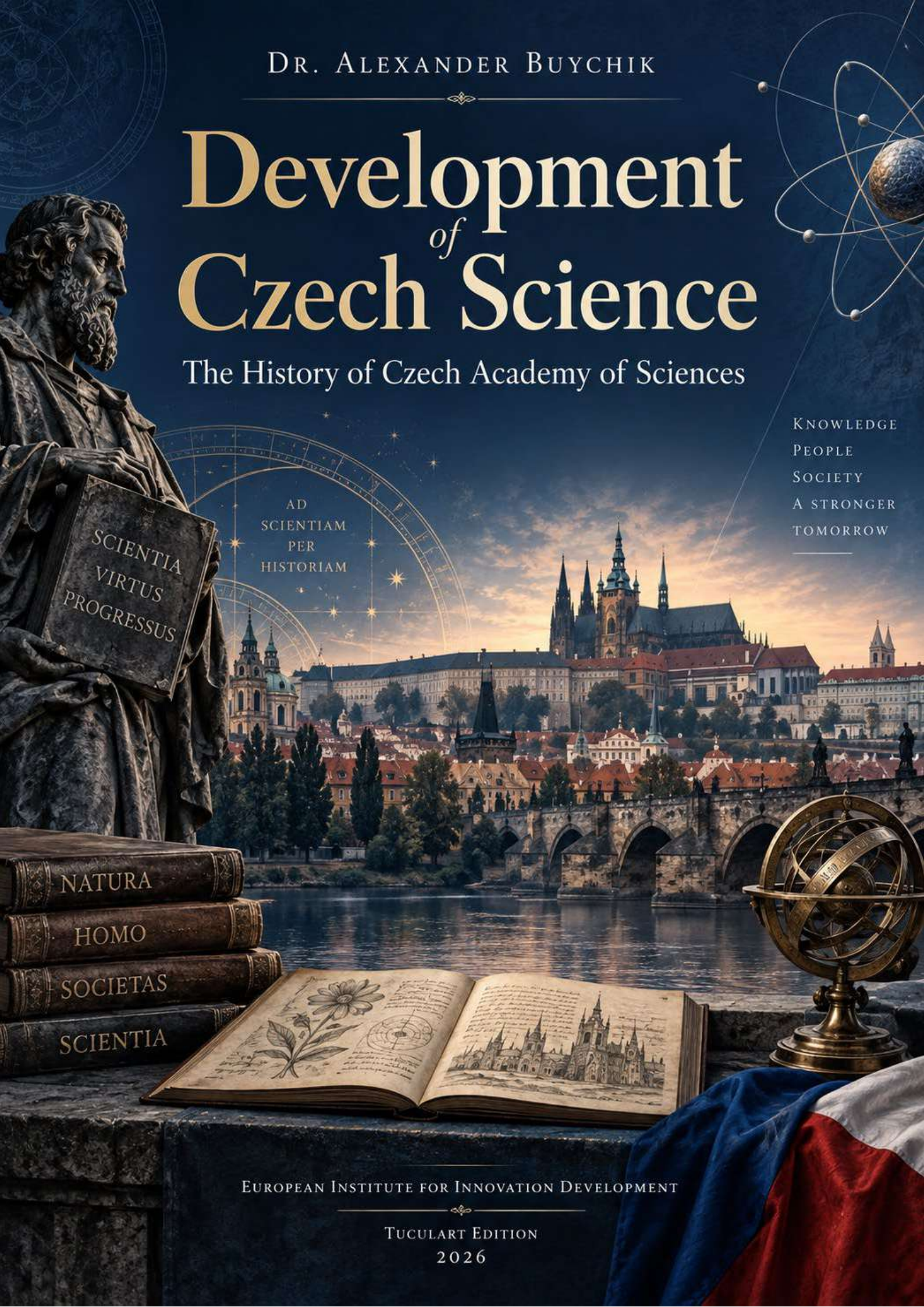
Dr. Alexander Buychik

Development of Czech Science

The History of Czech Academy of Sciences



European Institute for Innovation Development

Tuculart Edition
2026

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Development of Czech Science:

The History of Czech Academy of Sciences

Dr. Alexander Buychik

Ostrava–Opava, Czech Republic

2026

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Publisher:
Tuculart Edition (Tuculart s.r.o.), European Institute for Innovation Development, operated by the Tuculart Holding.

Edition:
Buychik, A. Development of Czech science: The history of Czech Academy of Sciences. Ostrava, Opava: Tuculart Edition, European Institute for Innovation Development, 2026. — 2355 p. (227,84 printed sheets)

ISBN 978-80-88474-48-7
DOI 10.47451/book-2026-10

For citation (in APA):
Buychik, A. (2026). *Development of Czech science: The history of Czech Academy of Sciences*. Ostrava, Opava: Tuculart Edition, European Institute for Innovation Development.

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Abstract

Development of Czech Science: The History of Czech Academy of Sciences is a comprehensive historical and institutional study of the development of Czech academic science and the changing role of the Academy as one of the country's principal institutions of research, knowledge, and scientific memory. The book traces the evolution of organised scholarship in the Czech lands from early learned societies and the Royal Czech Society of Sciences through the Czech Academy of Sciences and Arts and the Czechoslovak Academy of Sciences to the establishment and development of the modern Czech Academy of Sciences.

Particular attention is given to the relationship between scientific development and political transformation, including the formation of national scientific institutions, the socialist reorganisation of research after 1952, the effects of ideological control and political repression, the transformation of the Academy after 1989, and its institutional renewal following the establishment of the Czech Republic in 1993. The study examines both continuity and rupture, showing how research institutes, scientific schools, professional communities, archives, infrastructures, and intellectual traditions were preserved, transformed, or redefined across different political regimes.

The book also explores the structure and governance of the contemporary Academy, the modernisation of research evaluation, European and international integration, open science, digitalisation, scientific careers, and the development of interdisciplinary and public-interest research. It considers major achievements in the natural sciences, mathematics, physics, chemistry, life sciences, biomedicine, humanities, and social sciences, while also addressing innovation, technology transfer, research infrastructures, and cooperation with universities, government, industry, and society.

Extending its analysis to 2025, the book places the Czech Academy of Sciences within the broader history of European academic institutions and interprets it as a long-term carrier of scientific knowledge, institutional memory, cultural heritage, and national intellectual capacity. It presents the Academy not only as a research organisation, but also as an institution connecting historical inheritance with contemporary scientific excellence, innovation, public responsibility, and the strategic development of Czech science in the 21st century.

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Part One.

Historical Foundations of Czech Academic Science

Chapter One

The Idea of an Academy in the Czech Lands: From Learned Society to National Scientific Institution

The European Academy as an Institutional Model of Science

1. Academies, learned societies, and the institutionalisation of knowledge in Europe

The history of European academies and learned societies is not merely the history of organisations created for the convenience of scholars. It is, more profoundly, the history of how knowledge gradually acquired stable public forms, durable institutional memory, recognised procedures of verification, and a social authority distinct from both medieval scholasticism and private erudition. Before the modern academy became a familiar institution, learned activity existed in dispersed spaces: universities, courts, monasteries, private libraries, printers' workshops, noble households, botanical gardens, anatomical theatres, observatories, and informal circles of correspondence. These spaces were productive, but they were not yet fully integrated into a recognisable public system of knowledge-making. The academy and the learned society changed this situation by giving inquiry a collective body, a regular meeting place, statutes, membership rules, publication practices, and a claim to speak on behalf of organised science. This transformation was slow and uneven, but it altered the intellectual map of Europe. It allowed scientific work to move from the status of exceptional individual pursuit towards the status of a continuing institutional enterprise. The academy became one of the most important instruments through which Europe learned to preserve, test, circulate, and accumulate knowledge across generations. In this sense, the institutionalisation of knowledge was not an administrative afterthought to the Scientific Revolution; it was one of the conditions that made the long-term expansion of science possible (*Ornstein, 1938*; *McClellan, 1985*).

The emergence of academies must therefore be understood against the background of the wider transformation of European intellectual life from the Renaissance to the Enlightenment. Humanist republics of letters had already created transnational habits of correspondence, textual criticism, translation, scholarly travel, and learned sociability. Yet these practices remained relatively personal, elite, and dependent on the fragile networks of individual scholars, patrons, printers, and courts. The academy introduced a new element: it made learned sociability more regular, more visible, and increasingly more durable. It also created a bridge between private curiosity and public authority. A discovery discussed among friends could now be presented before a recognised society; an observation could be registered; an experiment could be witnessed; a memoir could be printed under institutional auspices. The early learned societies did not immediately eliminate older intellectual forms, nor did they replace universities as centres of education. Rather, they occupied a distinctive space between the university, the court, the state, and the republic of letters. Their significance lay in their capacity to organise knowledge without reducing it entirely either to teaching or to

government service. The academy was thus born as a hybrid institution: scholarly, civic, courtly, public, and increasingly national at the same time (*Ornstein, 1938*; *Hahn, 1971*).

The 17th century is usually treated as the decisive moment in the formation of this new institutional culture. Earlier Italian academies, including humanist and natural-philosophical circles, had already experimented with collective intellectual identity, symbolic names, ritual forms, and shared programmes of inquiry. The Accademia dei Lincei, associated above all with early modern natural philosophy and Galileo's milieu, demonstrated that a learned society could become a recognisable community devoted to the observation and interpretation of nature. Yet the more durable institutional models emerged in the second half of the 17th century, especially in England and France. The Royal Society of London, formally chartered in 1662, and the Académie royale des sciences in Paris, founded in 1666 under royal patronage, became reference points for later European scientific institutions. They represented two different but complementary models of organised science. The English model emphasised corporate fellowship, experimental witnessing, printed transactions, and a relatively autonomous learned body. The French model emphasised state patronage, selected membership, pensioned savants, and the integration of science into royal prestige and administrative utility. Later European academies often borrowed from both models, adapting them to local political, linguistic, and intellectual circumstances (*Hahn, 1971*; *McClellan, 1985*).

The Royal Society became a crucial example of how a learned society could turn experimental knowledge into a public practice. Its motto, *Nullius in verba*, expressed a new intellectual posture: knowledge should not rest solely on inherited authority, but on observation, experiment, discussion, and critical examination. This did not mean that early modern experimental culture was democratic in the modern sense. Its membership remained socially selective, and its practices were shaped by gentlemanly norms of credibility, civility, and trust. Yet the Royal Society institutionalised a new way of presenting and validating claims about nature. Experiments were described, repeated, witnessed, debated, and circulated through correspondence and print. The society's *Philosophical Transactions*, first appearing in the 17th century, became one of the most important models for scientific periodical publication. The printed paper, the meeting, the letter, the report, and the collective judgement of fellows formed a new ecology of knowledge. Scientific truth was no longer imagined only as a philosophical proposition; it became a socially mediated result of communication, testimony, and institutional procedure. The Royal Society thus helped to turn experimental philosophy into a durable public culture (*Ornstein, 1938*; *Royal Society, n.d.*).

The Paris Académie royale des sciences developed a different form of scientific institutionalisation. It was more closely tied to the state, to royal representation, and to the administrative ambitions of Colbertian France. The Académie was not simply a gathering of independent scholars; it was part of a broader project of using knowledge to strengthen royal power, economic development, cartography, navigation, engineering, astronomy, and technical expertise. This gave French academic science a distinctive public function. It linked learned authority with practical service and made the savant a figure of state-supported expertise. At the same time, the Paris Academy created demanding standards of collective work, record-keeping, official memoirs, reports, and disciplinary specialisation. Its members did not only discuss science; they produced observations, evaluated inventions, advised on technical matters, and participated in projects with direct administrative significance. This model later became especially influential in continental Europe, where academies were often

established under monarchical or state patronage. The academy could therefore become both a place of free inquiry and an instrument of enlightened administration. That ambiguity would remain central to the history of European academies, including those that later emerged in Central Europe (*Hahn, 1971*; *Académie des sciences, n.d.*).

The contrast between London and Paris is important because it reveals that there was never a single European model of the academy. Some learned societies were corporate, voluntary, and relatively self-governing. Others were royal, state-supported, and closely connected with administrative priorities. Some were broad intellectual societies embracing natural philosophy, antiquarian studies, language, history, and the arts. Others were increasingly specialised institutions of mathematical, physical, medical, or technical research. Some emphasised public lectures and communication; others emphasised closed deliberation and expert judgement. These differences mattered because they shaped how later academies understood their own legitimacy. Was an academy a fellowship of scholars, a servant of the state, a guardian of national culture, a tribunal of scientific truth, or a mechanism of practical improvement? In practice, it could be all of these at once. The European academy was therefore never merely one institution among others; it was a flexible institutional form through which different societies negotiated the relationship between knowledge, authority, utility, and identity. This flexibility explains why the academy became so widespread across Europe in the 18th and 19th centuries (*McClellan, 1985*).

During the 18th century, learned societies multiplied and formed what James McClellan famously described as a reorganised system of scientific sociability and communication. The growth of academies in provincial cities, smaller states, imperial capitals, and university towns reflected the increasing prestige of organised knowledge. These societies created prize competitions, journals, memoir series, correspondence networks, observatories, libraries, collections, and mechanisms of recognition. They also cultivated a new public image of useful knowledge. Science was expected not only to interpret nature, but also to improve agriculture, mining, navigation, public health, industry, education, and state administration. The language of improvement became one of the dominant languages of academic culture. Learned societies often presented themselves as institutions capable of transforming local knowledge into public benefit. They gathered meteorological observations, described natural resources, compared agricultural methods, investigated diseases, classified plants and minerals, and evaluated new technologies. The result was an increasingly dense institutional landscape of inquiry. Knowledge became more organised, more archival, more comparative, and more explicitly connected with the future of society (*McClellan, 1985*).

This 18th-century expansion also changed the geography of European science. Scientific authority was no longer concentrated only in a few famous capitals. Smaller centres could participate in Europe-wide knowledge networks through academies, journals, correspondents, and prize questions. This was especially important for Central Europe, where multilingual and multiethnic political spaces produced complex patterns of scientific communication. The Habsburg lands, German territories, Polish-Lithuanian spaces, Italian states, and other regions developed learned societies that combined local scholarship with European aspiration. Academies became instruments through which regional elites could claim participation in universal science while also cultivating local identity. They allowed scholars in Prague, Vienna, Berlin, Göttingen, Warsaw, Bologna, Uppsala, and other centres to situate themselves within a transnational intellectual order. This was not a simple story of diffusion from West to East. It was a process of adaptation, translation, and local institutional

invention. Each academy had to define what kind of knowledge mattered in its own political and cultural environment. This is why the later Czech academic tradition cannot be understood only as an imitation of London or Paris; it belonged to a broader Central European field of institutional creativity (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*).

The academy was also central to the transformation of scholarly communication. Before the consolidation of learned societies, books and letters were the dominant vehicles of intellectual exchange. They remained essential, but academic institutions added new forms of communication: proceedings, transactions, memoirs, reports, catalogues, prize essays, minutes, and institutional correspondence. These genres mattered because they stabilised the memory of research. A discovery presented before an academy did not disappear with the conversation in which it was first described. It could be recorded, evaluated, printed, indexed, archived, and cited. The academy therefore created a documentary infrastructure for knowledge. It transformed ephemeral intellectual exchange into retrievable institutional memory. This process may seem technical, but it was historically decisive. Without regular documentation, science could not become a cumulative enterprise in the strong sense of the word. Academies helped to create the paper architecture of modern science: the archive, the journal, the report, the catalogue, and the reviewed memoir (*Ornstein, 1938*; *McClellan, 1985*).

Equally important was the academy's role in defining membership and recognition. Scientific work had long depended on reputation, patronage, and correspondence, but academies gave recognition a more formal structure. Election to a learned society or academy signalled that a scholar had entered a recognised community of knowledge. Membership could be local, national, foreign, honorary, corresponding, or ordinary, and each category reflected a particular relationship between institution and scholar. This system of recognition created hierarchies, but it also created networks. A corresponding member in one city could become part of a wider European intellectual system. A foreign member could connect one academy to another scientific culture. Prizes could identify emerging talent and direct attention to specific research problems. In this way, academies did not simply reflect existing intellectual prestige; they produced and distributed it. They helped to establish who counted as a legitimate contributor to knowledge. This is one of the reasons why the history of academies is also a history of inclusion, exclusion, authority, and intellectual hierarchy (*McClellan, 1985*).

The institutionalisation of knowledge also required new procedures for evaluating claims. Early academies were not modern peer-review systems in the strict contemporary sense, but they created important precedents for expert assessment. They appointed committees, requested reports, examined inventions, judged prize essays, discussed observations, and decided which texts deserved publication. The idea that knowledge claims should pass through organised scrutiny became increasingly embedded in academic culture. This did not eliminate error, prejudice, rivalry, or political influence. On the contrary, academies were often marked by conflict, ambition, patronage, and institutional conservatism. Yet they made evaluation a public and repeatable procedure rather than a purely private judgement. They also introduced a distinction between individual opinion and collective institutional assessment. A scholar might propose; the academy might examine. This distinction became one of the foundations of modern scientific authority. The academy's power lay not only in producing knowledge, but in certifying, ordering, and sometimes rejecting knowledge (*Hahn, 1971*; *McClellan, 1985*).

The rise of academies also changed the relation between knowledge and the state. In the early modern period, rulers increasingly understood that scientific expertise could serve military,

fiscal, administrative, economic, and symbolic purposes. Astronomy aided navigation and calendar reform; mathematics and mechanics supported engineering and artillery; botany and medicine served health and colonial ambitions; cartography supported territorial administration; chemistry and mineralogy contributed to mining, manufacture, and agriculture. Academies gave rulers access to organised expertise. They also gave scholars access to resources, protection, prestige, and material support. This reciprocal relationship was productive but never innocent. State patronage could enable ambitious projects impossible for isolated scholars, but it could also define priorities, limit criticism, and bind knowledge to political authority. The academy therefore developed within a permanent tension between autonomy and utility. This tension would later become especially important in the history of state academies in Central and Eastern Europe, including the Czechoslovak Academy of Sciences after 1952. The modern Czech Academy of Sciences inherited not only a tradition of scholarship, but also this older European problem: how can science serve society without becoming subordinate to political power? (*Hahn, 1971*; *McClellan, 1985*).

Another key feature of European academies was their role in the formation of national scientific cultures. In the 17th century, many academies still spoke the cosmopolitan languages of Latin, French, Italian, or German, and their members often imagined themselves as citizens of a republic of letters. Yet by the 18th and 19th centuries, academies increasingly became connected with national languages, national histories, and national cultural projects. This was not a contradiction of universal science, but one of its European forms. A nation that wished to be recognised as modern needed institutions capable of producing, preserving, and publishing knowledge. Academies could collect linguistic materials, support historical research, publish critical editions, maintain museums and libraries, and cultivate scientific vocabulary in national languages. They could demonstrate that a language was capable of philosophical, scientific, and scholarly expression. This process was particularly important for smaller or politically subordinated nations. In such contexts, learned societies and academies became vehicles of cultural emancipation as well as scientific development. The Czech case would later fit precisely into this pattern, as the institutionalisation of scholarship became closely connected with language, national culture, and the claim to intellectual maturity (*Franc, Kostlán, & Míšková, 2010*).

The development of academies also marked a gradual differentiation between universities and research institutions. Medieval and early modern universities were primarily teaching corporations, even though they were also sites of scholarship. Their structures were organised around faculties, degrees, curricula, and the reproduction of learned professions. Academies, by contrast, were generally oriented towards research, discussion, publication, recognition, and expert judgement. This distinction was never absolute. Universities produced major scholars, and many academicians held university positions. Nevertheless, the academy introduced the idea that research could have an institutional home separate from teaching. This idea would become increasingly important in the 19th and 20th centuries, especially as research became more specialised, expensive, and dependent on laboratories, collections, instruments, and long-term projects. The later distinction between university-based and academy-based research, so important for understanding Czech and Czechoslovak science, has deep European roots. The academy was one of the first institutional answers to the problem of how to organise research as a collective, continuing, and socially recognised activity (*McClellan, 1985*; *Jareš, Franc, & kol., 2018*).

At the same time, academies helped to create the symbolic figure of the scientist as a public intellectual and expert. Earlier terms such as natural philosopher, virtuoso, savant, mathematician, physician, antiquarian, or scholar reflected specific traditions of learning. The modern scientist emerged gradually, and academies played an important role in this transition. They provided a recognised setting in which a person could be seen not merely as a private thinker, teacher, or court servant, but as a member of a collective enterprise of knowledge. Academic titles, memberships, prizes, reports, and publications created public markers of expertise. The academician became a bearer of intellectual authority. This authority could be used in many ways: to advise the state, educate the public, classify nature, protect cultural memory, evaluate inventions, or defend the autonomy of scholarship. The authority of the academician was therefore both epistemic and civic. It rested on knowledge, but it also carried expectations of service. This dual identity remains visible in modern academies of sciences, including the Czech Academy of Sciences, whose mission combines research excellence with public responsibility (*McClellan, 1985*; *Akademie věd České republiky, n.d.*).

The academy also participated in the long-term transformation of time in scientific culture. Individual scholars live within a limited biographical horizon, but institutions can organise knowledge across generations. An academy can preserve minutes, publications, instruments, collections, buildings, correspondence, and reputations long after individual members have died. It can maintain continuity through war, revolution, political rupture, and social transformation. This does not mean that academies are immune to crisis. On the contrary, they are often deeply affected by changes in regime, ideology, funding, and public legitimacy. Yet their institutional memory can survive even dramatic discontinuities. This is why the history of academies is so important for any study of scientific heritage. They are not only sites where new knowledge is produced; they are also mechanisms through which old knowledge is selected, preserved, reinterpreted, and transmitted. In this sense, the academy is a scientific archive in the broadest sense of the term. It preserves not only documents, but also standards, practices, identities, and expectations (*Franc & Mádlová, 2013*; *Franc, Kostlán, & Míšková, 2010*).

The institutionalisation of knowledge through academies was also connected with material culture. Science required instruments, rooms, books, specimens, maps, measuring devices, laboratories, cabinets, gardens, and later specialised technical infrastructures. Learned societies often began modestly, but even modest institutionalisation required material supports. A meeting needed a room; a library needed cataloguing; specimens needed cabinets; astronomical observations needed instruments; publications needed printers and funds. Over time, these material conditions became more complex and more expensive. Academies helped to gather and protect resources that individual scholars could rarely maintain alone. They also made instruments and collections part of institutional life. This material dimension is especially important for understanding the later development of academy-based research in fields such as physics, chemistry, biology, archaeology, and technical sciences. Scientific knowledge was never only an idea; it was also a practice embedded in things, spaces, instruments, and routines. The academy provided a durable home for this material ecology of research (*McClellan, 1985*).

The spread of learned societies also transformed the public perception of useful knowledge. Enlightenment academies frequently cultivated prize competitions on practical questions: agriculture, industry, medicine, public hygiene, mining, navigation, education, and political economy. Such questions invited scholars to demonstrate that knowledge could improve life.

The academy thus became a mediator between abstract inquiry and practical reform. It did not simply produce theory; it organised conversations about improvement. This role gave academies an important position in the emerging public sphere. They could translate specialised knowledge into recommendations, reports, and public debates. They also helped to legitimise the idea that social and economic progress required organised research. This language of usefulness later became central to national academies and state-supported research institutions. The modern vocabulary of innovation, applied research, strategic priorities, and public-interest science has older roots in this Enlightenment culture of useful knowledge. When contemporary academies speak of research for society, they are reworking a very old European academic theme (*McClellan, 1985*).

However, the institutionalisation of knowledge was never purely progressive or neutral. Academies could be conservative, exclusionary, hierarchical, and politically dependent. They often excluded women, religious minorities, socially marginal groups, and scholars outside recognised networks. Their standards of credibility could reinforce social privilege as well as intellectual quality. Their dependence on patrons or states could shape what kinds of knowledge were encouraged or silenced. Their national missions could support cultural development, but they could also produce narrow definitions of legitimate identity. The history of academies must therefore be written critically, not ceremonially. Their achievements are real, but so are their limitations. This balanced perspective is especially important for a book on the Czech Academy of Sciences, because Czech academic history includes both creative institutional continuity and periods of severe political distortion. A strong account of academic development must show how institutions preserve knowledge, but also how they can be captured, redirected, purified, or reformed. The academy is a powerful form precisely because it can serve different regimes of knowledge and power (*Hahn, 1971*; *Míšková, Barvíková, & Šmidák, 1998*).

The 19th century brought further changes to the European academic landscape. Research became more specialised, professionalised, and increasingly connected with universities, laboratories, museums, observatories, technical schools, and state services. The older learned society did not disappear, but it had to coexist with new forms of disciplinary organisation. Chemistry, physics, biology, geology, philology, history, archaeology, and social sciences developed their own methods, journals, associations, and professional norms. Academies responded by creating sections, classes, committees, and specialised publications. They increasingly became institutions that both represented the unity of knowledge and managed its differentiation. This double function was crucial. Without specialisation, modern research could not advance; without some institutional form of unity, knowledge could fragment into disconnected disciplines. Academies offered one answer to this problem by gathering different fields under a single symbolic roof. They could say, in effect, that the sciences and humanities belonged to a wider intellectual order. This idea would later become highly relevant for the Czech academic tradition, where natural sciences, humanities, social sciences, and cultural scholarship often coexisted within broad academic institutions (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*).

In Central Europe, academies also became deeply connected with questions of language and national representation. This was not accidental. Empires and multilingual states created situations in which intellectual life was often mediated through dominant languages, while emerging national movements sought scholarly legitimacy for their own languages and cultures. A learned society could become a place where a language was cultivated as a

medium of science. It could publish dictionaries, historical sources, literary studies, scientific terminology, and national histories. It could also demonstrate that a community possessed the institutional maturity necessary for modern cultural life. The Czech lands were shaped by precisely this dynamic. Prague was an old university city and a major centre of Central European culture, but Czech scientific and scholarly institutions had to define themselves within a multilingual and politically complex environment. The movement from learned society to national academy was therefore not only an intellectual process; it was a cultural and political one. It concerned the right to produce knowledge in one's own language and to present that knowledge as part of European civilisation (*Franc, Kostlán, & Míšková, 2010*; *Pokorná, 2010*).

The concept of institutional continuity is especially important here. Modern academies often claim descent from older learned societies, even when the legal, political, and organisational forms have changed dramatically. Such claims are not merely decorative. They express a belief that scientific institutions carry memory across historical ruptures. The Czech Academy of Sciences, for example, situates itself within a longer genealogy that includes the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy of Sciences. This type of genealogy does not mean that all these institutions were identical or that their values were unchanged. It means that they participated in a continuing effort to organise knowledge in the Czech lands. Continuity in academic history is therefore not a straight line, but a chain of transformations. Each institution inherits, reinterprets, rejects, or revives elements of its predecessors. The academy is best understood as a form that survives by changing. This insight will be crucial for later discussion of the transformation from the Czechoslovak Academy of Sciences to the Czech Academy of Sciences after 1989 and 1993 (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*).

The European history of academies also clarifies why scientific institutions so often carry a dual mission: they are at once universal and particular. Science claims universality because its methods and findings aspire to validity beyond local boundaries. Yet scientific institutions are always situated in specific languages, states, cities, funding systems, cultures, and historical memories. The academy embodies this duality. It invites scholars to participate in universal knowledge, but it also gives that participation a local or national form. The Royal Society was English and international; the Paris Academy was French and European; the Czech learned institutions were Czech, Central European, and part of a wider republic of letters. This duality is not a weakness. It is one of the reasons why academies have been so durable. They allow a society to say that its own intellectual traditions belong to a wider human pursuit of knowledge. The history of the Czech Academy of Sciences must therefore be written both as Czech history and as European history. Its distinctiveness emerges precisely from the way European academic forms were adapted to Czech historical circumstances (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*).

The academy as an institutional model also gave science a form of moral seriousness. To belong to an academy was not only to possess knowledge, but to accept certain expectations: accuracy, reliability, public responsibility, respect for evidence, and contribution to a collective enterprise. Of course, real academies did not always meet these ideals. They could be compromised by ambition, ideology, nationalism, or bureaucratic inertia. Yet the normative ideal mattered. It allowed academies to present themselves as guardians of disciplined inquiry. This ideal later became central to the defence of academic autonomy in periods of political pressure. When scholars argued that science needed freedom, they often did so in the

name of standards that institutions had helped to define. The academy therefore contributed not only to the organisation of knowledge, but also to the ethical vocabulary of scholarly life. It connected truth-seeking with institutional responsibility. This moral dimension would become especially important in societies where science had to survive authoritarian intervention, ideological control, war, occupation, or post-revolutionary transformation (*Hahn, 1971*; *Míšková, Barvíková, & Šmidák, 1998*).

In the long perspective, the institutionalisation of knowledge through academies produced several enduring consequences. It created stable communities of recognition. It generated documentary forms that allowed knowledge to accumulate. It linked research to public authority and social usefulness. It supported the professionalisation of scholarship. It strengthened the relation between science and national culture. It preserved institutional memory across generations. It also created tensions that would never fully disappear: autonomy versus utility, universal science versus national mission, expert judgement versus public accountability, continuity versus reform, and scholarly freedom versus political power. These tensions are not external to the history of academies; they are constitutive of it. Every academy must negotiate them in its own way. The Czech Academy of Sciences inherited this entire European legacy, even when it developed under very specific Czech and Czechoslovak conditions. To understand its modern history, one must first understand the academy as a European institutional invention. Only then can the Czech case be seen not as an isolated national story, but as a distinctive chapter in the longer European history of organised knowledge.

The relevance of this European background becomes particularly clear when one turns to the Czech lands. The emergence of Czech learned institutions did not occur outside Europe's academic transformation; it was part of it. Czech scholars, patrons, historians, naturalists, linguists, and later academicians operated in a world already shaped by the prestige of organised learning. The Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts were not accidental local creations, but Central European responses to the same broad historical need: to give knowledge a durable institutional form. They combined the universal ambitions of science with the particular needs of Czech language, culture, scholarship, and national self-definition. Later, the Czechoslovak Academy of Sciences would inherit both this older learned tradition and a very different 20th-century model of state-organised research. The modern Czech Academy of Sciences, established after the collapse of Czechoslovakia, would have to reinterpret all these inheritances under democratic, European, and global scientific conditions. This is why the history of academies and learned societies is not merely a background chapter. It is the conceptual foundation for the entire book. The Czech Academy can only be fully understood as a modern form of a much older European answer to the question of how knowledge should be organised, preserved, authorised, and placed in the service of society.

Thus, academies and learned societies institutionalised knowledge in Europe by transforming dispersed scholarship into a collective, documented, recognised, and publicly meaningful enterprise. They created forms of membership, publication, evaluation, patronage, expertise, archival memory, and scientific authority that made modern research possible as a continuing social practice. Their history shows that science does not develop only through discoveries, theories, or individual genius; it also develops through rooms, meetings, statutes, journals, libraries, collections, committees, and traditions of judgement. The European academy was never a single uniform model, but a flexible institutional form shaped by different relations

between scholars, states, publics, languages, and national cultures. Its legacy was productive and ambivalent: it enabled autonomy and usefulness, but also created hierarchies and dependencies. For the Czech lands, this European tradition provided the institutional grammar through which learned society, national scholarship, socialist research organisation, and the modern Czech Academy of Sciences could be historically connected. The following chapters will show how this general European model was adapted in Czech conditions and how, through many ruptures and renewals, it became one of the foundations of modern Czech science.

2. The Academy as a Form of Scholarly Authority and Intellectual Continuity

The academy became one of Europe's most durable answers to a problem that is older than modern science itself: how can knowledge acquire authority without becoming merely an instrument of power, tradition, or personal reputation? Before academies and learned societies developed stable institutional forms, scholarly authority depended heavily on individual fame, patronage, ecclesiastical recognition, university status, courtly proximity, printed reputation, or participation in correspondence networks. These forms of authority were not insignificant, and many of them continued to matter long after academies appeared. Yet they remained fragile because they were often attached to persons, places, confessions, dynasties, or intellectual fashions. The academy introduced a different principle: the authority of knowledge could be supported by a continuing collective body. It could be produced, examined, recorded, criticised, published, and remembered by an institution that survived beyond the lifespan of any single scholar. This was one of the decisive transformations in European intellectual history. The academy did not abolish individual genius, but it placed genius within a recognised structure of collective judgement. It did not eliminate conflict, but it gave conflict a setting, language, and procedure. It did not guarantee truth, but it created conditions under which truth-claims could be socially tested and historically preserved (*Shapin, 1994*; *McClellan, 1985*).

Scholarly authority in an academic setting is therefore never only a matter of intelligence or discovery. It is also a matter of recognition, procedure, institutional trust, and continuity of standards. A scholar may observe, calculate, interpret, or invent, but the academy gives these actions a public form. It receives papers, elects members, organises discussions, evaluates claims, preserves records, publishes proceedings, awards prizes, and defines fields of competence. These practices may look administrative from the outside, but they are epistemologically important. They help convert individual knowledge into shared knowledge. They distinguish private opinion from disciplined inquiry and isolated observation from a contribution to a recognised field. The academy therefore functions as a mediator between the solitary act of thought and the collective authority of science. This mediation is one of the reasons why academies became so important in the history of European research. The authority of science did not emerge simply because scholars became more rational; it emerged because institutions developed practices that made rational inquiry durable, visible, and transmissible (*Burke, 2000*; *McClellan, 1985*).

The academy's authority rests first on its claim to organise credible judgement. In early modern experimental culture, credibility was not an abstract philosophical condition; it was a social and institutional achievement. Observations had to be made believable. Experiments had to be described in ways that other competent observers could understand. Testimony had to be trusted. Reports had to circulate through channels that carried weight. Steven Shapin's

analysis of 17th-century English science shows that truth-making was tied to civility, trust, honour, and the social identity of reliable witnesses (*Shapin, 1994*). This does not mean that science was merely a social convention. It means that even the strongest claims about nature required credible persons, recognised settings, and accepted forms of communication. Academies offered precisely such settings. They gave testimony an audience, discussion a record, and disagreement a procedure. In this sense, the academy helped transform credibility from a personal quality into an institutional practice.

The same point can be made from the history of scientific objectivity. Modern readers often imagine objectivity as timeless, as if science had always been governed by the same ideal of impersonal observation. Yet Lorraine Daston and Peter Galison have shown that objectivity itself has a history and that scientific virtues such as truth-to-nature, mechanical objectivity, and trained judgement emerged within concrete practices of representation, discipline, and self-formation (*Daston & Galison, 2007*). Academies were among the institutions that helped stabilise such virtues. They did so not by inventing objectivity in a single act, but by cultivating habits of comparison, criticism, documentation, and public accountability. A drawing, specimen, measurement, map, or table became more than an isolated product when it entered an institutional archive or publication series. It could be compared with other records, corrected by later observers, and used by scholars who had never met its original maker. The academy therefore helped turn epistemic virtues into collective disciplines. It trained scholars not only to know, but to know in forms that others could inspect, preserve, and extend. This is one of the deepest meanings of academic authority.

The academy's authority also depends on its capacity to define membership. Membership in an academy or learned society is never a neutral detail. It marks the boundary between recognised and unrecognised competence. It tells the public, the state, other scholars, and future generations that certain persons have been admitted into a community of judgement. This process may be highly selective, and historically it has often reflected social privilege, gender exclusion, political pressure, linguistic hierarchy, or national preference. Yet it also created an organised structure of scholarly recognition. Election to an academy could validate a career, connect a scholar with international networks, and place a body of work within institutional memory. Corresponding membership could extend this authority across borders. Foreign membership could make an academy part of a wider European intellectual system. Honorary membership could symbolically connect knowledge with prestige, patronage, and diplomacy. In these ways, academies did not merely observe scholarly reputation; they actively produced it (*McClellan, 1985*).

Because academies produce recognition, they also produce hierarchy. This is one of the ambivalent features of their history. The academy can protect standards, but it can also become conservative. It can defend intellectual quality, but it can also exclude unconventional, politically inconvenient, socially marginal, or methodologically disruptive voices. It can maintain continuity, but it can also turn continuity into rigidity. The history of learned institutions therefore cannot be written as a simple celebration of progress. It must recognise that scholarly authority is always exposed to the risk of institutional closure. The same procedures that stabilise knowledge may also slow renewal. The same prestige that protects science from arbitrary interference may also create internal privilege. The same archive that preserves memory may also silence those who were never admitted into the record. A critical history of academies must therefore show both sides: their power to sustain

knowledge and their tendency to define the limits of legitimate knowledge (*Hahn, 1971*; *Burke, 2000*).

Nevertheless, without some form of institutional recognition, science cannot easily become cumulative. The academy's authority is linked to continuity because it allows knowledge to outlive the person who first produced it. A scholar may die, but an academy can preserve the paper, publish the memoir, maintain the correspondence, archive the minutes, continue the research programme, and train later generations to read the inherited record. In this respect, the academy is not only a community of living scholars. It is also a community of the dead and the not-yet-born. It binds past work to future inquiry. This is why archives, libraries, publication series, collections, catalogues, and institutional histories are not peripheral to academy life. They are central to the academy's identity as a bearer of intellectual continuity. An academy without memory would be a committee; an academy with memory becomes a historical institution of knowledge. The Czech case is especially revealing because the modern Czech Academy of Sciences explicitly situates itself within a genealogy of earlier learned institutions, including the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy of Sciences (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*).

The academy's authority is therefore temporal as well as social. It does not operate only in the present moment of evaluation. It connects different generations of scholars through inherited standards and shared institutional forms. A research institute, a learned society, or an academy may preserve certain methods, questions, collections, and intellectual habits even when political regimes change. This continuity is rarely pure. It is often interrupted by war, occupation, revolution, ideological pressure, exile, reform, or administrative restructuring. Yet precisely because academies are institutions, they can carry fragments of intellectual life across disruption. A collection may survive when a school of thought is suppressed. A library may preserve texts that later become newly important. An archive may document both achievement and injustice. A laboratory tradition may remain alive through pupils and technical staff even when senior figures are removed. The academy thus becomes one of the principal mechanisms through which scientific cultures survive historical rupture.

This temporal authority differentiates academies from many other organisations. A government ministry may change with political priorities. A private enterprise may disappear with market conditions. A university may shift its curriculum according to educational demand. An academy, at least in its ideal form, claims a longer horizon. It is supposed to protect research questions whose value may not be immediately visible. It is supposed to maintain expertise that society may need only in moments of crisis. It is supposed to preserve archives, collections, and disciplines that cannot be reduced to short-term utility. This long horizon is one of the reasons why academies have remained important even in modern research systems dominated by universities, grant agencies, and technological innovation. Their authority lies partly in their ability to say that knowledge has a duration longer than political cycles or market expectations. They are institutions of slow time within societies increasingly governed by acceleration. This role becomes especially important in small and medium-sized European countries, where the preservation of high-level expertise may depend on stable public research institutions (*Burke, 2012*; *Akademie věd České republiky, n.d.*).

The academy's continuity is also intellectual, not merely administrative. It preserves not only names, buildings, and statutes, but also styles of reasoning. Disciplines develop traditions of

evidence, argument, measurement, interpretation, and criticism. These traditions are learned through practice. They are passed from senior scholars to younger researchers, from laboratories to laboratories, from archives to readers, and from institutes to successor institutes. Academies often become the places where such traditions acquire institutional density. A chemical school may preserve laboratory habits and experimental techniques. A historical institute may preserve palaeographic competence, archival knowledge, and source-critical methods. A linguistic institute may preserve dictionaries, corpora, and norms of language scholarship. A mathematical school may preserve forms of abstraction and proof. In this way, continuity is not nostalgia. It is the living transmission of disciplined competence. The academy has authority because it can make this transmission organised rather than accidental.

The European academy also developed as an institution capable of speaking with collective authority. This does not mean that all academicians agreed with one another. On the contrary, serious scholarship depends on disagreement. Yet an academy could produce reports, recommendations, evaluations, official statements, prize judgements, and institutional publications that carried more weight than individual opinion. This collective voice was one of the reasons why states valued academies. Governments could ask them to evaluate inventions, advise on technical matters, reform calendars, survey resources, assess public health questions, or provide expertise in education and culture. The academy's authority was therefore not only internal to science. It had a public and sometimes political function. It created a form of expert speech that could enter statecraft without being identical to bureaucracy. This role was always delicate. If the academy became too dependent on power, its authority weakened; if it remained entirely detached from public needs, its social justification became fragile. The academy's history is therefore a history of balancing independence and usefulness (*Hahn, 1971*; *McClellan, 1985*).

This balance between independence and usefulness became one of the defining tensions of modern academic institutions. The academy gained prestige because it claimed to represent knowledge beyond immediate interests. Yet it also needed patrons, funds, legal recognition, and public legitimacy. A purely private academy might enjoy independence but lack resources. A fully state-controlled academy might enjoy resources but lose credibility. European academic history is full of attempts to negotiate this problem. The Royal Society relied on a corporate model and gentlemanly trust, while the Paris Academy represented a stronger model of state patronage and administrative service (*Hahn, 1971*; *Shapin, 1994*). Later academies adapted these models according to local circumstances. In Central Europe, academies often had to mediate between imperial structures, national aspirations, universities, state bureaucracies, and cultural movements. Their authority therefore depended on their ability to remain scholarly while also being socially meaningful. The Czech academic tradition would inherit this tension in several forms: national cultural service, socialist state planning, post-1989 autonomy, and contemporary public-interest research.

The academy as a form of authority also depends on the symbolic power of continuity. Institutions tell stories about themselves. They select founders, anniversaries, buildings, portraits, awards, and commemorative dates. These symbols are not merely decorative. They organise institutional identity and help scholars understand themselves as part of a longer tradition. A young researcher entering an academy institute does not simply enter a workplace. He or she enters a historical environment shaped by predecessors, archives, achievements, traumas, reforms, and expectations. This symbolic dimension can inspire responsibility, but it

can also simplify the past. Institutional memory often prefers continuity over conflict and achievement over failure. A serious history of an academy must therefore treat self-narration critically. It should ask what the institution remembers, what it forgets, what it commemorates, and what it transforms into heritage. In the case of the Czech Academy of Sciences, the declared line of descent from older Czech learned institutions gives the modern Academy historical depth, but it also requires careful interpretation of ruptures, discontinuities, and changes in political context (*Franc & Mádlová, 2013*; *Mádlová, 2024*).

Academic authority is strengthened by publication. A learned society that meets but does not publish remains limited in its influence. Publication converts internal discussion into public record. It allows ideas to travel beyond the meeting room and beyond the generation that first heard them. Proceedings, memoirs, bulletins, journals, annual reports, monographs, and catalogues are all instruments of authority. They show that an institution is active, selective, and capable of preserving knowledge in stable forms. They also allow later historians to reconstruct intellectual priorities, institutional language, and changing standards of scholarship. The publication record of academies is therefore a crucial part of their authority. It gives visible form to invisible labour. It transforms research into a trace that others can cite, challenge, translate, and reinterpret. In the Czech context, academic bulletins, historical series, annual reports, and digital collections will be essential not only as sources, but as evidence of how the Academy represented itself across different regimes and periods (*Československá akademie věd, 1965–1992*; *Masarykův ústav a Archiv AV ČR, n.d.*).

Academic authority is also inseparable from archival authority. Archives do not merely store documents; they shape what can later be known. An academy that preserves correspondence, minutes, personnel files, research reports, photographs, and institutional records enables future scholarship about itself and about science more broadly. The archive gives institutional memory a material body. It also makes the academy accountable to later generations. Archival preservation can reveal achievements, but it can also reveal exclusions, ideological pressures, purges, internal conflicts, and compromises. This dual character is important. A mature academy does not only celebrate its past; it makes its past available for investigation. In this sense, the existence of the Masaryk Institute and Archives of the Czech Academy of Sciences is not merely an administrative convenience. It is part of the Academy's broader role as a guardian of scientific and cultural memory. The archive makes continuity researchable rather than mythical (*Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

The academy's intellectual continuity often depends on institutions smaller than the academy itself. Research institutes, laboratories, departments, committees, collections, and editorial boards carry specialised forms of memory. The academy as a whole may change its statutes or leadership, but continuity may survive inside an institute through instruments, long-term projects, research teams, and inherited technical competence. This is particularly important in fields where knowledge is cumulative and materially embedded. A laboratory tradition cannot be recreated overnight. A historical dictionary, archaeological archive, biological collection, or astronomical dataset may require decades of continuous work. The academy's authority rests partly on its ability to protect such long-duration projects. Universities may also do this, but academy institutes are often designed precisely for sustained research beyond teaching cycles. This makes the academy a distinctive form of scholarly continuity. It can preserve projects that are too long, too specialised, or too infrastructural to depend solely on individual academic careers.

This also explains why the history of academies is closely connected with the history of expertise. Expertise is knowledge that can be trusted in contexts of decision, uncertainty, or public need. It requires more than information. It requires tested competence, institutional credibility, and continuity of practice. Academies became recognised sources of expertise because they gathered scholars whose authority had already been institutionally validated. Their reports and statements could speak to public questions with a weight different from journalism, politics, or private opinion. Yet expertise also creates responsibility. If academies claim authority, they must maintain standards of evidence, disclose uncertainty, and resist the temptation to provide convenient answers for power. This responsibility has become especially visible in the 21st century, when scientific advice is needed for climate change, health crises, energy systems, artificial intelligence, biodiversity, cultural heritage, security, and social resilience. The modern Czech Academy of Sciences' emphasis on research in the public interest can be read as a contemporary form of this older academic responsibility (*Akademie věd České republiky, n.d.*; *Strategie AV21, 2017*).

The academy's authority is not limited to the natural sciences. In European history, academies often embraced philology, history, archaeology, philosophy, law, literature, and the study of language and culture. This breadth matters because intellectual continuity is not only a matter of experimental results or technical capacity. It also concerns collective memory, cultural self-understanding, historical sources, language norms, and interpretive traditions. A national academy can therefore serve as a guardian of both scientific and cultural knowledge. In smaller European cultures, this role has often been especially important. The study of language, history, literature, and cultural heritage could demonstrate that a national community possessed not only political aspirations, but also scholarly depth. The Czech academic tradition was deeply shaped by this connection between knowledge and culture. The authority of Czech learned institutions was built not only through laboratories and natural sciences, but also through historical scholarship, philology, dictionaries, editions, archives, and the cultivation of Czech as a language of scholarship (*Franc, Kostlán, & Míšková, 2010*; *Pokorná, 2010*).

The academy's role in cultural continuity also gives it a distinctive place in the history of national identity. Universities educate citizens and professionals, but academies often preserve the deeper documentary and symbolic resources through which a culture understands itself. They maintain archives, publish historical sources, support linguistic research, produce encyclopaedic knowledge, and protect scholarly traditions that may not have immediate economic value. This role can be intellectually noble, but it can also become politically sensitive. National memory is rarely neutral. It can be used critically or mythologically, inclusively or exclusively, democratically or ideologically. The authority of an academy in the humanities therefore depends on its capacity to combine cultural responsibility with scholarly independence. It must preserve memory without becoming a servant of national mythology. It must study identity without reducing scholarship to identity politics. It must protect language and heritage while remaining open to international comparison. This tension will be essential for understanding the Czech Academy's humanistic and social-scientific mission after 1993.

The 20th century exposed academic authority to extreme pressures. War, occupation, totalitarian regimes, ideological censorship, forced emigration, purges, and political restructuring demonstrated that institutions of knowledge are never fully protected from power. Academies could be dissolved, reorganised, nationalised, politicised, or subordinated

to ideological agendas. Scholars could be excluded not because their work lacked quality, but because their political views, origins, associations, or intellectual independence became unacceptable. The Czechoslovak academic experience after 1948 and especially after 1968 belongs to this wider European history of the vulnerability of scholarly authority. Yet the same history also shows the resilience of intellectual continuity. Even when institutions were politically distorted, some research traditions survived through laboratories, archives, informal networks, technical competence, and the memory of excluded scholars. The restoration of academic freedom after 1989 was therefore not the creation of science from nothing. It was the recovery, revision, and re-legitimation of intellectual resources that had survived under pressure (*Míšková, Barvíková, & Šmidák, 1998*; *Štrbáňová & Kostlán, 2011*).

This is why continuity must not be confused with institutional innocence. An academy may preserve knowledge while also participating in compromised structures. It may support excellent research while operating under ideological supervision. It may protect some fields while sacrificing others. It may produce international achievements while excluding inconvenient scholars. A historically responsible account must avoid both condemnation without nuance and celebration without criticism. The authority of an academy is historical; it grows, weakens, is damaged, and is restored. It can be morally compromised and later reformed. It can inherit both valuable traditions and unresolved injustices. This complex view is particularly important for the Czech Academy of Sciences, whose modern legitimacy after 1993 depended partly on its ability to distinguish itself from the ideological distortions of the socialist period while preserving the genuine scientific capital inherited from ČSAV. The academy's continuity was therefore not passive inheritance. It was an active process of selection, reinterpretation, and institutional rebirth.

The academy's continuity also depends on the ability to reform itself. Institutions that only preserve eventually become museums of authority rather than living centres of knowledge. A modern academy must maintain traditions while opening itself to new methods, new fields, new generations, and new social expectations. This is why reform is not the opposite of continuity. In academic history, reform is often the condition of continuity. The Czech Academy's post-1993 development can be understood in precisely this way. It did not simply continue ČSAV, and it did not simply reject it. It transformed inherited institutes, research capacities, human resources, and symbolic capital into a new institutional form suited to a democratic Czech Republic and a European research environment. This transformation required new statutes, evaluation systems, international cooperation, funding mechanisms, and public missions. The academy preserved itself by changing what it meant to be an academy.

The concept of scholarly authority also helps explain why academies remain relevant in the age of networks, digital knowledge, and global science. One might assume that digital communication weakens traditional institutions because knowledge can now circulate instantly across borders and outside formal structures. Yet the opposite is also true. When information multiplies without reliable filters, institutions of credibility become more important, not less. Academies can provide expert judgement, long-term memory, disciplinary standards, and public trust in an environment saturated with claims. They can distinguish between information and knowledge, between opinion and expertise, between rapid visibility and durable contribution. Their authority no longer rests simply on ceremonial prestige. It must be earned through transparency, research quality, public communication, international cooperation, and openness to scrutiny. In this sense, the modern academy is not an obsolete

relic of the Enlightenment. It is one of the institutions that can help societies navigate the instability of knowledge in the 21st century (*Burke, 2012*; *Daston & Galison, 2007*).

For the Czech Academy of Sciences, scholarly authority has an additional national dimension. The Academy represents a country whose modern history includes imperial rule, national revival, democratic state-building, Nazi occupation, communist rule, federal dissolution, democratic transformation, and European integration. In such a history, scientific continuity cannot be taken for granted. It must be reconstructed across ruptures. The Academy's authority therefore rests not only on present research excellence, but also on its ability to embody a longer Czech intellectual trajectory. It connects early learned societies, the Czech Academy of Sciences and Arts, the Czechoslovak Academy of Sciences, and the post-1993 Czech Academy of Sciences in one complex line of institutional development. This does not mean that the line is smooth or free of contradiction. It means that the Academy provides a framework through which Czech science can understand its own historical depth. Its authority is therefore both epistemic and historical. It speaks not only as a producer of research, but as an heir and interpreter of Czech scholarly memory (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The academy as intellectual continuity also plays a role in the education of scholarly character. Even when academies are not primarily teaching institutions, they shape how researchers understand their vocation. They create expectations of rigour, patience, documentation, collegial criticism, and responsibility to a field larger than oneself. These expectations are learned through institutional culture. A young scholar learns what counts as a serious question, what kind of evidence is acceptable, how to disagree, how to cite predecessors, how to handle uncertainty, and how to relate specialised research to public meaning. Such formation is rarely written fully in statutes. It is transmitted through seminars, laboratories, editorial work, archives, committee discussions, grant preparation, and informal mentorship. The academy thus creates a professional ethos. Its authority is not only external prestige, but an internal discipline of scholarly life. This dimension is essential if one wants to understand academies as living institutions rather than as administrative structures.

The durability of academies depends partly on their ability to integrate different forms of knowledge under one institutional roof. Modern science is intensely specialised, and specialisation creates extraordinary power. Yet it also creates fragmentation. The academy offers a symbolic and organisational counterweight to fragmentation by affirming that different disciplines remain part of a wider intellectual culture. Natural scientists, historians, linguists, mathematicians, biologists, archaeologists, economists, philosophers, and engineers may work with different methods, but within an academy they can be understood as participants in a shared enterprise of knowledge. This does not automatically produce interdisciplinarity, but it creates conditions for mutual visibility. It allows an institution to think beyond individual disciplines and to address complex social problems that require combined expertise. Contemporary programmes such as Strategy AV21 can be interpreted as a modern response to this old academic function: the need to reconnect specialised knowledge around public questions. The academy's continuity is therefore not only backward-looking; it also enables future-oriented synthesis (*Strategie AV21, 2017*).

The authority of an academy ultimately depends on public trust. This trust cannot be demanded by title alone. It must be built through research quality, intellectual independence, openness, communication, and visible responsibility. Historical prestige can help, but it

cannot substitute for contemporary credibility. A modern academy that invokes a long tradition must also demonstrate that it remains capable of renewal. It must show that its archives do not imprison it in the past, that its expert voice is not merely bureaucratic, and that its public mission is not rhetorical. The Czech Academy of Sciences after 1993 faced precisely this challenge. It had to persuade society that academy-based research remained necessary in a democratic and European Czech Republic. It had to move from inherited authority to renewed authority. That process forms one of the central narratives of this book. The older European model of academic authority survived only because it could be translated into new conditions of research, democracy, competition, openness, and public accountability.

Thus, the academy as a form of scholarly authority and intellectual continuity is best understood as a historical mechanism that transforms knowledge into recognised, preserved, and transmissible public value. It creates authority through membership, evaluation, publication, archival memory, expert judgement, disciplinary standards, and the collective ethos of research. It creates continuity by carrying methods, collections, archives, institutions, research schools, and scholarly identities across generations and political ruptures. Yet this authority is never automatic or innocent; it may be strengthened by autonomy and weakened by hierarchy, ideology, exclusion, or dependence on power. The European academy has always lived within the tension between preservation and renewal, expertise and independence, national culture and universal knowledge. The Czech Academy of Sciences inherits this wider European tradition while giving it a distinctive Czech historical form. Its modern significance lies precisely in its ability to transform inherited scholarly memory into renewed research authority for the democratic, European, and globally connected Czech Republic.

3. The relation between science, statehood, language, and cultural identity

The history of European academies cannot be understood only as a history of research institutions, scholarly meetings, publications, or scientific authority. It is also a history of the relationship between knowledge and collective identity. From the early modern period onwards, science increasingly became one of the ways through which states, nations, cities, empires, and cultural communities represented themselves as civilised, progressive, and historically significant. A learned society or academy did not merely collect observations or publish memoirs; it demonstrated that a political or cultural community possessed the institutional capacity to produce organised knowledge. In this sense, science acquired a symbolic value beyond its immediate intellectual content. It became a sign of maturity, autonomy, and participation in the wider European order of reason. This was especially important in regions where political sovereignty, linguistic recognition, and cultural prestige were contested. An academy could show that a community was not merely a population, a province, or an administrative unit, but a bearer of intellectual life. It could transform scholarship into a public argument about historical legitimacy. This link between science and identity was never simple, because science claimed universality while institutions of science were always located in particular languages, states, and cultural environments. The academy stood precisely at this intersection between universal knowledge and particular historical belonging (*Burke, 2000*; *McClellan, 1985*).

The European academy was born within a world in which statehood and knowledge were becoming increasingly intertwined. Monarchies and republics gradually recognised that scientific expertise could support navigation, warfare, cartography, mining, agriculture,

taxation, public health, engineering, and administration. Knowledge was therefore useful not only to scholars, but also to rulers. At the same time, rulers discovered that patronage of science could enhance their prestige. A state that supported observatories, academies, botanical gardens, surveys, and scientific publications could present itself as enlightened and modern. This was the political side of academic development. Yet academies were never only instruments of the state. They also cultivated forms of scholarly autonomy, transnational exchange, and intellectual judgement that could not be fully reduced to administrative utility. The relationship between science and statehood was therefore productive and tense at the same time. The state gave science resources, legal recognition, symbolic authority, and institutional durability. Science gave the state expertise, prestige, and a language of rational improvement. The academy became one of the most important places where this exchange was organised, negotiated, and sometimes contested (*Hahn, 1971*; *McClellan, 1985*).

The relation between academies and statehood differed across Europe. In France, the Académie royale des sciences was closely associated with royal patronage, administrative ambition, and the prestige of the monarchy. In England, the Royal Society developed as a chartered corporate body whose authority rested more visibly on fellowship, experimental culture, and gentlemanly credibility, although it too depended on political recognition and social hierarchy. In German-speaking Central Europe, academies and learned societies often operated within a plural political landscape of courts, universities, princely states, imperial structures, and municipal centres. In the Habsburg lands, including the Czech lands, the situation was still more complex because science developed within a multilingual imperial environment. Institutional science could not be separated from questions of language, status, and cultural representation. A scientific institution might be loyal to the imperial state while also nourishing local or national intellectual traditions. It might publish in German, Latin, French, or Czech, depending on audience, discipline, and historical moment. These variations show that the academy was never a politically neutral container of knowledge. It was an institution whose form and meaning were shaped by the state structures within which it operated (*Hahn, 1971*; *Franc, Kostlán, & Míšková, 2010*).

Language was one of the most powerful mediators between science and cultural identity. For much of early modern Europe, Latin remained an important language of learned communication, while French acquired high prestige in diplomacy, philosophy, and elite culture. German, Italian, English, Dutch, and other vernaculars gradually gained strength as languages of scholarship, print, and academic exchange. This linguistic transformation was not merely technical. It changed the social location of knowledge. When scholarship moved from Latin into vernacular languages, it became more accessible to local publics, state administrations, educational systems, and national cultures. At the same time, the choice of language could signal political orientation and cultural aspiration. To publish science in a national language was to claim that the language was capable of expressing exact thought, abstract reasoning, technical vocabulary, and historical interpretation. This mattered greatly for cultures whose languages had been subordinated, marginalised, or associated mainly with popular or domestic use. The academy could help convert a language into a language of science. In doing so, it contributed not only to scholarship, but also to cultural self-definition (*Burke, 2000*; *Franc, Kostlán, & Míšková, 2010*).

The Czech case is especially important because the history of Czech scholarly institutions developed within a multilingual Central European environment. The Czech lands were part of the Habsburg Monarchy, where German often functioned as a dominant language of

administration, higher education, and elite communication, while Czech underwent a complex process of cultural revival and modernisation. Scientific and scholarly life in Bohemia and Moravia was therefore not simply a matter of producing knowledge; it was also a matter of deciding in which language knowledge should be produced, preserved, and circulated. The struggle for Czech as a language of scholarship was inseparable from broader efforts to establish Czech cultural and intellectual equality. Learned societies and later academies played a significant role in this process by supporting publications, historical research, philology, terminology, and institutional recognition. They helped demonstrate that Czech could be a language not only of poetry, folklore, or national sentiment, but also of rigorous scholarship and scientific communication. This transformation was gradual, contested, and discipline-specific. Natural sciences, historical sciences, philology, and the humanities did not all move at the same pace. Yet the general direction was clear: language became one of the central instruments through which Czech scholarly identity was formed (*Pokorná, 2010*; *Franc, Kostlán, & Míšková, 2010*).

Cultural identity in academic history should not be understood as a purely emotional or symbolic category. It also has institutional and epistemic dimensions. A cultural community becomes intellectually durable when it creates archives, libraries, dictionaries, scholarly editions, journals, societies, academies, museums, and schools. These institutions allow memory to become organised and researchable. They transform cultural identity from inherited feeling into documented knowledge. In the Czech lands, the development of scholarly institutions contributed to the collection, classification, and interpretation of historical sources, language materials, literary traditions, natural observations, and cultural artefacts. Such work strengthened the sense that Czech culture had a recoverable past and a modern intellectual future. The academy was one of the institutional forms through which this work could be stabilised. It did not invent Czech identity by itself, but it gave that identity scholarly depth and documentary authority. It also connected Czech cultural work to wider European standards of research. This dual function was crucial: Czech scholarship had to be nationally meaningful and internationally credible at the same time (*Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

The connection between science and national identity was especially visible in the 19th century. Across Europe, national movements invested heavily in history, language, folklore, archaeology, geography, ethnography, and literary scholarship. These disciplines helped define communities by reconstructing their past, codifying their languages, mapping their territories, and interpreting their cultural traditions. Yet the natural sciences also participated in national identity, though often in less obvious ways. Geological surveys, botanical classifications, meteorological observations, agricultural studies, and industrial research all helped a society understand its own land, resources, environment, and economic possibilities. Science was therefore both universal and territorial. It described nature through methods that aspired to general validity, but it often began with the study of a particular landscape, flora, fauna, mineral wealth, climate, or population. The academy became a place where such local and universal dimensions could meet. A Czech scientific institution could study Bohemian geology, Czech language, Moravian archaeology, Slavic philology, or European mathematics without contradiction. It could present local knowledge as part of world knowledge. This capacity to connect the particular and the universal became one of the strongest features of academy-based scholarship (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*).

The relationship between science and statehood became more complicated in societies where the political state and the cultural nation did not fully coincide. The Czech lands before 1918 belonged to an imperial state, while Czech national scholarship sought stronger recognition within that structure. This situation gave learned institutions a special significance. They could become semi-public spaces in which Czech intellectual life acquired form even before full political sovereignty existed. The academy or learned society could serve as a kind of cultural statehood before statehood. It could organise language, history, scientific communication, and scholarly authority in a way that anticipated or supported later political claims. This does not mean that all scholars were national activists or that science was merely a disguised political project. Many were committed to universal standards and international exchange. Yet their institutional work contributed to the building of a Czech intellectual infrastructure. When political circumstances changed, that infrastructure could be reinterpreted as part of national development. This is why the history of Czech academies and learned societies must be read not only as intellectual history, but also as a history of cultural state formation (*Pokorná, 2010*; *Mádlová, 2024*).

The foundation of the Czech Academy of Sciences and Arts in the late 19th century is an especially revealing example of this connection. Its creation represented much more than the establishment of another scholarly institution. It expressed the ambition to give Czech science, literature, and art a recognised national centre. Josef Hlávka's role as patron and organiser symbolised the link between civic responsibility, cultural development, and institutional support for knowledge. The Academy was designed to support research and creative work, but also to demonstrate the maturity of Czech intellectual life. Its very title joined sciences and arts, reflecting a broad understanding of national culture. This breadth is important because it shows that the academy was not conceived merely as a technical research body. It was a cultural institution in the strongest sense of the term: a place where scholarship, language, art, memory, and public prestige could be joined. The later history of Czech academic institutions would repeatedly return to this broad conception of knowledge. Even when 20th-century political regimes transformed the institutional form of science, the question of how knowledge relates to national culture did not disappear (*Mádlová, 2024*; *Franc & Mádlová, 2013*).

The First Czechoslovak Republic changed the relationship between science and statehood fundamentally. After 1918, Czech and Slovak intellectual life entered the framework of a new state that needed its own institutions, experts, universities, archives, museums, research centres, and international scholarly representation. Science became part of the work of state-building. The new republic required knowledge for administration, education, economic development, public health, minority policy, infrastructure, and cultural diplomacy. At the same time, scholarship helped narrate the legitimacy of the new state by connecting it with historical traditions, democratic ideals, and European intellectual standards. Academic institutions therefore acquired a new public function. They no longer operated only as cultural substitutes for political sovereignty; they became elements of an actual state system. Yet this transition also brought new tensions. The Czechoslovak state was multiethnic and multilingual, and the relation between Czech, Slovak, German, Hungarian, Ruthenian, Jewish, and other intellectual communities remained complex. Science served statehood, but statehood itself contained multiple cultural identities (*Franc, Kostlán, & Míšková, 2010*).

The 20th century showed that the bond between science and statehood could be both enabling and dangerous. Democratic states could support academic autonomy, fund research, and create institutions in which scholarship served the public without being reduced to ideology.

Authoritarian and totalitarian states, however, could seek to subordinate science to political doctrine. The Czech experience under Nazi occupation and later under communist rule demonstrates both sides of this problem. Academic institutions could be closed, reorganised, censored, purged, or used to legitimise power. Scholars could be persecuted, excluded, forced into exile, or compelled to adapt. Language and identity could also be manipulated under ideological pressure. Yet even in such conditions, academic institutions sometimes preserved fragments of continuity: archives, collections, research methods, technical competence, and the memory of excluded scholars. The relation between science and statehood is therefore not simply a story of patronage. It is also a story of vulnerability, resistance, compromise, and recovery. The academy gains strength from state support, but it must also protect the independence without which its scholarly authority loses meaning (*Míšková, Barvíková, & Šmidák, 1998*; *Štrbáňová & Kostlán, 2011*).

The Czechoslovak Academy of Sciences, founded in 1952, embodied a particularly intense form of the science-state relationship. It was created within the socialist system and bore the imprint of the Soviet model of a centralised academy. This meant that science was treated as a planned, state-organised force connected with economic development, ideological education, and the prestige of socialism. The new academy concentrated research institutes, personnel, resources, and disciplinary programmes in a powerful institutional framework. This framework enabled significant scientific work, especially in fields where long-term research, laboratories, and coordinated infrastructure were necessary. At the same time, it placed scholarship under political supervision and ideological expectation. The humanistic and social sciences were especially vulnerable, but no field was entirely outside the structures of control. The ČSAV therefore shows the ambivalence of state-supported science in a concentrated form. It could create major research capacities while also limiting intellectual autonomy. This legacy would later become one of the central problems of post-1989 transformation (*Dvořáčková, Franc, & kol., 2019*; *Míšková, Barvíková, & Šmidák, 1998*).

Language continued to matter under socialism, although in a changed way. Czech and Slovak were now official languages within a Czechoslovak state, and the older 19th-century struggle for Czech scholarly legitimacy no longer had the same form. Yet language still mediated scientific identity and international orientation. Russian acquired institutional and ideological importance within the socialist bloc, while English, German, and French remained important for international communication, though access to Western scholarly networks was politically conditioned. Scientific language therefore reflected geopolitical belonging. To publish, translate, correspond, or travel was not merely a technical matter; it depended on political borders and institutional permissions. At the same time, Czech scholarly terminology, academic publishing, and national research traditions continued to develop within the framework of state socialism. The academy remained a place where Czech intellectual culture was maintained, even when it was ideologically constrained. This is one of the paradoxes of the socialist period. The same institution could serve state ideology and preserve national scientific capacity. Understanding that duality is necessary for any balanced history of the Czech Academy's predecessors.

The collapse of communist rule in 1989 and the later creation of the Czech Academy of Sciences after the dissolution of Czechoslovakia transformed the relation between science, statehood, language, and identity once again. The new democratic Czech Republic needed research institutions that could operate within European and global science while also serving national public needs. The Academy could no longer legitimise itself through socialist planning

or ideological service. It had to define itself through research excellence, autonomy, international cooperation, public accountability, and historical continuity. Czech language remained important for culture, public communication, education, and the humanities, but English became increasingly central to international scientific publication and collaboration. This created a new linguistic duality. The Academy had to speak to the world in English and to Czech society in Czech. It had to produce globally recognised research without losing its national public mission. This duality is not a weakness; it is a defining condition of contemporary science in smaller European countries. The modern Czech Academy of Sciences lives in precisely this space between national responsibility and international visibility (*Akademie věd České republiky, n.d.*; *Strategie AV21, 2017*).

The post-1993 Academy also had to reinterpret the meaning of cultural identity in a democratic context. National culture could no longer be treated as a simple unifying myth or as an ideological instrument. It had to become an object of critical research, plural interpretation, and public reflection. Institutes concerned with history, language, literature, archaeology, philosophy, sociology, law, and contemporary society acquired a special responsibility in this respect. They could study Czech identity not as propaganda, but as a historically complex, multilingual, European, and contested phenomenon. They could open archives, reassess 20th-century traumas, investigate totalitarianism, analyse social transformation, and preserve cultural memory in a critical rather than celebratory mode. This role is essential for understanding the modern Academy. Its contribution to Czech society is not limited to technological innovation or natural-scientific discovery. It also includes the scholarly interpretation of the past, the maintenance of language culture, the protection of documentary heritage, and the development of social self-knowledge. In this sense, the Academy remains deeply connected with cultural identity, but in a more reflexive and democratic form than in earlier periods (*Franc & Mádlová, 2013*; *Akademie věd České republiky, n.d.*).

The relationship between science and cultural identity is also visible in the Academy's archival and bibliographical work. Archives, libraries, digital collections, dictionaries, editions, and historical databases are not merely technical infrastructures. They are instruments through which a culture preserves the conditions of its own self-understanding. The Czech Academy's digital library, archival fonds, and historical publications make earlier scientific and cultural materials available to new generations of researchers. This has a double significance. It supports specialised scholarship, but it also democratises access to cultural memory. When old academy proceedings, bulletins, monographs, and archival records become accessible, the history of Czech science can be studied more critically and more widely. Such work strengthens the connection between academic research and public heritage. It also shows that modernisation does not mean abandoning the past. On the contrary, digitalisation and open access can renew the meaning of historical continuity. The Academy's role as a guardian of memory is therefore compatible with its contemporary role as a modern research organisation (*Masarykův ústav a Archiv AV ČR, n.d.*; *Akademie věd České republiky, n.d.*).

In the 21st century, the relation between science and statehood has acquired new dimensions. States increasingly depend on scientific expertise to address climate change, pandemics, energy security, demographic shifts, technological disruption, biodiversity loss, cyber risks, and social inequality. This gives academies renewed importance as institutions of long-term expertise. Unlike short-term political bodies, they can maintain research capacities across decades. Unlike private firms, they can support knowledge whose value is not immediately commercial. Unlike universities, they can concentrate on research without making teaching

their primary institutional function. The Czech Academy of Sciences, through its modern research areas and strategic programmes, participates in this broader European transformation of the academy's public role. Its mission is no longer only to represent national science, but to help society understand and respond to complex challenges. Statehood in this context does not mean narrow nationalism. It means the capacity of a democratic state to rely on independent, high-quality, publicly accountable knowledge. The Academy becomes part of national resilience because it preserves expert capacities that cannot be improvised during crisis (*Strategie AV21, 2017*; *Akademie věd České republiky, n.d.*).

Strategy AV21 is especially significant because it reframes the classical relationship between academy and society. Its language of "top research in the public interest" links excellence with responsibility. This formulation is historically important. It does not reject the old academic ideal of fundamental research, but it places that ideal within a contemporary public horizon. Science is not asked to become merely applied or instrumental. Rather, it is asked to show how long-term inquiry can illuminate problems that matter to society. This creates a modern version of an older European academic mission: the production of useful, reliable, and publicly meaningful knowledge. Yet the meaning of usefulness has changed. It now includes climate resilience, health, social cohesion, cultural memory, digital transformation, security, ethics, and sustainability. The Academy's public mission is therefore much broader than technological transfer alone. It includes the cultivation of informed democratic life. This is one of the ways in which science, statehood, and cultural identity continue to intersect in contemporary Czech academic life (*Strategie AV21, 2017*).

The linguistic dimension of this contemporary mission should not be underestimated. For the Academy, English is essential for global visibility, publication metrics, international collaboration, and participation in European research networks. However, Czech remains essential for public communication, cultural scholarship, national education, expert advice to domestic institutions, and the preservation of historical and linguistic memory. A scientific institution in a smaller language community must therefore operate bilingually or even multilingually at a high level. It must avoid two opposite dangers. If it retreats into the national language alone, it risks isolation from international science. If it abandons the national language entirely, it risks weakening its public role and cultural responsibility at home. The modern Academy must therefore cultivate what may be called a double linguistic competence: international scientific communication and national intellectual service. This balance is one of the distinctive challenges of Czech science after 1993. It is also one of the reasons why the Academy remains important as a national institution rather than merely as a collection of globally connected research teams.

The relation between language and identity is particularly important in the humanities and social sciences, but it also affects the public reception of the natural and technical sciences. Scientific results become socially meaningful only when they can be communicated, interpreted, and debated. During crises, societies need expert knowledge in a language they can understand. Public trust depends not only on the accuracy of science, but also on the clarity and credibility of communication. The Academy's ability to speak Czech to Czech society is therefore part of its public authority. At the same time, its researchers must speak the international languages of their disciplines to remain scientifically competitive. This double communication role is a structural feature of Czech academic life. It connects the Academy to a broader European problem: how can smaller national research cultures maintain linguistic and cultural identity while fully participating in global science? The answer cannot be to choose

one side. The answer must be institutional bilingualism, translation, public scholarship, and a strong culture of mediation between specialised research and civic understanding (*Burke, 2012*).

The history of Czech academic institutions also shows that cultural identity is not static. It changes as political borders, scientific disciplines, social expectations, and international contexts change. The identity supported by the Royal Czech Society of Sciences was not the same as the identity expressed by the Czech Academy of Sciences and Arts. The identity of the Czechoslovak Academy of Sciences differed from both, because it operated within a socialist federal state and under a very different model of science-state relations. The identity of the Czech Academy of Sciences after 1993 differs again, because it belongs to a democratic Czech Republic integrated into European and global research systems. Yet across these transformations, certain questions recur. What is the place of Czech scholarship in Europe? How should science serve society without losing autonomy? How should the Czech language function in learned culture? How can institutions preserve memory while supporting innovation? These recurring questions give continuity to Czech academic history even when institutional forms change. They also explain why the history of the Academy must be written as a history of transformations rather than as a simple institutional genealogy.

The relation between science and identity also includes the problem of international recognition. For smaller countries, the international visibility of science is an important component of cultural prestige. A major discovery, influential institute, internationally cited publication, or globally recognised scientist can reshape how a country is perceived. Czech science has repeatedly produced such figures and achievements, from earlier learned traditions to modern chemistry, medicine, physics, linguistics, history, and technical research. Yet international recognition does not happen automatically. It requires institutions capable of supporting research, maintaining standards, building networks, and preserving continuity. The Academy's role is therefore both internal and external. Internally, it sustains research culture and expertise. Externally, it represents Czech science in wider European and global contexts. This representative function is not ceremonial alone. It influences collaboration, reputation, funding, mobility, and the ability of Czech researchers to participate in major international projects. Scientific excellence thus becomes one of the languages through which the Czech Republic speaks to the world.

Statehood also shapes the moral responsibilities of science. In a democratic society, publicly supported research institutions must justify their autonomy not by obedience to government, but by service to knowledge and society. This service includes truthfulness, methodological rigour, independence, transparency, and readiness to address public problems. The academy's relationship with the state must therefore be based on trust and distance at the same time. It needs public funding and legal recognition, but it must not become a political instrument. It must serve society, but it must not simply confirm what society or government already wishes to hear. This balance is difficult and historically fragile. The Czech experience makes this especially clear because 20th-century history showed how easily science can be drawn into ideological structures. The post-1993 Academy's legitimacy depends partly on its ability to embody a different model: publicly responsible but intellectually independent science. This model is central to the meaning of modern academic statehood in a democratic European country.

The academy's connection with cultural identity also has a klironomical dimension, if one understands scientific institutions as carriers of inherited knowledge. An academy preserves not only cultural monuments or national memory, but also scientific practices, intellectual standards, disciplinary archives, instruments, bibliographies, and research schools. These are forms of scientific heritage. They can be lost through war, neglect, ideological intervention, underfunding, or generational rupture. They can also be renewed through documentation, digitalisation, institutional reform, and public interpretation. The Czech Academy of Sciences is therefore not only a producer of future knowledge; it is also a guardian of inherited scholarly capital. This is particularly important for a book that belongs to a wider series on the development of modern Czech sciences. The success of individual disciplines after 1993 cannot be explained only by contemporary policy. It also depends on inherited institutions, long-term research traditions, and the ability to transform past knowledge into future capacity. In this respect, the Academy stands at the intersection of scientific innovation and scientific heritage.

The relationship between science, statehood, language, and cultural identity should therefore be treated as a structural theme of the entire book, not as a background detail. It explains why academies matter beyond the internal history of disciplines. It explains why the establishment of learned societies in the Czech lands had cultural significance. It explains why the Czech Academy of Sciences and Arts mattered for national intellectual life. It explains why the Czechoslovak Academy of Sciences became such a powerful and ambivalent institution under socialism. It explains why the transformation after 1989 and 1993 was not merely administrative, but symbolic and cultural. It also explains why the modern Czech Academy of Sciences must combine excellence, public service, internationalisation, and preservation of national scholarly memory. Without this theme, the history of the Academy would become a list of statutes, presidents, institutes, and reforms. With it, the Academy appears as a central institution in the making, preservation, and renewal of Czech intellectual life.

Thus, the relation between science, statehood, language, and cultural identity reveals the academy as one of the key institutions through which European societies transformed knowledge into public authority and cultural continuity. Science needed the state for resources, recognition, and infrastructure, while the state needed science for expertise, legitimacy, and modernisation. Language gave knowledge cultural location, allowing communities such as the Czechs to claim that their own language and intellectual traditions could participate fully in European scholarship. Cultural identity was not merely expressed by academies; it was organised through their archives, publications, memberships, dictionaries, historical studies, collections, and research programmes. In the Czech lands, this relationship was especially important because academic institutions developed through imperial multilingualism, national revival, Czechoslovak statehood, socialist centralisation, democratic transformation, and European integration. The modern Czech Academy of Sciences inherits all these layers. Its distinctive mission lies in balancing international science with national responsibility, fundamental research with public value, and innovation with the preservation of scholarly memory. This balance will become one of the principal interpretative keys for understanding the whole history of the Academy in the following chapters.

The Czech Lands in the European Scientific Space

1. Prague, universities, scholarly communication, and Enlightenment science

Prague occupied a distinctive position in the long formation of Czech academic science because it was not merely a political or ecclesiastical centre, but one of the oldest university cities in Central Europe. The foundation of Charles University in 1348 placed Prague within the institutional map of European higher learning at a very early date, and this fact remained important for the later development of scholarly authority in the Czech lands. The university was modelled on the older European universities, especially Paris and Bologna, and its original faculties of theology, liberal arts, law, and medicine placed it within the classical medieval structure of learned knowledge (*Charles University, n.d.*). The importance of this foundation should not be reduced to medieval prestige alone. It meant that Prague possessed a continuing scholarly infrastructure long before the emergence of modern academies and scientific societies. The city had lecture halls, libraries, disputations, manuscript circulation, educated clergy, jurists, physicians, and intellectual links with other European centres. Even when the university passed through periods of crisis, confessional conflict, reform, decline, or restructuring, the memory of Prague as a city of learning persisted. This memory became part of the symbolic capital from which later Czech scholarly institutions could draw. It also gave the Czech lands a deeper academic genealogy than that of many other Central European regions. The later emergence of learned societies, academies, research institutes, and the Czech Academy of Sciences must therefore be understood against the background of Prague's older university tradition. Prague did not become a scientific city only in the Enlightenment; the Enlightenment reactivated, reorganised, and redirected much older traditions of learned life.

The medieval university created the first durable institutional framework for organised scholarship in Prague, but it was not equivalent to a modern research academy. Its primary functions were teaching, degree-granting, theological and legal formation, and the reproduction of learned professions. Nevertheless, the university created habits and infrastructures that later became essential for scientific development. It gathered books, trained readers, cultivated disputation, preserved Latin learning, and connected Prague to wider European intellectual circuits. Medieval and early modern universities were conservative in many respects, but they also maintained the continuity of scholarly practices across generations. They preserved astronomy, medicine, mathematics, logic, philosophy, and natural philosophy within curricula that could later be transformed by new methods and new intellectual movements. The university also gave Prague an international identity. Students and teachers moved across regions, carrying texts, methods, disputes, and reputations. In this sense, scholarly communication in Prague began long before the age of scientific journals and academies. The later learned society did not replace the university tradition; it developed alongside it and often depended on people formed within university culture. The Czech lands thus entered modern academic life through a layered institutional history in which medieval university learning, Jesuit education, Enlightenment reform, learned societies, and modern academies overlapped rather than simply succeeded one another.

The relation between Prague and European science was shaped by geography as well as by institutions. The city stood between German-speaking, Latin, Slavic, Austrian, and broader European intellectual worlds. It was connected to Vienna, Leipzig, Halle, Dresden, Paris, Rome, and later London not by a single intellectual channel, but by multiple routes of travel,

bookselling, correspondence, ecclesiastical networks, noble patronage, university exchange, and administrative reform. This made Prague receptive to different forms of knowledge. Scholarly communication in the city was rarely monolingual or culturally simple. Latin retained importance as a learned language, German was powerful in administration and higher scholarship, Czech gradually strengthened as a language of national culture and later scholarship, while French and Italian circulated through elite and intellectual networks. This multilingual condition was not merely a complication; it was also a resource. It allowed Prague scholars to participate in several scholarly worlds at once. It also meant that the later Czech academic tradition emerged within a dense field of translation, mediation, and cultural negotiation. The Enlightenment in the Czech lands cannot therefore be described as a simple importation of ideas from Western Europe. It was a process of adaptation within a multilingual Central European space. The future Czech Academy of Sciences would inherit this long experience of positioning Czech scholarship between local identity and European communication.

The libraries of Prague were crucial to this process of scholarly continuity. A university city is not sustained only by lectures and offices; it is sustained by books, catalogues, manuscripts, collections, and the routines of reading. The establishment of university library traditions after the foundation of Charles University marked an important shift in the Czech lands because it created an institutional space where knowledge could be accumulated beyond the life of individual teachers. Later, the Klementinum became one of the most important sites of scholarly culture in Prague, combining Jesuit education, library collections, astronomical observation, and eventually national library functions. Historical accounts of Czech librarianship emphasise the importance of university and institutional libraries for the development of learned culture in the Czech lands (*Rhodes, 2002*; *National Library of the Czech Republic, 2007*). The library gave scholarship a material foundation. It made communication with the past possible and helped turn Prague into a repository of European learning. Books arriving from abroad brought new methods and controversies; manuscripts and local collections preserved historical specificity. The growth of libraries also prepared the documentary culture later required by learned societies and academies. Without libraries, there can be erudition, but not a stable scholarly culture capable of cumulative development. This is why Prague's library history must be treated as part of the prehistory of Czech academic science.

The Klementinum is especially important because it connects university education, Jesuit scholarship, astronomy, mathematics, and Enlightenment observation in one physical and symbolic space. Its astronomical tower, built in the 18th century, became associated with mathematical and astronomical education, and around the middle of the 18th century it was equipped for astronomical and climatic observations. Prague's official tourism and astronomical heritage sources both stress the relation between the tower, university education, mathematics, and astronomy, showing that the Klementinum was not merely an architectural monument but a scientific site. Around 1750, observations and measurements began there, and the tower was supplied with astronomical instruments, giving Prague a visible place in the observational culture of the Enlightenment. Such sites mattered because Enlightenment science depended on disciplined observation, measurement, recording, and comparison. An observatory made the city part of a larger European network of astronomical and meteorological knowledge. It also linked scholarly practice to instruments and regular records rather than to purely textual learning. In this sense, the Klementinum marks a transition

from older university erudition to a more empirical and observational style of knowledge. The later academy-based culture of records, reports, and expert observation had important antecedents in such institutional sites. Prague's scientific identity was thus shaped not only by the university as a corporation, but by concrete spaces where knowledge was measured, written down, and preserved.

The Jesuit contribution to Prague's scholarly culture should be treated with nuance. In older secularising narratives, Jesuit institutions were often represented chiefly as conservative, confessional, and resistant to intellectual modernisation. That view captures only part of the story. Jesuit education could be doctrinally disciplined, but it also maintained strong traditions of mathematics, astronomy, optics, geography, linguistics, missionary knowledge, and educational organisation. The Klementinum itself shows this complexity. It was a Jesuit college and later became deeply associated with scientific observation and library culture. In the Czech lands, as in other parts of Catholic Europe, Enlightenment science did not simply defeat religious learning from outside. It often emerged through transformations within existing ecclesiastical and educational institutions. Clerical scholars, reform-minded administrators, noble patrons, university teachers, and mathematically trained intellectuals all contributed to this transition. Prague's Enlightenment was therefore neither purely secular nor purely clerical. It was a mixed culture in which older institutional forms were redirected towards new practices of observation, classification, and public knowledge. This hybrid character is essential for understanding the later emergence of learned societies in the Czech lands.

The figure of Joseph Stepling is particularly significant in this context. Stepling, a Jesuit mathematician and astronomer connected with Prague, belonged to the generation that helped raise the status of mathematical and observational sciences in the Czech lands. His role in the development of Prague astronomical practice has been noted in discussions of the Klementinum and the revival of astronomical observation in 18th-century Prague. He is also associated with the circle that contributed to the emergence of the Royal Bohemian Society of Sciences, together with figures such as Josef Dobrovský and Gelasius Dobner. Stepling's importance lies not only in his scientific activity, but in the institutional pattern he represents. He shows how Prague's university and Jesuit intellectual environment could produce scholars who participated in the broader Enlightenment reorganisation of knowledge. He also illustrates the transition from individual learned competence to collective scholarly institutions. Mathematics and astronomy provided particularly strong paths into this transition because they required instruments, records, calculations, and comparison with European observations. They encouraged regularity and discipline. They also gave Prague scholarly work a field in which local observations could have wider European relevance. Through figures such as Stepling, the university city began to move towards an academy-like culture of organised inquiry.

The 18th-century transformation of scholarship in the Czech lands was inseparable from the broader Habsburg Enlightenment. Reforming rulers and administrators increasingly valued useful knowledge, educational improvement, economic rationalisation, statistical information, public health, mining, agriculture, and technical expertise. This did not mean that intellectual life became free in a modern liberal sense. Rather, knowledge was encouraged when it could be connected to reform, administration, and improvement. The university reforms of the 18th century, especially under Maria Theresa and Joseph II, altered the relation between scholarship, state, and society across the Habsburg Monarchy. Prague was affected by these changes because it belonged to a political world in which the state increasingly sought

to rationalise education and expertise. This created new opportunities for sciences linked to administration and practical reform. It also created new tensions, because knowledge could be supported precisely when it served state objectives. The Enlightenment in Prague therefore had a cameralist and administrative dimension as well as a philosophical one. It was concerned with usefulness, order, classification, and public benefit. Such concerns later became central to learned societies, which often justified themselves by promising to advance knowledge useful to the country. The Prague scholarly world thus participated in a wider European movement that connected science with enlightened governance.

Scholarly communication in Enlightenment Prague depended on several overlapping media. Correspondence remained fundamental, linking local scholars with colleagues in Vienna, German university towns, Italian centres, and other parts of Europe. Books and journals transmitted new ideas and made Prague readers aware of debates beyond the Habsburg lands. Academic travel and personal networks carried methods, reputations, manuscripts, and instruments. Public lectures, university courses, private circles, noble salons, ecclesiastical libraries, and scientific demonstrations all contributed to the circulation of knowledge. The learned society added a new form to this ecology. It regularised meetings, gave papers a collective audience, created membership structures, and eventually produced publications with institutional authority. This shift from informal communication to institutional communication was decisive. It meant that Prague scholarship could be preserved not only in private letters or scattered publications, but in the proceedings and records of a recognised scholarly body. The later history of the Czech Academy of Sciences begins in this transformation of scholarly communication. The Academy's documentary and publication culture has deep roots in Enlightenment practices of recording, corresponding, reviewing, and circulating knowledge.

Prague was not the only centre of Enlightenment scholarship in the Czech lands, and this point is important for avoiding an overly Prague-centred narrative. Olomouc, Brno, noble estates, monastic libraries, and other intellectual sites also contributed to the development of learned culture. The Societas eruditorum incognitorum in terris Austriacis, founded in Olomouc in 1746, is often presented as the first Enlightenment-inspired learned society in the Habsburg lands. Its existence shows that the impulse towards organised scholarly sociability in the Czech lands was not confined to Prague. It also shows that the early Enlightenment operated through aristocratic, clerical, university, and transregional networks. The society's publication, *Monatliche Auszüge*, was part of an attempt to create a regular medium for scholarly communication. Although the society itself was short-lived, its significance is greater than its institutional duration might suggest. It demonstrated that learned association, periodical publication, and Enlightenment exchange could emerge within the Habsburg Central European environment before the later Prague society acquired durable form. Prague would become the main centre of institutional continuity, but it did not stand alone. The Czech lands entered Enlightenment science through a polycentric scholarly landscape.

The formation of the Royal Bohemian Society of Sciences represented a decisive moment in the institutionalisation of Enlightenment scholarship in Prague. The Society developed from earlier private learned activity in the 1760s and 1770s and acquired its more public institutional form in the 1780s. The current Czech Academy of Sciences identifies the Royal Czech Society of Sciences as its earliest predecessor and notes the bilingual German-Czech character that persisted through much of the 19th century. This continuity is essential for the history of the Academy because it shows that the institutional genealogy of modern Czech science did not

begin in 1952 or 1993. It reaches back to the Enlightenment effort to create a recognised scholarly body in Prague. The Society encompassed both the humanities and the natural sciences, and this breadth would become a characteristic feature of later academy traditions in the Czech lands. It was not merely a natural-scientific association, nor merely a historical or philological society. It reflected the Enlightenment belief that knowledge formed a connected enterprise whose parts could support the improvement and self-understanding of the country. Its foundation also gave Prague scholarship a new public face. From this point onward, scholarly communication in the Czech lands had a durable institutional centre that could claim continuity, authority, and historical memory.

The Royal Bohemian Society of Sciences emerged in a city where scholarship was already shaped by university life, libraries, noble patronage, clerical learning, administrative reform, and multilingual communication. This made it a synthesis rather than an isolated beginning. Its members and supporters drew on earlier scholarly resources, but they gave them a new institutional form. The Society's importance lies partly in its ability to bring together fields that had previously existed in separate or semi-private spaces. Historical research, philology, mathematics, natural history, astronomy, and other forms of inquiry could now be presented under the authority of an organised learned body. The Society also helped integrate Prague into wider European learned culture through correspondence, membership, and publication. It created a setting in which Czech lands scholarship could become both locally rooted and internationally visible. This was crucial because the Enlightenment increasingly valued regularity, comparability, and institutional reliability. A private scholar could be brilliant, but a society could preserve and publicise a tradition. The Society therefore marked the transition from dispersed erudition to organised scholarly identity. It was one of the institutional foundations on which later Czech academic science would be built.

The bilingual and multilingual character of Prague's scholarly world shaped the meaning of Enlightenment science in the Czech lands. German often functioned as the dominant language of learned and administrative communication, while Latin remained part of older scholarly culture and Czech gradually gained renewed cultural and intellectual significance. The Royal Bohemian Society of Sciences itself maintained a bilingual character for much of the 19th century, according to the Academy's own historical overview. This fact is not a minor linguistic detail; it is central to the later history of Czech academic identity. It meant that Enlightenment scholarship in Prague was initially Bohemian in a territorial and learned sense before it became clearly Czech in a modern national sense. Scholars could contribute to the knowledge of the country while writing in German or Latin. Later generations, especially those shaped by national revival, would reinterpret this inheritance through the question of Czech-language scholarship. The development of Czech as a scholarly language was therefore not a sudden break with Enlightenment science, but a later transformation of its institutional forms. The learned society provided continuity, while language politics gradually redefined the cultural meaning of that continuity. Prague's scientific space was thus European, Habsburg, Bohemian, German-speaking, Latin-trained, and increasingly Czech at the same time.

The Enlightenment also changed the status of historical scholarship in Prague. Modern readers often associate Enlightenment science mainly with mathematics, physics, astronomy, natural history, or medicine, but in the Czech lands historical and philological research were equally important. The study of medieval sources, chronicles, charters, language, and national antiquities helped construct a scholarly understanding of Bohemia's past. Figures such as Gelasius Dobner and Josef Dobrovský were important not because they simply preserved

patriotic memory, but because they subjected historical and linguistic materials to critical scholarly methods. This mattered enormously for Czech intellectual development. A culture seeking modern recognition needed not only emotional attachment to the past, but rigorous knowledge of that past. Enlightenment historical criticism therefore became part of the institutionalisation of Czech scholarly identity. It also connected Prague with broader European practices of source criticism, antiquarian research, and philology. The later importance of history, language, archaeology, and cultural memory within Czech academic institutions has roots in this period. Prague's Enlightenment science was thus not narrowly natural-scientific; it was a broad culture of disciplined inquiry into nature, society, language, and history.

This breadth helps explain why the Czech academy tradition has repeatedly joined the natural sciences and humanities within one institutional imagination. The Royal Bohemian Society of Sciences did not divide knowledge according to the strict boundaries of later disciplinary specialisation. It reflected a world in which astronomy, mathematics, natural history, history, philology, and antiquarian scholarship could all be understood as parts of learned improvement. This was not simply because disciplines were underdeveloped. It was also because the Enlightenment ideal of knowledge was encyclopaedic and civic. The purpose of scholarship was to understand the country, improve society, cultivate language, classify nature, correct error, and connect local knowledge with European reason. The later Czech Academy of Sciences and Arts would inherit this broad cultural conception in a different form. The Czechoslovak Academy of Sciences would later institutionalise research in a much more centralised and specialised 20th-century structure. The modern Czech Academy of Sciences would again have to combine disciplinary excellence with cross-field and public missions. These later developments cannot be understood without recognising the Enlightenment foundation of broad learned culture in Prague. The unity of knowledge was not an abstract philosophical slogan; it was built into the early institutional history of Czech scholarly life.

Prague's scholarly communication was also shaped by print culture. Scientific and scholarly societies depended on the ability to publish proceedings, treatises, extracts, reports, and memoirs. Print gave continuity to meetings and allowed local scholarship to enter wider circulation. In the Czech lands, the development of scholarly periodicals, society publications, and later academy publications transformed the scale and memory of research. What had once circulated in manuscript, lecture, or private letter could now become part of a public documentary record. This was especially important for a region situated between several languages and intellectual markets. A publication could travel to Vienna, Leipzig, Halle, Paris, or other centres; it could also be preserved in local libraries and cited by later scholars. Print therefore served both outward communication and inward memory. It allowed Prague scholarship to be seen from outside and remembered from inside. The later documentary culture of the Academy — bulletins, annual reports, proceedings, institutional histories, and digital libraries — has its deep prehistory in this Enlightenment print ecology. The history of Czech academic science is, in part, a history of how spoken scholarly exchange became printed and archival knowledge.

The Enlightenment university reforms also affected the social function of knowledge. Under older university structures, learning could remain strongly tied to traditional faculties, ecclesiastical education, and professional formation. The 18th century increasingly demanded knowledge useful for administration, economy, public health, and state reform. In Prague, as elsewhere in the Habsburg lands, this encouraged the strengthening of disciplines and

practices that could serve public improvement. Medicine, natural history, mathematics, statistics, agriculture, engineering, and geography acquired new public relevance. The university did not cease to be a teaching institution, but the meaning of teaching changed when the state needed trained officials, physicians, surveyors, teachers, and technical experts. Scholarly communication therefore expanded beyond purely academic audiences. Knowledge had to be useful to government, estates, municipalities, landowners, and educated publics. Learned societies became important because they could mediate between specialised knowledge and public improvement. They gathered observations, encouraged essays, and created a public language of useful learning. Prague's Enlightenment science was therefore part of the broader European movement that connected learning with reform. This connection would later reappear in modern forms as applied research, public expertise, innovation, and science in the public interest.

The relationship between universities and learned societies in Prague should not be imagined as one of simple competition. Universities provided training, intellectual authority, and institutional continuity. Learned societies provided flexibility, sociability, publication, and recognition outside formal curricula. Many scholars moved between both worlds. University professors could become active in learned societies; society discussions could influence academic fields; libraries and collections could serve both institutional environments. This interaction is important because later Czech science would also be shaped by the relationship between universities and academy-based research. The tension between teaching and research, so visible in the 20th-century relationship between Charles University and the Czechoslovak Academy of Sciences, had older roots. Already in the Enlightenment, the university was not sufficient by itself to organise all forms of inquiry. Learned societies emerged partly because research, correspondence, observation, and public discussion required forms different from ordinary teaching structures. Prague's scientific space therefore developed through institutional plurality. This plurality would become one of the lasting features of Czech academic life. The Academy tradition grew beside the university tradition, not outside it.

Prague's place in Enlightenment science also depended on the circulation of persons. Scholars, students, clerics, administrators, noble patrons, instrument-makers, printers, and foreign correspondents all contributed to the city's intellectual environment. Scientific communication was embodied in movement. A book had to be imported, a letter carried, an instrument acquired, a student trained abroad, a professor appointed, a patron persuaded, a printer engaged. The learned society made some of these movements more visible, but they had long existed in the background of university and urban culture. Prague's scholarly networks were therefore social as well as textual. They involved trust, reputation, friendship, patronage, and shared participation in European debates. This is important because institutional history can become too formal if it focuses only on statutes and foundation dates. The history of Prague science also includes informal circles, conversations, translations, recommendations, and intellectual hospitality. Enlightenment knowledge was made through people who connected places. Prague's eventual emergence as a centre of academy-like scholarship depended on such human networks as much as on official institutions.

The city's political and cultural position within the Habsburg Monarchy gave its scholarly communication a particular character. Prague was historically prestigious, but Vienna was the imperial administrative centre. This meant that Prague scholars often had to negotiate between local ambition and imperial hierarchy. Scientific initiatives could benefit from Habsburg reformist policies, but they could also be shaped by central priorities. The

development of learned institutions in Prague therefore involved both local scholarly self-assertion and participation in a wider imperial knowledge system. This double orientation would later become important for Czech national scholarship. Prague intellectuals could draw on European and imperial networks while gradually developing a more distinctly Czech institutional identity. The Royal Bohemian Society of Sciences embodied this intermediate stage. It was territorial, learned, and Bohemian before becoming part of a more sharply national Czech story. The history of Enlightenment science in Prague thus reveals the layered nature of Czech academic identity. It was not created by sudden separation from imperial Europe. It emerged through adaptation within it.

Natural history played an important role in this transformation because it connected local observation with universal classification. The study of plants, minerals, animals, climate, geography, and landscape allowed scholars in the Czech lands to contribute to European systems of knowledge while grounding their work in local territory. This was typical of Enlightenment science across Europe, but it had special importance in regions where knowledge of the land was linked with economic reform and cultural identity. A mineralogical description of Bohemia, a botanical survey of local flora, or a meteorological record from Prague could serve both science and the improvement of the country. Such work also encouraged the collection of specimens, the creation of cabinets, and the development of specialised expertise. The university, noble collections, libraries, and learned societies all contributed to this culture of collecting and describing. Over time, these practices helped prepare the ground for museums, research institutes, and academy-based science. They also reinforced the idea that the Czech lands were a legitimate object of systematic scholarly investigation. Through natural history, local territory entered European science. Through European science, local territory acquired new intellectual meaning.

Astronomy and meteorology also connected Prague to wider European networks of measurement. Observations made at the Klementinum could be compared with observations elsewhere, and this comparability gave local scientific work international significance. Enlightenment science placed high value on regular observation over time. A single observation could be interesting, but a continuous series could become a scientific resource. This principle is important for understanding institutional continuity. Long-term measurements require institutions, instruments, trained personnel, records, and preservation. They cannot depend entirely on isolated enthusiasm. Prague's observational culture therefore anticipated one of the defining features of modern research institutions: the capacity to sustain knowledge over time. The Academy as a later institution would inherit this logic of long-duration research. Whether in astronomy, climate, biology, archaeology, linguistics, or history, the value of many projects depends on continuity. The Klementinum's scientific role thus belongs not only to the history of astronomy, but to the wider history of institutionalised knowledge in the Czech lands. It demonstrates how place, instrument, record, and institution combine to create scientific authority.

The humanities were equally dependent on long-term scholarly infrastructure. Historical criticism required access to archives, chronicles, charters, manuscripts, and libraries. Philology required dictionaries, comparative materials, textual editions, and linguistic competence. These forms of knowledge were not less institutional than astronomy or natural history. They demanded patient accumulation and disciplined methods. Prague's historical and philological scholarship became central to the formation of Czech cultural identity because it supplied evidence for the past and structure for the language. The Enlightenment

did not simply romanticise the nation; it helped create scholarly tools for studying it. This distinction is important. Later national revival depended on emotional and literary energies, but it also depended on critical scholarship. The learned society could support such scholarship by giving it public standing and institutional memory. The Academy tradition in the Czech lands therefore developed from the beginning as both scientific and cultural. This dual character would remain visible in the modern Czech Academy of Sciences, where natural sciences, social sciences, and humanities continue to coexist within one institutional framework.

Prague's Enlightenment scientific culture also contributed to the gradual emergence of a public for knowledge. This public was not democratic in the modern mass sense. It consisted mainly of educated elites, clergy, nobles, officials, professors, students, physicians, lawyers, and cultivated urban readers. Nevertheless, it represented an expansion beyond closed scholastic settings. Learned societies, public lectures, printed reports, and periodicals helped create audiences interested in history, nature, language, medicine, economy, and improvement. The existence of such a public mattered because science requires legitimacy as well as expertise. Scholars needed readers, patrons, subscribers, and institutional supporters. The public circulation of knowledge also allowed scientific and historical work to become part of broader cultural life. In the Czech lands, this was especially important because scholarship increasingly contributed to questions of language and identity. Prague's learned culture thus helped create a bridge between specialised inquiry and public meaning. The later Academy tradition would repeatedly return to this bridge, especially in its modern public-interest mission.

The Enlightenment in Prague should therefore be understood as a period of transition from inherited learned culture to organised modern scholarship. It did not create science from nothing. It reconfigured existing university, ecclesiastical, library, noble, and urban resources into new forms of communication and authority. It strengthened empirical observation, historical criticism, useful knowledge, and institutional sociability. It linked Prague with Habsburg reform, European correspondence, and local cultural development. It also prepared the ground for the later differentiation between university-based education and academy-based research. This transition was uneven and incomplete, but it was decisive. The Royal Bohemian Society of Sciences could emerge because Prague already possessed the human, documentary, and symbolic resources of a scholarly city. At the same time, the Society transformed those resources by giving them a more durable collective form. The Enlightenment thus occupies a pivotal place in the genealogy of Czech academic science. It connects the medieval university to the modern academy.

The relevance of this history for the later Czech Academy of Sciences is direct. The modern Academy's official historical self-understanding begins with the Royal Czech Society of Sciences, and this beginning makes sense only if one recognises the broader Prague scholarly environment from which that Society emerged. The Academy's genealogy is not merely institutional; it is urban, linguistic, documentary, and communicative. It includes Charles University, the Klementinum, libraries, observatories, learned circles, Enlightenment reform, multilingual scholarship, and the gradual formation of Czech-language intellectual culture. This does not mean that the modern Academy is simply the continuation of 18th-century Prague scholarship. It means that its later forms of authority were built on older practices of organised knowledge. The Academy's concern with research excellence, public value, archives, publications, and national scholarly memory has roots in this longer history. The Czech Academy of Sciences is modern, but its modernity is historically layered. To understand

the Academy after 1993, one must understand why Prague had already become a city where knowledge could be institutionalised, communicated, and preserved. That story begins with the university and comes into sharper focus during the Enlightenment.

Thus, Prague's role in European scientific space was formed through the interaction of university tradition, multilingual communication, libraries, observatories, Enlightenment reform, learned societies, and the gradual emergence of Czech scholarly identity. Charles University gave Prague an old and prestigious institutional foundation, while the Klementinum and related scientific practices connected the city with observational and documentary forms of knowledge. Enlightenment science in the Czech lands did not simply imitate Western models; it adapted European forms of learned sociability, useful knowledge, historical criticism, and empirical observation to a Central European, Habsburg, Bohemian, and increasingly Czech context. The Royal Bohemian Society of Sciences transformed this environment into a durable institutional framework and became the earliest recognised predecessor of the modern Czech Academy of Sciences. Prague therefore functioned as both a city of inherited learning and a laboratory of modern scholarly organisation. Its university and learned society traditions created the conditions under which Czech science could later develop academy-based forms of authority, continuity, and public responsibility. The next stages of this chapter will show how this scientific space was shaped further by multilingual culture and by the long process through which German, Latin, Czech, and other languages mediated scholarly exchange in the Czech lands.

2. Multilingual scientific culture in Bohemia and Moravia

Multilingualism was one of the defining conditions of scientific culture in Bohemia and Moravia, and it should not be treated as a decorative feature of Central European intellectual life. It shaped who could participate in scholarship, which audiences could be reached, what counted as public knowledge, and how local research entered wider European circulation. In the Czech lands, scientific communication developed at the intersection of Latin learned tradition, German administrative and university culture, Czech linguistic revival, and the wider European prestige of French, Italian, and later English. This linguistic plurality did not produce a simple hierarchy in which one language merely replaced another. Instead, different languages performed different functions at different moments. Latin preserved the older transnational language of the university and learned republic. German served as a dominant medium of higher education, bureaucracy, print, and Central European scholarly exchange. Czech gradually became a modern language of scholarship, national culture, public education, and institutional self-definition. French and Italian mediated elite culture, diplomacy, philosophical debate, and selected scientific communication. The scientific culture of Bohemia and Moravia was therefore not monolingual with occasional foreign influences; it was structurally multilingual from its foundations. Any serious account of Czech academic science must begin from this fact (*Franc, Kostlán, & Míšková, 2010*; *Agnew, 2004*).

The multilingual character of scholarship in Bohemia and Moravia was rooted in the historical position of the Czech lands within the Holy Roman Empire, the Habsburg Monarchy, and later Austria-Hungary. These political frameworks made the region part of larger imperial, administrative, ecclesiastical, and educational systems. Scholars, clerics, physicians, jurists, mathematicians, naturalists, historians, and philologists often moved within networks that were not defined by one language alone. A learned person in Prague, Olomouc, Brno, or

another Moravian centre could be trained in Latin, publish in German, collect Czech-language materials, correspond with colleagues abroad, and read French or Italian works. Such multilingual competence was not exceptional among elites; it was often a condition of serious scholarly participation. It allowed local intellectuals to communicate upward to imperial authorities, outward to Europe, and inward to regional or national publics. This also meant that scientific identity did not coincide neatly with ethnic or linguistic identity. A scholar could contribute to the knowledge of Bohemia while writing in German; another could write in Czech while relying on Latin or German sources; a third could belong intellectually to several linguistic communities at once. This layered situation is essential for understanding the long prehistory of the Czech Academy of Sciences. The later nationalisation of scholarly institutions did not erase multilingual origins; it reinterpreted them.

Latin remained the older foundation of learned communication for many centuries. Its importance lay not only in ecclesiastical or university tradition, but in its capacity to connect scholars across political and vernacular boundaries. In medieval and early modern Prague, Latin enabled participation in European scholastic, theological, legal, medical, philosophical, and scientific discourse. It provided a shared grammar of learned authority and allowed texts produced in one region to circulate elsewhere. Even when vernacular languages gradually expanded their scholarly functions, Latin continued to preserve symbolic prestige and technical continuity in certain fields. It was especially important in older university settings, where curricula, disputations, and scholarly genres had long been shaped by Latin forms. Yet Latin also had limits. It separated scholarship from broader publics and tied knowledge to a narrow-educated elite. As the Enlightenment and national movements transformed the social function of knowledge, Latin increasingly gave way to vernacular languages in many fields. This transition did not happen overnight, and it did not affect all disciplines equally. In the Czech lands, the shift from Latin to German, and later the strengthening of Czech, reflected the wider European movement from learned cosmopolitanism to public, national, and state-oriented scholarship (*Burke, 2000*; *Franc, Kostlán, & Míšková, 2010*).

German acquired particular importance in Bohemia and Moravia because it was not simply a foreign language of communication. It was a language of administration, higher education, urban elites, university scholarship, printing, and Central European intellectual exchange. In Prague and many other centres, German-language scholarship was deeply embedded in local institutions. This means that German cannot be understood merely as an external imposition on Czech scholarly life. It was also one of the media through which the Czech lands participated in European science. German connected Prague, Brno, Olomouc, Vienna, Leipzig, Halle, Göttingen, Berlin, Dresden, and other centres of scholarship. It gave local scholars access to philosophical, historical, medical, natural-scientific, and technical literature. It also shaped the institutional language of many learned societies and university settings. At the same time, German's strength created a linguistic and cultural problem for the Czech national revival. If high scholarship existed primarily in German, Czech risked remaining associated with popular, domestic, literary, or patriotic culture rather than rigorous science. The development of Czech as a scholarly language therefore occurred partly in response to German dominance. The tension between German and Czech was not simply political; it was epistemic, institutional, and cultural (*Agnew, 2004*; *Sayer, 1998*).

The bilingual character of the Royal Bohemian Society of Sciences illustrates this complexity particularly well. The modern Czech Academy of Sciences identifies the Royal Czech Society of Sciences as one of its earliest predecessors, and the Society's development shows how

territorial, German-language, Czech-language, and European scholarly identities interacted over time (*Akademie věd České republiky, n.d.*). In its earlier phases, the Society was not a narrowly Czech national institution in the later 19th-century sense. It was Bohemian, learned, Enlightenment-oriented, and multilingual. Its members operated in a scholarly environment where German and Latin were powerful, while Czech was increasingly important as an object of philological and historical inquiry and later as a scholarly medium. This matters because modern Czech academic identity emerged not by rejecting all earlier German-language scholarship, but by transforming a multilingual territorial tradition into a more self-conscious Czech scientific culture. The Society provided continuity before national linguistic separation hardened. It allowed scholarship about the Czech lands to be institutionalised before the modern Czech-language academy fully emerged. Later Czech historiography could therefore claim the Society as part of its genealogy, but that claim must be understood historically. The Society belonged to a world in which language, territory, scholarship, and identity were still fluid. Its significance lies precisely in this transitional character.

Moravia had its own multilingual and polycentric learned culture, and it would be misleading to reduce Czech scholarly development to Prague alone. Olomouc, Brno, monastic centres, noble libraries, medical and administrative circles, and regional learned networks contributed to the intellectual history of Moravia. The Societas eruditorum incognitorum in terris Austriacis, founded in Olomouc in the mid-18th century, is an important example of early Enlightenment sociability in the Habsburg lands. Its German-language periodical activity and Central European orientation show that Moravian scholarship participated in wider Enlightenment communication before later Czech national institutions acquired their stronger form. Brno likewise became increasingly important in the 19th and 20th centuries as an urban, industrial, administrative, and scientific centre. Moravian scientific culture therefore developed through several languages and institutional forms. German was important in urban and official contexts, Czech gradually expanded in public and scholarly life, Latin remained part of older learned tradition, and other languages mediated specialised communication. This Moravian plurality later mattered for the structure of Czech science because modern research did not develop only in Prague's institutions. The Czech Academy's present-day research geography, including institutes and centres outside Prague, has distant roots in this broader historical polycentrism (*Franc, Kostlán, & Míšková, 2010*).

The rise of Czech as a scholarly language was one of the most consequential transformations in the intellectual history of the Czech lands. It was not simply a linguistic substitution, as though Czech merely replaced German in an already completed institutional framework. Czech had to be modernised, standardised, enriched with terminology, and made credible as a medium of exact thought. This process was inseparable from philology, lexicography, education, publishing, translation, historical research, and national revival. Josef Dobrovský and later figures of the Czech revival helped create the scholarly foundations on which Czech language culture could develop. Their work demonstrated that language itself could be an object of rigorous research and also a vehicle of cultural reconstruction. In this sense, philology had a foundational role in Czech scientific modernity. It was not a marginal humanistic discipline, but a discipline that helped make Czech intellectual life possible in modern form. A language that could be described historically and grammatically could also be defended as a language of scholarship. The later expansion of Czech in schools, universities, journals, learned societies, and academies depended on this earlier labour of linguistic codification and cultural legitimisation (*Sayer, 1998*; *Macura, 1995*).

The development of Czech scientific terminology was especially important. A language may possess a rich literary or vernacular tradition and still lack the specialised vocabulary required for modern chemistry, physics, medicine, law, economics, sociology, archaeology, or philosophy. Terminology is not merely a collection of words; it is an infrastructure of thought. It allows concepts to be taught, translated, debated, standardised, and extended. In the 19th century, Czech intellectuals faced the task of creating or stabilising terminology across many disciplines. Some terms were borrowed, others translated, and others newly coined or revived. This work could be controversial because terminology involved choices about purity, comprehensibility, international comparability, and cultural identity. Too much borrowing might appear to weaken national linguistic autonomy. Too much purism might isolate Czech scholarship from international scientific communication. Czech scientific language therefore had to find a balance between national expression and European intelligibility. This balance has remained a structural issue for Czech science into the present. Contemporary scholars still operate between Czech public communication and English-dominated international research, repeating in new form an older problem of linguistic mediation.

The multilingual culture of Bohemia and Moravia also shaped the development of historical scholarship. Historians, antiquarians, archivists, and philologists worked with sources in Latin, Czech, German, Church Slavonic, Hebrew, and other languages depending on period and subject. The historical past of the Czech lands could not be reconstructed through a single linguistic archive. It required multilingual competence and a sensitivity to layered political and cultural contexts. This gave Czech historical scholarship a strong source-critical tradition. Scholars had to interpret documents produced by royal chancelleries, ecclesiastical institutions, municipal offices, noble estates, universities, monasteries, and later state administrations. Each archive carried linguistic traces of power, identity, law, and social organisation. The academy tradition inherited this multilingual archival labour. Institutes of history, archaeology, language, and literary studies within modern Czech academic structures continue to depend on competence in multiple historical languages. The preservation of this competence is one of the less visible but essential functions of academic institutions. Without it, a society loses access to its own documentary memory. In this respect, multilingualism is not merely a historical topic; it is a continuing condition of Czech scholarship.

Natural science, too, was multilingual. It is sometimes assumed that language mattered less in mathematics, astronomy, chemistry, or natural history because these fields deal with universal phenomena. Yet in practice, natural science required names, descriptions, classifications, reports, teaching materials, textbooks, correspondence, and institutional records. Botanical, zoological, geological, and medical knowledge circulated through Latin nomenclature, German publications, French classifications, local names, and later Czech terminology. The study of Bohemian and Moravian nature required communication between local observers and international systems of classification. A plant, mineral, disease, or meteorological pattern observed in Moravia had to be described in forms intelligible beyond the region. At the same time, local names and local knowledge could matter for collection, agriculture, medicine, and public education. Scientific multilingualism therefore connected local empirical knowledge with European taxonomic frameworks. This was especially important in the Enlightenment and 19th century, when natural history became a major instrument of both scientific and territorial understanding. The Czech lands were studied in several languages before they were fully integrated into a modern Czech-language scientific culture. The academy tradition later inherited this tension between universal scientific

nomenclature and national scholarly communication (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*).

The university environment reflected the same linguistic complexity. Charles University and its successor institutional arrangements experienced changes in language, governance, and national meaning over several centuries. The division of Prague's university environment into Czech and German institutional forms in the late 19th century was one of the most visible expressions of the nationalisation of scholarship. It marked not only a political and cultural turning point, but also a transformation in the organisation of knowledge. Czech scholars gained stronger institutional conditions for teaching and research in Czech, while German-language scholarship continued with its own traditions and international connections. This separation did not mean that intellectual exchange ceased, but it did reconfigure the social geography of scholarship. It made language a principle of institutional organisation. The development of Czech-language higher education strengthened the conditions for Czech academic science, but it also intensified boundaries between linguistic communities. The later academy tradition would emerge from this already differentiated landscape. By the time modern Czech academic institutions matured, language had become inseparable from questions of institutional legitimacy and national representation (*Agnew, 2004*; *King, 2002*).

The multilingual character of Bohemian and Moravian science was also shaped by Jewish scholarly and cultural participation. Jewish intellectual life in the Czech lands operated across Hebrew, German, Czech, Yiddish, and other linguistic traditions depending on period, community, education, and social position. In Prague especially, German-speaking Jewish intellectuals played an important role in literary, philosophical, medical, legal, and scientific culture. Their position complicates any simple Czech-German binary. The Czech lands were not merely divided between Czech and German cultures; they contained overlapping communities whose linguistic identities could be multiple and shifting. Jewish scholars, physicians, writers, and intellectuals often mediated between languages and contributed to the cosmopolitan character of Central European urban culture. This is important for the history of science because institutions often remember national narratives more easily than multilingual or minority contributions. A serious history of Czech academic culture should therefore avoid narrowing the past into a single linguistic line. The Academy's later Czech identity was built within a broader historical field in which several communities contributed to knowledge. Recognising this complexity strengthens rather than weakens the interpretation of Czech science because it shows how much of its development depended on intercultural contact.

Translation was one of the central practices of multilingual scientific culture. It was through translation that ideas travelled between Latin, German, Czech, French, Italian, and later English. Translation did not simply move words from one language to another. It transformed concepts, adjusted terminology, created equivalences, and sometimes generated new intellectual possibilities. In the Czech lands, translation was especially important because Czech scholarly language had to be built partly through engagement with more established scientific languages. Translators and terminologists had to decide whether to borrow international terms, create Czech equivalents, or preserve hybrid forms. These decisions affected how knowledge was understood by students, teachers, readers, and publics. Translation also made European debates available to Czech audiences and made Czech scholarship available beyond Czech-speaking circles. Learned societies, journals, university textbooks, dictionaries, and later academy publications all participated in this translational

culture. The institutionalisation of Czech science therefore required not only laboratories and archives, but also translators, editors, lexicographers, and multilingual scholars. Translation was one of the quiet engines of Czech scientific modernisation.

Print culture amplified multilingual exchange. Prague, Brno, Olomouc, and other centres participated in Central European publishing circuits that made books, journals, pamphlets, textbooks, calendars, proceedings, and scholarly series available to educated readers. German-language print often had wider Central European reach, while Czech print became increasingly important for national education and cultural mobilisation. Latin publications continued in certain learned contexts, and French or other foreign works circulated through libraries and private collections. Learned societies depended on print to make their discussions durable and public. The printed proceedings or memoir transformed multilingual scholarly activity into archival memory. It also fixed the language of a contribution and thereby gave linguistic choices lasting significance. A paper published in German had a different audience and symbolic meaning from one published in Czech; a Latin text belonged to another learned tradition; a bilingual or multilingual publication could signal mediation. The history of scientific print in the Czech lands is therefore inseparable from the history of linguistic authority. What was printed, in which language, and under whose institutional auspices helped define the public identity of scholarship.

The multilingual condition also shaped the relationship between local and international reputation. For a Czech or Moravian scholar, writing in German could provide access to wider Central European scholarly readership, while writing in Czech could strengthen national culture and domestic public life. Latin could still function as a transnational learned code in some older traditions, while French carried prestige in Enlightenment and diplomatic contexts. Later, English would become increasingly important for global scientific communication. These choices involved trade-offs. A national language could deepen local legitimacy but limit international circulation if translation or foreign-language publication was absent. A dominant international language could broaden readership but weaken the public connection between science and national culture. Czech scholarship repeatedly had to manage this dilemma. The issue was not whether to be national or European. The issue was how to be both. The Academy tradition in the Czech lands can be understood as one answer to this problem: an institution capable of preserving national scholarly identity while maintaining participation in wider scientific networks. This dual mission remains visible in the modern Czech Academy of Sciences.

Language also influenced the social accessibility of science. Latin and specialised German scholarly discourse limited participation to educated elites. Czech-language scholarship, textbooks, lectures, and popular scientific writing gradually expanded the public reach of knowledge. This expansion was essential for national education and cultural development. If science remained locked in elite or foreign-language forms, it could not become part of broader Czech public life. The growth of Czech-language scholarly and educational writing helped create a readership capable of engaging with history, nature, society, and technology in its own language. This did not mean that every citizen became a scientist, but it did mean that science could become part of national culture. Public lectures, museums, schools, journals, and learned publications contributed to this transformation. The academy, as an institution of recognised scholarship, gave authority to this process. It showed that Czech was not only a language of everyday life or literature, but also a language of disciplined knowledge. The democratisation of scientific culture therefore had a linguistic dimension from the beginning.

The multilingual scientific culture of Bohemia and Moravia also created tensions over ownership of knowledge. When a scholar wrote about Bohemian history in German, was the work German, Austrian, Bohemian, Czech, or European? When a Czech-language scholar used German source editions, Latin chronicles, and French methods, where did that scholarship belong? Such questions may appear anachronistic if applied too rigidly, but they became increasingly important as national identities hardened in the 19th century. Scientific achievements, historical interpretations, archaeological discoveries, and linguistic studies could be claimed by different communities. The same institution could be interpreted differently by Czech and German narratives. This contested ownership shaped the later historiography of learned societies and academic institutions. The modern Czech Academy's genealogy includes institutions that were not exclusively Czech in their original linguistic or national character. This does not invalidate the genealogy; it makes it historically richer. It shows that Czech academic science emerged through appropriation, reinterpretation, and transformation of a shared Bohemian and Moravian scholarly inheritance. The task of the historian is not to simplify this inheritance, but to explain how it became Czech while retaining traces of its multilingual past.

The Czech national revival transformed multilingual scholarship by giving language a new political and cultural urgency. Czech was no longer merely one language among others in regional communication; it became a central marker of national existence. Scholars, writers, teachers, and cultural organisers worked to prove that Czech could sustain modern education, literature, scholarship, and public debate. This effort included historical research, grammar, lexicography, folklore collection, literary history, scientific terminology, and the creation of institutions. The academy-like ideal was important here because a nation seeking recognition needed more than poetry and political slogans. It needed scholarly institutions capable of producing authoritative knowledge. The development of Czech science was therefore bound to the development of Czech national culture, but not in a simplistic propagandistic sense. Rather, scholarship helped supply the documentary, linguistic, and conceptual foundations of national identity. It gave the revival intellectual seriousness. At the same time, it exposed Czech scholarship to the danger of subordinating research to national myth. The best Czech scholarly traditions sought to avoid this by combining cultural commitment with critical method (*Macura, 1995*; *Sayer, 1998*).

The relationship between Czech and German scholarship remained especially delicate because the two communities were historically intertwined. German-speaking scholars in Bohemia and Moravia contributed significantly to local science, medicine, philosophy, literature, law, and historical research. Czech-language scholarship developed partly in dialogue with, partly in competition with, and partly in opposition to German-language institutions. The national division of university and scholarly life did not erase shared spaces, shared archives, shared cities, or shared scientific objects. Prague, Brno, and other centres remained culturally layered even when institutional boundaries sharpened. This has important implications for the history of Czech academic science. A Czech institutional history that ignores German-language scholarship would distort the past. Yet a history that treats Czech scholarly emancipation as merely derivative of German structures would also be inadequate. The correct approach is relational. Czech science developed through a complex interaction of dependence, competition, translation, differentiation, and eventual institutional autonomy. The academy tradition is one of the places where this relational history becomes visible.

Moravian multilingualism had its own specific texture. Moravia was shaped by Czech, German, Jewish, ecclesiastical, noble, and regional cultures, and its intellectual life often had a more regionally distributed character than Prague-centred Bohemia. Brno's development as an industrial and administrative centre gave it increasing scientific and technical importance. Olomouc preserved older ecclesiastical and university traditions. Monasteries and noble collections contributed to natural history, history, agriculture, and education. The presence of several linguistic communities made Moravian scholarship especially dependent on mediation and translation. This regional pattern is important because the later Czech scientific system included several centres of excellence beyond Prague. Modern academy institutes and research workplaces cannot be understood only through the capital. They belong to a broader geography of Czech and Moravian knowledge. The multilingual past of Moravia also reminds us that Czech academic identity was built from regional diversity, not from one uniform cultural centre. This diversity would later enrich the national scientific system.

The 20th century transformed multilingual scientific culture dramatically. The creation of Czechoslovakia in 1918 strengthened Czech and Slovak as languages of statehood, education, and public life. At the same time, German remained significant among German-speaking citizens and institutions, especially before the Second World War. The political disasters of the 20th century then radically altered the linguistic landscape. Nazi occupation, the destruction and persecution of Jewish communities, the closing of Czech universities during the occupation, post-war expulsions of Germans, communist centralisation, and the dominance of Russian within the socialist bloc all reshaped the languages of science. These events meant that multilingualism did not simply evolve peacefully. It was broken, redirected, and politicised by violence and regime change. The post-war Czech scientific world became much more nationally Czech in linguistic terms, but it also lost much of the older German-Jewish-Central European plurality. Under socialism, Russian gained ideological importance, while access to Western languages and networks was constrained. The modern Academy of Sciences inherited not only multilingual traditions, but also the scars of linguistic ruptures.

The socialist period introduced a new hierarchy of scientific languages. Czech remained central for domestic institutional life, education, and many publications. Slovak was important within the Czechoslovak federal context. Russian acquired official and ideological significance as the language of the Soviet bloc and socialist scientific cooperation. English, German, and French remained essential for international scholarship, but access to Western literature, travel, and collaboration was shaped by political conditions. This linguistic order affected scientific communication in subtle and direct ways. It influenced which journals were read, which conferences were accessible, which collaborations were possible, and which intellectual traditions were favoured or marginalised. In some fields, especially natural sciences and technology, researchers still maintained awareness of international developments despite political constraints. In the humanities and social sciences, ideological pressure often shaped terminology and interpretative frameworks more strongly. The Czechoslovak Academy of Sciences operated within this linguistic and geopolitical order. Its transformation after 1989 therefore also involved a linguistic reorientation: from socialist multilingual hierarchy towards renewed participation in global, increasingly English-dominated science (*Dvořáčková, Franc, & kol., 2019*; *Míšková, Barvíková, & Šmidák, 1998*).

After 1989 and 1993, the linguistic situation changed again. English became the principal language of international scientific publication, grant competition, conferences, and research networking. For the Czech Academy of Sciences, this created both opportunities and

pressures. English allowed Czech researchers to participate more fully in global science, European projects, and international evaluation. It also increased visibility and comparability. Yet it created a new version of the old dilemma between international communication and national public responsibility. If the highest-prestige scientific output appears mainly in English, how can the Academy maintain Czech as a language of sophisticated public knowledge? How can humanities and social sciences serve Czech society while also meeting international standards? How can natural and technical sciences communicate complex findings to domestic publics without becoming detached from them? These questions are not secondary. They define the modern linguistic mission of the Academy. The Czech Academy of Sciences must be international in its research language and Czech in its public responsibility. This double orientation continues the long history of multilingual mediation in Bohemia and Moravia.

The modern Academy's role in digital libraries, archives, open access, and public communication gives multilingualism a new form. Earlier multilingual scholarship depended on manuscripts, printed books, correspondence, and personal networks. Today it also depends on digital databases, online catalogues, bilingual websites, translated summaries, English-language publication platforms, and Czech-language public outreach. Digitalisation can make historical multilingual materials more accessible, but it also requires decisions about metadata, translation, searchability, and audience. A Czech archival document, a German-language academy proceeding, a Latin manuscript, or an English-language research report all require different forms of mediation. The Academy's memory institutions therefore continue to perform a multilingual function. They do not merely preserve texts; they make texts intelligible across languages and generations. This is especially important for reconstructing the history of Czech science, because many foundational sources are not in modern Czech or English. The historian of the Academy must move across linguistic layers. In this sense, multilingual competence remains a methodological requirement for the project of writing Czech academic history.

Multilingualism also has a philosophical significance for the history of science. It reminds us that knowledge is never produced in a pure abstract space. Even when science seeks universal validity, it must be articulated in words, signs, notations, images, classifications, and institutional genres. Language shapes what can be taught, remembered, debated, and publicly trusted. In Bohemia and Moravia, the plurality of languages made this fact especially visible. Scholars had to decide how to name things, how to translate concepts, how to address different publics, and how to locate themselves between local and international communities. These decisions affected the development of disciplines. They also affected identity. Czech science became modern not by escaping language, but by learning to operate across languages. Its strength lay partly in mediation: between Latin erudition and vernacular scholarship, between German Central European science and Czech national culture, between socialist Russian-oriented networks and post-1989 English-language global science. The Academy's history can therefore be read as a history of linguistic adaptation under changing political and intellectual conditions.

This multilingual heritage should not be romanticised. Multilingualism could enable communication, but it could also create inequality. Those who controlled dominant languages often controlled institutions, publication opportunities, and access to authority. Scholars without access to Latin, German, Russian, or English at different historical moments could be excluded from important conversations. Language could mark class, ethnicity, education,

religion, and political loyalty. It could also become a tool of assimilation or marginalisation. The struggle to establish Czech as a scholarly language was therefore not simply cultural pride; it was a struggle over access to knowledge and institutional authority. Likewise, the modern dominance of English creates new forms of asymmetry, even while it facilitates global communication. Czech researchers must invest labour in publishing in English, while domestic publics require communication in Czech. Smaller language communities must constantly translate themselves into global science. This does not diminish their intellectual value, but it creates structural burdens. The Academy's responsibility includes managing these burdens without losing either international excellence or domestic relevance.

The multilingual scientific culture of Bohemia and Moravia therefore produced a particular kind of scholarly resilience. Because Czech science developed through several languages, it learned to translate, adapt, compare, and reinterpret. It learned to preserve local identity while engaging wider intellectual systems. It learned that institutional authority depends partly on the ability to speak to more than one audience. This resilience became important in later historical transitions. After the national revival, after the creation of Czechoslovakia, after Nazi occupation, after communist rule, after the dissolution of Czechoslovakia, and after integration into European research structures, Czech science repeatedly had to redefine its linguistic and institutional orientation. The Academy tradition provided one of the frameworks through which such redefinition could occur. It gave multilingual scholarly life an institutional memory. It allowed changing language regimes to be absorbed into a longer history of scientific continuity. This is one reason why the modern Czech Academy of Sciences can be understood not as a purely post-1993 institution, but as an heir to a much older culture of linguistic mediation.

Thus, multilingual scientific culture in Bohemia and Moravia was not a marginal historical circumstance, but one of the foundations of Czech academic development. Latin connected the region with older European learned traditions; German integrated it into Central European scholarly, administrative, and university networks; Czech gradually became a modern language of science, national culture, public education, and institutional legitimacy; other languages, including French, Italian, Hebrew, Russian, and later English, mediated specific intellectual, political, and international connections. This plurality shaped universities, learned societies, publications, libraries, archives, terminology, historical research, natural science, public communication, and national identity. It also created tensions over authority, access, representation, and ownership of knowledge. The Czech Academy of Sciences inherits this multilingual past in transformed form. Its contemporary task is no longer to prove that Czech can be a language of scholarship in the 19th-century sense, but to balance Czech public responsibility with English-language global science and with the preservation of older multilingual archives. The next part of this chapter will therefore examine the specific languages of scholarly exchange — German, Latin, Czech, French, and others — as historical instruments through which Bohemian and Moravian science entered European intellectual circulation.

3. German, Latin, Czech, and French as Languages of Scholarly Exchange

The scientific culture of the Czech lands was built through languages that did not merely transmit knowledge, but shaped its social authority, institutional location, and cultural meaning. German, Latin, Czech, and French did not function as interchangeable instruments of communication. Each language carried a particular historical weight, opened specific intellectual networks, and connected scholars in Bohemia and Moravia with different audiences. Latin linked Prague, Olomouc, and other learned centres with the older European republic of letters and the long university tradition. German connected the Czech lands with Habsburg administration, Central European universities, print culture, philosophy, natural sciences, and bureaucratic modernisation. Czech gradually became the language through which scholarship could become a component of national revival, public education, and cultural self-determination. French provided access to Enlightenment sociability, diplomacy, elite culture, philosophical literature, and the prestige of European learned exchange. These languages did not simply follow one another in a linear succession. They overlapped, competed, coexisted, and changed function according to discipline, period, institution, and political context. The history of scientific exchange in Bohemia and Moravia is therefore a history of linguistic mediation. It shows that Czech academic science emerged not from linguistic isolation, but from the ability to move between several languages of knowledge (*Burke, 2000*; *Gordin, 2015*).

Latin was the oldest and most durable scholarly language in the European academic world, and its role in the Czech lands was foundational. From the medieval university tradition onwards, Latin provided a common intellectual medium for theology, philosophy, medicine, law, astronomy, mathematics, and natural philosophy. The foundation of Charles University in 1348 placed Prague inside a Latin scholarly order that connected it with Paris, Bologna, Oxford, Vienna, Kraków, and other centres of European learning (*Charles University, n.d.*). Latin allowed scholars from different regions to study, teach, dispute, and write within a shared learned grammar. Its authority rested not only on tradition, but also on institutional continuity. A Latin lecture, disputation, thesis, or treatise could be understood by scholars beyond the local vernacular community. This made Latin indispensable for a city whose intellectual life was never purely local. It enabled Prague scholars to participate in a wider world of universities and learned correspondence. At the same time, Latin restricted the social reach of knowledge because it remained available mainly to educated elites. This double character — transnational reach and social exclusiveness — shaped the later transition towards vernacular scientific cultures (*Burke, 2000*; *Franc, Kostlán, & Míšková, 2010*).

Latin also had a methodological significance because it preserved continuity in disciplines that depended on inherited terminology and textual authority. In medicine, law, theology, botany, zoology, and historical scholarship, Latin terms, classifications, citations, and textual conventions created a shared learned memory. Even when German, Czech, French, and other languages gained importance, Latin did not disappear immediately. It continued to function as a technical and symbolic language in certain fields, especially where older scholarly traditions remained strong. Botanical and zoological nomenclature preserved Latinised forms long after Latin ceased to be the ordinary language of scientific prose. Archival and historical work also required Latin competence because much of the medieval and early modern documentation of the Czech lands was written in Latin. For Czech historical scholarship, Latin was therefore not only a language of the past; it was a key to documentary memory. Without Latin, large parts of Bohemian and Moravian history would remain inaccessible. This is why the later academy

tradition, especially in the humanities, inherited Latin not as a living public language, but as a necessary scholarly competence. The preservation of such competence became one of the quiet but essential functions of research institutions devoted to history, philology, law, archaeology, and cultural memory (*Franc, Kostlán, & Míšková, 2010*).

German occupied a different position because it became one of the dominant languages of Central European scholarly modernity. In Bohemia and Moravia, German was not merely a language imported from outside; it was deeply embedded in urban life, administration, university culture, print, and learned exchange. German connected Czech lands scholarship with Vienna, Leipzig, Halle, Göttingen, Berlin, Dresden, Jena, and other centres whose universities, publishers, journals, and learned societies shaped European science and humanities. It also connected local scholarship to Habsburg administrative reform and to the practical sciences valued by the 18th- and 19th-century state. German-language scholarship in Prague and Moravia contributed to medicine, philosophy, physics, mathematics, law, history, philology, and natural history. To write in German often meant entering a broader Central European scholarly market. It gave research a readership wider than the Czech-speaking public and allowed local scholars to participate in debates that crossed imperial and regional boundaries. Yet German's dominance also created a structural problem for Czech cultural emancipation. If higher scholarship remained primarily German-language, Czech could be excluded from the most prestigious forms of intellectual production. This tension became one of the main linguistic engines of the Czech national revival (*Agnew, 2004*; *Sayer, 1998*).

The German language also shaped the institutional history of Prague's university environment. After the reforms and national conflicts of the 19th century, the division of Charles-Ferdinand University into separate Czech and German institutions in 1882 formalised a linguistic separation that had been developing for decades. Charles University's own historical overview presents this division as one of the key moments in the university's modern history, when Czech and German became respective languages of instruction in separate institutional structures. This event was more than an administrative settlement. It transformed language into an organising principle of higher education and scholarly authority. Czech gained institutional space as a language of university teaching and research, while German-language scholarship continued its own traditions and international links. The division reflected the maturity of Czech national scholarship, but also the deepening separation of Czech and German intellectual communities. It did not eliminate exchange, shared archives, or shared scientific objects, but it changed the social geography of knowledge. The later Czech academy tradition developed in a world already shaped by this linguistic institutionalisation. The history of Czech science must therefore treat 1882 not only as a university event, but as a moment in the linguistic reorganisation of scholarly authority (*King, 2002*; *Agnew, 2004*).

German-language scholarship in the Czech lands should not be treated as external to the history of Czech academic science. Many German-speaking scholars worked in Prague, Brno, Olomouc, and other centres, contributing to the intellectual life of the same territories whose later institutional memory would become Czech. The question is not whether their work was "Czech" in a modern national sense, but how it formed part of the scientific culture of Bohemia and Moravia. This distinction is important. A territorial history of knowledge must include German-language contributions; a national history must explain how those contributions were later remembered, contested, appropriated, or separated. The modern Czech Academy of Sciences inherits the institutions and archives of a region whose scholarly past was

multilingual. Its genealogy includes learned societies and academic cultures that were not originally monolingual Czech institutions. This does not weaken the Czech character of the modern Academy. Rather, it shows that Czech scientific identity was formed through a historically complex process of differentiation within a shared Central European scholarly space. The task is not to erase German from the story, but to understand how Czech scholarship emerged in relation to it (*Franc, Kostlán, & Míšková, 2010*; *Sayer, 1998*).

Czech became a modern scholarly language through a long process of cultural, philological, educational, and institutional labour. It was not enough to speak Czech or to value Czech literature; the language had to be made capable of sustained academic use. That meant developing grammar, dictionaries, terminology, textbooks, journals, public lectures, scholarly prose, and educational institutions. Josef Dobrovský and Josef Jungmann are central figures in this process, though they represent different moments and tendencies within the Czech national revival. Dobrovský's scholarly work on grammar and language history contributed to the critical understanding of Czech as a historical language. Jungmann's lexicographical work, especially his Czech-German dictionary, became a major instrument for expanding the expressive capacity of Czech. Accounts of the national revival repeatedly stress the importance of lexicography and terminology in making Czech suitable for modern intellectual and scientific life. This linguistic work had scientific consequences. It created the conditions under which Czech could become a language of instruction, publication, classification, and public knowledge. The development of Czech science was therefore inseparable from the development of Czech language culture (*Macura, 1995*; *Sayer, 1998*).

The rise of Czech as a scholarly language changed the social meaning of knowledge. A scientific or historical argument written in Czech could address a different public from one written in Latin or German. It could enter schools, journals, civic associations, cultural debates, and later university classrooms. It allowed science and scholarship to become part of national education rather than remaining the possession of elites trained in foreign or classical languages. This mattered profoundly for the Czech lands because language was central to national self-definition. To prove that Czech could sustain rigorous scholarship was to prove that Czech culture possessed modern intellectual capacity. The development of Czech scientific prose therefore had a symbolic value beyond terminology. It made knowledge part of national life. It also produced new responsibilities. Czech scholars had to maintain international standards while writing for a domestic public whose language had to be cultivated, standardised, and expanded. They had to avoid both provincial isolation and linguistic dependency. The Czech language thus became not only a medium of scholarship, but a field of scholarly construction.

French performed a different function in the Czech lands. It was not generally the dominant language of university instruction or local administration, but it carried immense prestige in European elite culture, diplomacy, philosophy, and Enlightenment sociability. French connected Central European intellectuals with the language of salons, encyclopaedism, political thought, scientific academies, and aristocratic cosmopolitanism. The Paris Academy of Sciences, the Encyclopédie, Enlightenment philosophy, and French-language scientific and political literature shaped learned life far beyond France. For scholars and educated elites in Bohemia and Moravia, French could function as a language of intellectual orientation and cultural prestige. It also provided access to models of academic organisation, public reason, and useful knowledge. The importance of French was therefore less territorial and more cosmopolitan. It offered a window onto a European style of knowledge associated with clarity,

sociability, reform, and philosophical critique. In the Habsburg context, French influence interacted with German-language administration and Latin learned tradition. It contributed to the Europeanisation of local intellectual culture without replacing German or Czech as the main languages of regional scholarly organisation (*Hahn, 1971*; *Burke, 2000*).

The prestige of French Enlightenment culture influenced the language of improvement that became important for learned societies. French academic and encyclopaedic models suggested that knowledge should not remain hidden in scholastic institutions, but should serve public reason, economic development, education, technical progress, and social refinement. Such ideas reached the Czech lands through translations, libraries, noble households, correspondence, and the broader cultural circulation of Enlightenment Europe. French thus helped shape the ideals of learned sociability and public knowledge even where local institutional communication took place mainly in German, Latin, or later Czech. Its role was often indirect but significant. It contributed to the intellectual atmosphere in which academies and learned societies could justify themselves as instruments of improvement. It also reinforced the idea that scholarship had a public mission. The later Czech academy tradition inherited this Enlightenment ideal in transformed forms: first through national scholarly culture, later through state-supported research, and today through public-interest science. French was therefore one of the languages through which the Czech lands entered the wider European conversation about the social function of knowledge.

The Royal Bohemian Society of Sciences provides an especially useful case for understanding these linguistic functions together. Its official historical place in the genealogy of the Czech Academy of Sciences is clear: the present Academy identifies the Royal Czech Society of Sciences as one of its predecessors, and external institutional portraits also present it as the oldest long-lasting learned society in the Czech academic line. Yet the Society's linguistic character cannot be reduced to modern Czech-language nationalism. It emerged from a multilingual Enlightenment environment in which Latin, German, Czech, and broader European languages all had different functions. German was prominent in communication and publication; Latin carried learned prestige; Czech became increasingly important for language, history, and national scholarship; French contributed to the wider intellectual model of Enlightenment learned culture. The Society therefore stood at the intersection of several linguistic regimes. Its importance lies partly in the fact that it could hold these regimes together before later national differentiation became sharper. It was a territorial and learned institution before it became part of a retrospectively Czech academy genealogy. This makes it a key bridge between multilingual Bohemian scholarship and modern Czech academic identity (*Pokorná, 2010*; *Pokorná, n.d.*).

The very naming of institutions reveals the linguistic and political complexity of the Czech lands. A learned society could appear in German, Latin, Czech, or French forms depending on context, audience, and historiographical tradition. The Royal Bohemian Society of Sciences, or Royal Czech Society of Sciences, appears under different names in different languages, each carrying a slightly different emphasis. "Bohemian" stresses territory and historical lands; "Czech" stresses national interpretation; Latin or German names situate the institution within older learned and imperial contexts. Such naming is not trivial. It affects how an institution is remembered. A modern Czech account may naturally place the Society within the genealogy of Czech science, while an 18th-century actor may have understood it within a broader Bohemian, Habsburg, or European learned world. The historian must hold these meanings together. The language of institutional naming is itself a historical source. It shows how

scholarship moved from territorial learned culture to national academic identity. This movement is one of the central themes of the early history of Czech academic science.

The Czech lands also participated in Slavic linguistic and scholarly exchange. Czech revivalists did not construct scholarly Czech in isolation; they drew on other Slavic languages, comparative philology, pan-Slavic interests, and broader debates about Slavic cultural history. This was particularly relevant for lexicography and terminology. When Czech lacked a modern term, scholars sometimes borrowed from other Slavic languages or created neologisms inspired by Slavic roots. This practice reflected both linguistic pragmatism and cultural ideology. It linked Czech scholarly development to the wider Slavic world while also distinguishing it from German dominance. Yet the Slavic dimension should not be romanticised as a simple alternative to European science. Czech scholarship remained deeply connected with German, Latin, French, and later English traditions. The Slavic connection was one layer within a larger multilingual structure. It helped Czech language building, especially in philology, literary history, and national culture, but it did not replace the need for engagement with broader European scholarly systems (*Macura, 1995*; *Sayer, 1998*).

The emergence of Czech scientific terminology was especially difficult in the natural and technical sciences. Disciplines such as chemistry, physics, mathematics, medicine, botany, geology, and engineering relied on international vocabularies that had already developed through Latin, Greek, German, French, and later English forms. Czech terminologists had to decide how far to adapt international terms and how far to create Czech equivalents. These decisions were not merely linguistic. They affected teaching, textbook writing, public comprehension, and the authority of Czech scientific prose. A term that was too foreign might fail to support national language culture; a term that was too artificially Czech might isolate scholars from international communication. The development of Czech academic language therefore required practical judgement. It also required institutions capable of stabilising usage through dictionaries, textbooks, journals, schools, and expert communities. Later institutes concerned with Czech language, lexicography, terminology, and academic publication inherited this responsibility. The 2024 study on the origins of Czech academic lexicography, for example, places academic lexicographical work within longer traditions of translation, interpretation, and institutional language scholarship. This confirms that scientific language building was not peripheral to academic development; it was one of its foundations.

In the humanities, the linguistic situation was equally complex but differently structured. Historical scholarship required Latin, German, Czech, and often other languages of archival documentation. Literary scholarship required sensitivity to Czech textual traditions, German-Czech interaction, manuscript transmission, and comparative European forms. Philosophy moved through Latin, German, French, and later Czech conceptual vocabularies. Law reflected Latin and German traditions, as well as Czech public and political terminology. Archaeology and ethnography required the interpretation of material culture through several linguistic frameworks. The humanities were therefore not simply “national” disciplines. They were multilingual disciplines that helped construct national identity through critical work on multilingual sources. This is particularly important because national historiography can sometimes give the impression that Czech scholarship emerged fully formed in Czech. In reality, Czech historical and cultural scholarship had to master older non-Czech sources in order to build a Czech understanding of the past. The academy tradition preserved and professionalised this multilingual competence. Without it, Czech cultural memory would be narrower and less critical.

The coexistence of languages also affected scientific authority. Latin carried old learned prestige; German carried institutional and administrative power; Czech carried national-cultural legitimacy; French carried cosmopolitan Enlightenment prestige; later English would carry global scientific visibility. A scholar's choice of language therefore shaped the perceived authority of a text. A German-language article might be read more widely in Central Europe but might not serve Czech public mobilisation. A Czech-language publication might strengthen national scholarship but circulate less internationally. A Latin text might appear learned but socially distant. A French reference might signal participation in Enlightenment culture. These choices were often strategic, even when not consciously political. They reflected intended audience, discipline, patronage, publication venue, and intellectual ambition. The history of Czech science is full of such linguistic positioning. The modern Academy's current dual orientation towards Czech public communication and English-language international research is a contemporary continuation of this older problem. The languages have changed, but the structural question remains: how can knowledge be both locally meaningful and internationally recognised?

The division between Czech and German scholarly institutions in the 19th century produced both empowerment and loss. It empowered Czech-language scholarship by giving it stronger institutional space, especially in higher education and later academy structures. It allowed Czech scholars to teach, publish, organise, and train students in their own language. However, it also contributed to the separation of intellectual communities that had long shared the same urban and regional environment. Czech and German scholars increasingly developed parallel institutions, journals, networks, and cultural narratives. This separation made national science more visible but reduced some forms of bilingual everyday exchange. It also influenced later memory. After the catastrophes of the 20th century, especially Nazi occupation, the Holocaust, and the post-war expulsion of Germans, much of the older multilingual world disappeared or was radically transformed. Modern Czech scientific identity therefore rests on a past that is both inherited and broken. A balanced history must recognise Czech scholarly emancipation while also acknowledging the loss of the older multilingual Central European ecology (*King, 2002*; *Agnew, 2004*).

The linguistic consequences of the 20th century were profound. The First Czechoslovak Republic strengthened Czech and Slovak as languages of statehood, education, administration, and scholarship. German remained important in German-speaking communities and institutions until the Second World War radically altered the social and linguistic landscape. Nazi occupation attacked Czech higher education directly, including the closure of Czech universities, and imposed violent political control over cultural and scientific life. After 1945, the expulsion of Germans transformed the demographic and intellectual structure of the Czech lands. Under communism, Russian gained ideological and institutional importance, while Western languages remained necessary but politically mediated. The Czechoslovak Academy of Sciences was created in this changed linguistic world, where Czech and Slovak formed the domestic framework, Russian connected the socialist bloc, and English, German, and French remained important for international scholarship. This period demonstrates that languages of science are never only intellectual choices. They are shaped by geopolitical power, regime structures, educational policy, and access to networks. The post-1989 transformation of Czech science therefore required not only institutional reform, but also a linguistic reorientation towards open international communication (*Dvořáčková, Franc, & kol., 2019*; *Míšková, Barvíková, & Šmidák, 1998*).

English eventually became the dominant language of global scientific exchange, and this changed the linguistic economy of Czech science after 1989 and especially after 1993. English now functions in many respects as Latin once did: a transnational language that allows scholars from different countries to communicate within shared disciplinary fields. Yet the analogy should not be overstated. English is tied to contemporary global publishing systems, citation metrics, grant competition, academic rankings, and unequal geopolitical structures. Michael Gordin's study of scientific languages shows that global English emerged after a long multilingual history of science and that the current linguistic order is historically recent rather than natural or inevitable (*Gordin, 2015*). For the Czech Academy of Sciences, English offers access to international visibility, European projects, and global collaboration. At the same time, it creates pressure on Czech-language scholarly communication, especially in fields where public relevance depends on domestic readership. The Academy must therefore operate within a new multilingual regime. Czech is indispensable for public responsibility, cultural memory, education, and national expertise. English is indispensable for international scientific recognition. The balance between them is one of the defining challenges of contemporary Czech academic life.

The Academy's official presentation of its history and mission reflects this bilingual modern condition. The Czech Academy of Sciences maintains both Czech and English forms of institutional communication, presenting its genealogy, structure, legal status, annual reports, and strategic programmes to domestic and international audiences. Its official historical overview explicitly connects the present-day Academy with earlier learned institutions and with the Czechoslovak Academy of Sciences. This bilingual self-presentation is historically meaningful. It shows that the Academy speaks simultaneously to Czech society and to the international research community. It continues the older function of academies as mediators between local identity and universal knowledge. In the 18th century, that mediation moved through Latin, German, Czech, and French. In the 21st century, it moves especially through Czech and English, while older languages remain essential for archival and historical work. The linguistic form has changed, but the institutional problem remains recognisable. The Academy must make Czech science legible both at home and abroad.

The role of French in modern Czech science has diminished in comparison with English, but its historical importance should not be underestimated. French shaped the European vocabulary of academies, enlightenment, public reason, sociability, and cultural refinement. It also influenced political thought, diplomacy, historiography, and philosophical discussion across Central Europe. In the 19th and early 20th centuries, French remained a significant language of elite education and international culture. For Czechoslovakia after 1918, French also had diplomatic and cultural significance because of the new republic's orientation towards Western alliances and European recognition. Although German and later English played more direct roles in scientific publication for many fields, French belonged to the wider symbolic geography of European scholarship. It helped Czech intellectuals situate themselves within a Europe not reducible to the German-speaking world. This mattered politically and culturally. It offered another axis of orientation beyond Vienna and Berlin. The multilingual Czech scholarly world therefore included French as a language of prestige, comparison, and international imagination, even when it was not the principal language of everyday academic work.

The study of languages themselves became a major scholarly field in the Czech lands. Czech philology, Slavic studies, German studies, Romance studies, historical linguistics, lexicography, and later structural linguistics all contributed to the scientific understanding of

language as an object of research. This is important because language was not only a medium of exchange; it became a central scientific problem. The Czech lands produced influential linguistic traditions, including the Prague Linguistic Circle in the 20th century, which gained international importance far beyond Czech national scholarship. This development demonstrates the creative potential of multilingual environments. A society that lives between languages may become especially sensitive to language structure, translation, meaning, and communication. The later strength of Czech linguistics did not arise accidentally. It was prepared by centuries of multilingual contact, philological labour, and debates over language status. The Academy tradition, with its concern for Czech language research and institutional scholarly memory, belongs to this broader linguistic history. The scientific study of language became one of the ways in which Czech scholarship turned its own historical condition into an intellectual resource.

Multilingualism also shaped scholarly genres. A Latin dissertation, a German scientific article, a Czech patriotic essay, a French philosophical text, and an English research paper do not differ only in vocabulary. They often belong to different rhetorical traditions, citation cultures, audiences, and expectations of style. Czech scholars moving between languages had to move between genres. This required more than translation; it required rhetorical adaptation. A concept introduced in German idealist philosophy might acquire a different resonance in Czech national discourse. A scientific classification translated from Latin into Czech might require new pedagogical explanation. A French Enlightenment term might carry political associations that differed from its German equivalent. Scholarly communication therefore involved conceptual negotiation. The history of Czech academic science includes many such acts of genre adaptation. This is another reason why linguistic history is central to institutional history. Academies and learned societies did not merely host research; they helped stabilise the genres through which research could be publicly presented.

The connection between multilingualism and public authority is especially visible in the Academy's later role as an institution of national expertise. A public research institution must be able to address citizens, schools, ministries, media, industry, and international partners. Each audience may require a different linguistic and rhetorical mode. Domestic public communication requires Czech clarity and credibility. International collaboration requires English fluency and disciplinary precision. Historical scholarship may require Latin, German, Czech, and other archival languages. European cooperation may require sensitivity to multilingual policy environments. The Academy's authority depends partly on its ability to move across these registers without losing quality. This is a modern continuation of the older multilingual culture of Bohemia and Moravia. The names of languages have changed in importance, but the need for mediation has not. The Czech Academy of Sciences remains an institution that must translate knowledge between scholarly communities and public worlds. Its linguistic competence is therefore part of its scientific mission.

The history of German, Latin, Czech, and French in scholarly exchange also helps explain why the Czech Academy cannot be interpreted simply as a national institution in a narrow sense. It is national because it belongs to the Czech Republic, serves Czech society, preserves Czech scholarly memory, and supports Czech public knowledge. Yet its historical foundations are transnational and multilingual. Its predecessors emerged from European learned society, Habsburg reform, German-language scholarship, Latin university tradition, French Enlightenment models, and Czech national revival. The modern Academy's legitimacy comes not from purity of origin, but from the successful transformation of this complex inheritance

into a coherent research institution. This interpretation is especially important for avoiding simplistic historical narratives. Czech academic science was never isolated. It became Czech through European contact, linguistic mediation, and institutional differentiation. The Academy's history is therefore a history of translation in the broadest sense: translation between languages, institutions, regimes, publics, and scientific cultures.

This linguistic perspective also clarifies the meaning of continuity. Continuity in Czech academic history does not mean that one language, institution, or identity remained unchanged. It means that scholarly work continued through changing linguistic regimes. Latin gave way to German in many contexts; Czech rose as a scholarly language; French mediated Enlightenment and European prestige; Russian entered through socialist geopolitics; English became dominant in global science. Across these changes, the Czech lands preserved and renewed institutions of knowledge. The Academy tradition is one of the main forms of this continuity. It absorbed old scholarly languages into archives, maintained Czech public and cultural responsibility, and adapted to international scientific languages. Its continuity is therefore dynamic, not static. It consists in the ability to survive linguistic transformation without losing institutional memory. This is one of the reasons why the modern Czech Academy of Sciences can claim a long genealogy while still being a contemporary European research organisation.

Thus, German, Latin, Czech, and French functioned as distinct but interconnected languages of scholarly exchange in Bohemia and Moravia. Latin provided the older transnational grammar of university learning and documentary scholarship; German connected the Czech lands with Habsburg administration, Central European science, and 19th-century institutional modernity; Czech became the language of national scholarly self-definition, public education, terminology, and cultural legitimacy; French mediated Enlightenment prestige, academic models, philosophical discourse, and wider European sociability. Later Russian and English transformed this linguistic order again, showing that Czech science has always operated within changing geopolitical languages of knowledge. The Czech Academy of Sciences inherits this entire multilingual history. Its contemporary bilingual and international mission is not a break with the past, but a new form of an old Central European condition: the need to produce knowledge that is locally meaningful, nationally responsible, and internationally communicable. The study of these languages therefore prepares the ground for understanding the emergence of Czech learned institutions, the Royal Bohemian Society of Sciences, and the long movement from multilingual scholarly culture to modern national academic science.

The Emergence of Czech Learned Institutions

1. The Royal Czech Society of Sciences and Its Historical Role

The Royal Czech Society of Sciences occupies a foundational place in the history of Czech academic science because it represents the first durable institutional form through which scholarship in the Czech lands acquired a recognisable collective body. Its importance cannot be reduced to the fact that it was old, prestigious, or later incorporated into the genealogy of

the Czech Academy of Sciences. Its deeper significance lies in the way it connected several historical worlds: the university tradition of Prague, the Enlightenment culture of learned sociability, the multilingual scholarly environment of Bohemia, the practical ambitions of useful knowledge, and the emerging need for a territorial centre of scientific authority. The Society did not arise in an intellectual vacuum. It grew from earlier private circles, university learning, aristocratic and clerical patronage, and the broader European movement towards organised scientific communication. Yet once it acquired a more public institutional form in the late 18th century, it changed the character of scholarship in the Czech lands. Knowledge could now be presented not only by individual scholars, professors, collectors, or clerics, but by a recognised learned corporation. This altered the social position of science. It gave scholarly activity a memory, a membership structure, a public voice, and an institutional continuity that could survive beyond individual careers. The present Czech Academy of Sciences is right to identify the Society as one of its earliest predecessors, because the Society established the basic idea that Czech lands scholarship required a stable learned institution (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*). In this sense, the history of the Society is not merely an introductory episode. It is the first durable chapter in the long institutional formation of Czech academic science.

The Society emerged from the Enlightenment world in which learned association became one of the principal instruments of knowledge-making. Across Europe, academies and learned societies helped to transform dispersed erudition into organised public scholarship. They gathered correspondence, organised meetings, evaluated papers, sponsored publications, maintained libraries, and created new forms of intellectual recognition. The Czech lands participated in this European movement through their own institutional and linguistic conditions. Prague possessed an old university tradition, but the university alone could not satisfy all the needs of Enlightenment scholarship. New forms were required for research, correspondence, publication, historical criticism, natural observation, and collective representation. The Royal Czech Society of Sciences answered that need. It became a place where mathematical, historical, philological, natural-historical, and other inquiries could be gathered under one institutional roof. Its model reflected the European learned society but adapted it to Bohemian conditions. It had to operate within the Habsburg Monarchy, within a multilingual scholarly culture, and within a region where science, history, language, and emerging national consciousness were increasingly interconnected. The Society therefore belongs simultaneously to European Enlightenment history and to the specific genealogy of Czech academic institutions. Its historical role is best understood as a bridge between older learned culture and later national academic organisation (*McClellan, 1985*; *Pokorná, 2010*).

The origins of the Society are complex because it did not appear fully formed in a single moment. Its prehistory is usually connected with private learned activity in Prague in the second half of the 18th century, especially with circles devoted to mathematics, patriotic history, natural history, philology, and the study of the Bohemian lands. Sources often describe a formative process rather than a single act of foundation: a private learned society took shape before being transformed into the Bohemian or Czech Society of Sciences in 1784, and the royal designation was attached in 1790 (*Pokorná, n.d.*; *Učená společnost České republiky, n.d.*). This gradual development matters because it shows that institutionalisation was a process of maturation. A group of scholars and patrons had first to create habits of cooperation, define fields of interest, establish trust, and demonstrate usefulness before the society could acquire stronger public authority. The movement from private learned sociability

to recognised public institution reflects a wider Enlightenment pattern. Knowledge was becoming less dependent on isolated patrons or informal circles and more dependent on corporate structures capable of continuity. The Society's history therefore begins not with bureaucracy, but with intellectual sociability. It became an institution because a scholarly community had already formed around shared concerns. Its later prestige was built on this earlier culture of association.

The year 1784 is especially significant because it marks the Society's recognised institutional consolidation as the oldest long-lasting learned society in the line of the present Czech Academy of Sciences. Official accounts of AV ČR emphasise the Royal Czech Society of Sciences as an institution existing from 1784 to 1952 and encompassing both the humanities and the natural sciences (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*). This breadth is crucial. The Society was not a narrow professional association dedicated to one discipline. It reflected an Enlightenment conception of knowledge in which mathematics, astronomy, natural history, medicine, history, philology, and antiquarian studies could belong to one larger project of learned improvement. Such breadth also made the Society an ancestor of later academy structures that joined several fields within a single institutional framework. The modern Czech Academy of Sciences, with its divisions covering natural, technical, medical, social, and human sciences, is obviously a much more complex institution. Yet the older idea of gathering different forms of knowledge under one scholarly authority is already visible in the Society. The Society's historical importance therefore lies not only in chronological priority, but in its interdisciplinary institutional imagination. It created a Czech lands version of the European idea that knowledge should be organised, preserved, and publicly represented through a learned corporate body.

The founders and early members of the Society reveal its intellectual profile. The official history of the Czech Academy of Sciences names Josef Dobrovský, Gelasius Dobner, and Joseph Stepling among the founders of the Royal Czech Society of Sciences (*Akademie věd České republiky, n.d.*). This combination is highly instructive. Dobrovský symbolises philology, language study, and the scholarly foundations of Czech cultural revival. Dobner represents critical historical scholarship and the rigorous examination of Bohemian historical sources. Stepling represents mathematics, astronomy, and the scientific culture connected with Prague's university and observatory traditions. Taken together, these figures show that the Society was not merely literary, patriotic, or natural-scientific; it integrated several forms of disciplined inquiry. It united the study of nature and the study of historical-cultural memory. It also connected empirical observation with textual criticism. This intellectual mixture would later become one of the lasting strengths of Czech academic culture. In the Czech lands, the institutionalisation of science was never limited to the natural sciences alone. It included language, history, archives, and cultural self-understanding from the beginning. The Society's founding generation therefore established a broad model of scholarship that would remain important for later Czech academic institutions (*Pokorná, 2010*; *Franc, Kostlán, & Míšková, 2010*).

The role of Josef Dobrovský deserves special attention because he embodied the connection between scholarship, language, and national-cultural modernisation. Dobrovský was not a nationalist writer in the later romantic sense; he was above all a critical scholar, philologist, historian of language, and intellectual organiser. His importance lies precisely in the fact that the Czech national revival required rigorous scholarship before it could become a mature cultural movement. A language cannot acquire modern scholarly authority merely by being

loved; it must be studied, described, codified, historicised, and equipped for intellectual work. Dobrovský's philological labour contributed to this process. Within the context of the Society, his presence shows that language scholarship was a central part of learned institutional life. The Society therefore helped support the conditions under which Czech could gradually become a modern scholarly language. This does not mean that the early Society was already a Czech-language national academy in the later sense. It was still deeply multilingual and strongly connected with German and Latin scholarly cultures. Yet it provided an institutional place where the historical and linguistic foundations of Czech culture could be studied with scholarly seriousness. This made it an essential precursor to later Czech academic identity (*Macura, 1995*; *Sayer, 1998*).

Gelasius Dobner's role points to another important dimension: the rise of critical historical scholarship. Czech national culture could not rely only on legend, memory, or inherited chronicle traditions. It needed historical criticism, source analysis, documentary work, and methodological discipline. Dobner's work in Bohemian historical scholarship contributed to the transformation of history from patriotic recollection into critical inquiry. This was especially significant in a region where historical memory played a central role in cultural self-definition. The Society provided a setting in which such work could acquire authority. Historical research was not simply a private antiquarian pursuit; it became part of organised learned activity. This gave the study of the Czech past an institutional form. It also connected Bohemian historical scholarship with broader European practices of Enlightenment source criticism. The importance of this development should not be underestimated. Later Czech academic history, archaeology, philology, and cultural studies all depended on the idea that national memory must be documented and critically examined. The Royal Czech Society of Sciences helped to establish that principle at an early stage (*Franc, Kostlán, & Míšková, 2010*; *Pokorná, 2010*).

Joseph Stepling's presence among the founding figures links the Society to the mathematical and observational sciences. Stepling's association with Prague's university and observatory traditions reflects the importance of astronomy, mathematics, and measurement in Enlightenment scholarship. These fields required instruments, records, calculations, and institutional support. They also connected local observation to wider European networks. An astronomical observation made in Prague could matter beyond Prague if it was recorded and communicated according to recognised standards. This gave the Society an important natural-scientific dimension. It was not merely a guardian of historical memory or language scholarship; it also belonged to the European movement towards empirical, mathematical, and observational knowledge. In this respect, the Society continued the scientific culture associated with the Klementinum, university mathematics, and Prague's Enlightenment observational practices. The later Czech academy tradition would repeatedly combine humanistic scholarship with strong natural-scientific ambitions. Stepling's place in the Society's genealogy shows that this combination was present from the beginning. The Society's historical role was therefore to organise knowledge of both culture and nature.

The Society's foundation also reflected the social structure of Enlightenment scholarship. Learned societies depended not only on scholars, but also on patrons, officials, printers, librarians, and members of educated elites. The work of science required material and social support. Meetings needed space; publications needed money; correspondence needed networks; libraries needed catalogues; collections needed care; scholarly authority needed recognition. The Royal Czech Society of Sciences developed within a world in which aristocratic patronage, state approval, university competence, and civic prestige all mattered.

Its later acquisition of the "Royal" designation in 1790 strengthened its symbolic and institutional position, linking learned activity with monarchical recognition (*Učená společnost České republiky, n.d.*). This royal status did not make the Society simply an instrument of the state. Rather, it placed it within the Enlightenment pattern in which scholarly autonomy and official recognition coexisted uneasily but productively. The Society needed legitimacy, and recognition from the ruler helped provide it. At the same time, its authority depended on the quality and seriousness of its scholarly work. This dual basis of legitimacy — state recognition and scholarly competence — would remain important in later academy history.

The Society was also historically important because it gave the Czech lands a learned institution comparable to those found in other European centres. European scientific culture in the 18th century was increasingly organised through academies, societies, journals, prize competitions, and correspondence networks. To lack such an institution was to risk marginality in the European republic of letters. The Royal Czech Society of Sciences helped prevent Prague and the Bohemian lands from becoming merely passive recipients of foreign knowledge. It allowed local scholars to gather, publish, communicate, and represent their work collectively. This mattered for both prestige and practical scholarship. The Society could receive and transmit knowledge, but it could also produce knowledge about the Bohemian lands for wider European audiences. Its existence signalled that the region possessed an organised intellectual life. It also helped transform Prague from an old university city into a modern learned centre. The Society therefore strengthened the European visibility of Czech lands scholarship. It made local knowledge institutionally communicable. In this sense, the Society was not only a domestic institution; it was part of the European infrastructure of scientific exchange (*McClellan, 1985*; *Pokorná, n.d.*).

The Society's multilingual character was central to its role. It emerged in a Bohemian environment in which Latin, German, Czech, and other languages all shaped scholarly exchange. German was especially important in learned and administrative communication, while Latin retained older academic prestige and Czech gradually gained stronger cultural and scholarly significance. The Society therefore cannot be understood as an originally monolingual Czech national academy. Its early identity was territorial, Enlightenment-oriented, and learned rather than exclusively national in the later 19th-century sense. This is precisely why it is historically important. It shows how Czech academic identity emerged from a multilingual Bohemian matrix. Scholarship about the Czech lands could be carried out in German or Latin before Czech became the dominant symbol of national intellectual emancipation. The Society's later place in Czech institutional memory reflects a process of reinterpretation, not a simple identity from the beginning. This does not weaken its role as a predecessor of the Czech Academy of Sciences. On the contrary, it shows that Czech science was formed through translation, mediation, and transformation within a multilingual Central European world (*Agnew, 2004*; *Sayer, 1998*).

The Society's connection with public knowledge was another important element of its historical role. Enlightenment learned societies often justified themselves through the language of usefulness and improvement. They were expected to contribute not only to abstract scholarship, but to the better understanding of the country, its natural resources, history, language, economy, and educational needs. The Royal Czech Society of Sciences participated in this culture. Its broad disciplinary profile allowed it to connect natural observation, historical research, mathematical knowledge, philology, and public learning. This meant that it could serve several publics: scholars, educated elites, state officials, teachers,

and eventually a broader national public. Such public orientation would become increasingly important in later Czech academic history. The modern Czech Academy of Sciences' language of research in the public interest has very different institutional and political conditions, but it echoes an older expectation that organised knowledge should matter beyond the walls of scholarship (*Strategie AV21, 2017*). The Society therefore established one of the early forms of the relationship between scholarship and public responsibility in the Czech lands. It helped create a tradition in which academic authority had a civic dimension.

The Society's publications were crucial to its authority. A learned society becomes historically durable not only by meeting, but by leaving records. Publications transform oral exchange into documentary memory. They allow papers, reports, observations, and studies to circulate beyond the immediate audience of a meeting. They also allow later scholars to reconstruct the intellectual priorities of the institution. The Royal Czech Society of Sciences produced publications that placed Bohemian scholarship within a printed learned culture. These publications connected the Society with European practices of proceedings, memoirs, and scholarly series. They also helped stabilise the institution's memory. A society without publications can be remembered only through scattered references, but a society with publications becomes part of the archive of science. The importance of this documentary role is especially clear today, because digital libraries preserve and make accessible many older academy-related materials. The Society's printed record is therefore part of the long documentary lineage that eventually leads to the academic bulletins, annual reports, and digital collections of AV ČR (*Digitální knihovna AV ČR, n.d.*; *Masarykův ústav a Archiv AV ČR, n.d.*).

Membership gave the Society another form of authority. Learned societies defined communities of recognised competence by admitting members, corresponding members, and honorary figures. Such membership did not merely reflect existing reputation; it helped produce reputation. To be associated with a learned society meant to be placed within an institutional network of scholarly credibility. In the case of the Royal Czech Society of Sciences, membership also helped connect local scholars with wider European intellectual circuits. Lists of members, such as 19th-century commemorative materials, are therefore more than administrative records. They reveal the social and intellectual geography of scholarship. They show who was recognised, which disciplines were represented, how networks expanded, and how the Society situated itself within the larger world of knowledge (*Wegner, 1884*). Membership also created continuity. Even as individual scholars died, the institution could renew itself through new admissions and preserve the memory of earlier generations. The Society thus became a mechanism for transferring scholarly authority across time. It helped create a lineage of learned work in the Czech lands.

The Society's institutional continuity from the late 18th century to 1952 is remarkable because it survived political regimes, social transformations, linguistic conflicts, and changing models of science. It existed under Habsburg rule, during the national revival, through the rise of modern Czech political life, across the First Czechoslovak Republic, under Nazi occupation, and into the early communist period before being absorbed into the Czechoslovak Academy of Sciences. Such longevity makes it an exceptional institution in Czech scientific history. Yet continuity should not be misunderstood as sameness. The Society's character changed over time as Czech national culture strengthened, as universities and museums developed, as specialisation increased, and as new institutions such as the Czech Academy of Sciences and Arts emerged. Its relative importance also changed. What began as a central learned body in a

less differentiated scholarly landscape later existed alongside more specialised and more powerful institutions. Nevertheless, its survival preserved an institutional memory of Enlightenment scholarship. When it was incorporated into the new socialist academy structure in 1952, a long era of learned society culture came to an end. The modern Academy's genealogy therefore includes both continuity and institutional closure (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*).

The Society's relationship with the Czech National Revival was complex. It was not founded as an organ of national revival in the later 19th-century sense, but it provided a scholarly environment in which the historical and linguistic foundations of the revival could be studied. This distinction is essential. The Society's early multilingual and Enlightenment character predated the more developed national movement. Yet its work in history, philology, and knowledge of the Bohemian lands contributed to the intellectual conditions of national awakening. It gave scholarly seriousness to questions of language, history, and cultural memory. Figures connected with the Society helped demonstrate that Czech culture could be an object of critical study and not merely patriotic sentiment. Later national revivalists could draw on this scholarly foundation. The Society therefore functioned as a bridge between Enlightenment learned culture and national cultural modernisation. It did not create the national revival alone, but it helped provide the documentary and intellectual materials from which Czech national scholarship could grow (*Macura, 1995*; *Sayer, 1998*). Its historical role is therefore both pre-national and proto-national.

The Society's relation to the state also changed over time. Under the Habsburg Monarchy, it operated within a framework where official approval, patronage, and imperial recognition mattered. The royal designation of 1790 strengthened its status and helped support its activities. In the 19th century, however, the Society also became part of a wider field of Czech cultural and institutional self-assertion. Under the First Czechoslovak Republic, its relationship to statehood changed again, because Czech scholarship now operated within a state that claimed Czech and Slovak political legitimacy. Under Nazi occupation and communist transformation, the conditions of academic autonomy changed dramatically. These shifts reveal a fundamental feature of learned institutions: they survive by negotiating with changing political orders. The Society's authority was never isolated from power, but it was not reducible to power either. It maintained scholarly functions across changing regimes. This capacity to survive political transformation would later become one of the key themes in the history of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences. The Society provides the earliest long-term example of such institutional endurance.

The Society's broad disciplinary character also shaped the later idea of an academy in the Czech lands. The Czech Academy of Sciences and Arts, founded in the late 19th century, would develop a different institutional form and stronger national-cultural symbolism, but it did not emerge without precedent. The Society had already established the possibility of a learned institution that gathered several fields and spoke with scholarly authority. Jan Evangelista Purkyně's later proposal for an autonomous non-university scientific institution, noted in institutional portraits of the Academy, belongs to a 19th-century development of the same larger question: how should research be organised outside the university? (*ALLEA, 2008*). The Society was not a modern research academy in the 20th-century sense, but it prepared the institutional imagination for such projects. It showed that a learned body could stand beside the university, organise research, and represent science publicly. Later institutions would professionalise, specialise, and bureaucratise this model. But the underlying idea — that

scholarship needs a durable non-university corporate form — had already entered Czech lands culture through the Society.

The Society also matters because it demonstrates the importance of the humanities within the history of science. Modern readers sometimes imagine the history of academies chiefly through physics, chemistry, biology, mathematics, or technological research. The Royal Czech Society of Sciences reminds us that Czech academic science developed through an older unity of natural and humanistic scholarship. Philology, history, antiquarian research, and language study were not secondary cultural ornaments. They were central to the formation of scholarly authority in the Czech lands. This is especially important because the Czech academic tradition has always been deeply connected with questions of language, historical memory, and cultural identity. The modern Czech Academy of Sciences continues to include institutes devoted to humanities and social sciences alongside natural and technical research. That structure has deep historical roots. It reflects a long understanding that knowledge of society, language, and the past is part of national scientific capacity. The Royal Czech Society of Sciences helped establish this broad understanding at the beginning of institutional academic history in the Czech lands (*Franc, Kostlán, & Míšková, 2010*).

At the same time, the Society's natural-scientific dimension should not be understated. Mathematics, astronomy, natural history, medicine, and related fields were essential to its Enlightenment profile. These disciplines connected Prague and the Czech lands with the European culture of observation, classification, measurement, and useful knowledge. They also linked scholarship with practical concerns such as education, health, agriculture, geography, and understanding of the natural environment. The Society's inclusion of natural sciences meant that it was not merely a patriotic historical association. It belonged to the European scientific movement that sought to make nature intelligible through disciplined inquiry. This natural-scientific component later became increasingly important as research became more specialised and laboratory-based. The Czechoslovak Academy of Sciences would eventually organise extensive institutes in mathematics, physics, chemistry, biology, and technical sciences. The modern Czech Academy of Sciences would inherit and transform those capacities. The roots of this broad scientific orientation can be traced back to the Society's early integration of natural and humanistic inquiry.

The Society's relation to Prague was central, but its significance was not purely local. Prague gave the Society its historical environment: the university, libraries, learned circles, observatory traditions, printing, and administrative visibility. Yet the Society's intellectual horizon extended beyond the city. It concerned the Bohemian lands and later contributed to the wider Czech scholarly tradition. Its name and activities reflected a territorial conception of knowledge: the study of the country, its history, language, nature, and intellectual life. This territorial orientation was important because it helped convert local and regional materials into scholarly objects. Bohemian history, natural resources, language, and culture became subjects of organised inquiry. Prague functioned as the institutional centre from which such inquiry could be coordinated and represented. In this sense, the Society helped create a scientific image of the land itself. It contributed to the transformation of Bohemia from a historical territory into an object of disciplined scholarship. That transformation would later support both national culture and modern research administration.

The Society's limitations must also be recognised. Like most learned societies of its period, it was socially selective, elite, and limited in its accessibility. It did not represent the broad

population, and it did not operate according to modern democratic ideals of research inclusion. Its early scholarly world was shaped by gender exclusion, social hierarchy, linguistic privilege, and dependence on patrons and official recognition. These limitations do not diminish its importance, but they prevent a purely celebratory narrative. The Society was a product of Enlightenment elite culture, not a modern public research institution. Its authority rested on learned status and social credibility as much as on institutional procedure. Its multilingual character could be inclusive for some scholars and exclusionary for others. Its use of German and Latin could connect it with Europe while distancing it from Czech-speaking publics. A balanced history must therefore show the Society as both pioneering and limited. It opened a path towards institutional science, but it did so within the social constraints of its time.

The Society's later incorporation into the Czechoslovak Academy of Sciences in 1952 symbolised a major shift from learned society culture to state-organised research. The socialist academy model differed profoundly from the older society model. ČSAV was a centralised, state-supported, institute-based research organisation shaped by 20th-century planning, political authority, and the Soviet academy pattern. The Royal Czech Society of Sciences, by contrast, belonged to the older European tradition of learned association, membership, publication, and broad scholarly sociability. The absorption of the Society into ČSAV therefore represented not only institutional succession, but also the end of one model of academic life. Yet the succession was not meaningless. It transferred historical memory into a new organisational framework. The modern Czech Academy of Sciences, established after the dissolution of Czechoslovakia, later inherited both lines: the older learned society tradition and the 20th-century institute-based academy tradition. This dual inheritance is one of the reasons why the Academy's history is so rich. It combines Enlightenment learned sociability, national scholarly culture, socialist research infrastructure, and post-1993 democratic modernisation (*Dvořáčková, Franc, & kol., 2019*; *Akademie věd České republiky, n.d.*).

The Society's historical role can therefore be described as foundational, mediating, and symbolic. It was foundational because it created the first durable learned institution in the Czech academic genealogy. It was mediating because it connected university scholarship, Enlightenment sociability, multilingual communication, state recognition, and emerging national-cultural scholarship. It was symbolic because later institutions could look back to it as evidence that organised science in the Czech lands had deep roots. This symbolic function mattered especially after later ruptures. When the modern Czech Academy of Sciences presents its history, the Society provides an origin that predates socialism, Czechoslovakia, and even modern Czech statehood. It places Czech science within the longer European history of academies and learned societies. At the same time, the Society's multilingual and territorial character prevents a simplistic national origin story. It reminds us that Czech academic science emerged from a complex Bohemian and Central European past. Its symbolism is therefore powerful precisely because it is historically layered. It provides continuity without erasing transformation.

For the purposes of this book, the Royal Czech Society of Sciences is important not only as a subject of early institutional history, but as an interpretative key. It shows that the Czech Academy of Sciences should not be understood only through the post-1993 period or through the Czechoslovak Academy of Sciences. The Academy's deeper genealogy includes older forms of scholarly association, public knowledge, and cultural self-understanding. The Society reveals the first durable attempt to organise research and scholarship in the Czech lands in a

corporate form. It also shows that the later Academy's combination of natural sciences, humanities, public mission, and institutional memory has long historical roots. The Society helps explain why Czech academic science cannot be separated from language, history, territory, and European communication. It also helps explain why the modern Academy can claim continuity across very different institutional forms. The Royal Czech Society of Sciences was not yet a modern academy of public research institutes. But it made the idea of such an academy historically conceivable. It gave Czech lands scholarship its first durable learned body.

Thus, the Royal Czech Society of Sciences was the first major institutional expression of organised scholarly life in the Czech lands and one of the essential predecessors of the modern Czech Academy of Sciences. It transformed private learned sociability into a recognised public institution, connected Prague scholarship with European Enlightenment models, and gathered the humanities and natural sciences within a single learned framework. Its founders and early members represented the broad intellectual profile of Czech lands scholarship: philology, history, mathematics, astronomy, natural history, and public learning. Its multilingual character reflected the real conditions of Bohemian and Moravian science, while its later interpretation within Czech institutional memory shows how a territorial learned society became part of a national academic genealogy. The Society's long survival from the late 18th century to 1952 preserved a line of scholarly continuity across monarchy, national revival, democratic statehood, occupation, and early socialism. It was neither a modern research academy nor a purely national institution at its origin, but it created the institutional grammar from which later Czech academies could develop. Its historical role was therefore to make scholarship durable, collective, public, and memorable. In the long history of the Czech Academy of Sciences, it stands as the first lasting form of academic continuity.

2. Learned Societies as Predecessors of Modern Academic Organisation

Learned societies were among the most important institutional predecessors of modern academic organisation because they created the first durable collective forms through which scholarship could be gathered, recognised, recorded, and transmitted. They were not yet modern research academies in the 20th-century sense, and they were not usually institute-based systems with permanent laboratories, salaried research staff, administrative departments, and national research strategies. Their importance lies elsewhere. They introduced the habits and structures without which later academies could not have developed: membership, regular meetings, scholarly correspondence, collective discussion, publication series, prize questions, libraries, archives, committees, and procedures of recognition. In the European history of science, these societies transformed the scholar from an isolated learned individual into a member of a recognised intellectual body. They also helped turn knowledge from personal erudition into an institutional process. A learned claim could be heard, examined, circulated, preserved, and cited through the authority of a society. This was a decisive step towards modern academic culture. In the Czech lands, the Royal Czech Society of Sciences played precisely this role, standing between the university tradition, Enlightenment learned sociability, and the later academy system (*McClellan, 1985*; *Pokorná, 2010*). Its historical significance therefore lies not only in what it produced, but in the organisational model it made possible.

The learned society emerged as a flexible form of scholarly organisation before the modern research institute became dominant. Unlike medieval universities, learned societies were not primarily teaching corporations. Unlike courts, they were not merely circles of patronage. Unlike private correspondence networks, they had a more visible and durable institutional form. They could meet regularly, elect members, preserve minutes, sponsor publications, and represent scholarship publicly. This combination made them especially suitable for the needs of early modern and Enlightenment science. Knowledge was becoming more empirical, more comparative, more dependent on communication, and more connected with public usefulness. Individual scholars could observe, calculate, collect, or interpret, but learned societies gave these activities collective continuity. They created a structure in which knowledge could be accumulated across several generations. This was especially important in fields such as astronomy, natural history, history, philology, medicine, and mathematics, where long-term comparison and documentary preservation mattered. The learned society was therefore not merely a social club for cultivated elites. At its best, it was an early infrastructure of organised research (*Burke, 2000*; *McClellan, 1985*).

One of the most important organisational contributions of learned societies was the formalisation of membership. Membership created a recognised community of scholarly authority. It distinguished those admitted to the society from the wider world of educated readers, amateurs, collectors, officials, teachers, and patrons. This distinction was not always democratic or fair, and early learned societies often reflected social hierarchies, gender exclusion, confessional boundaries, and linguistic privilege. Nevertheless, membership gave scholarship a collective body. It created categories of belonging: ordinary members, corresponding members, foreign members, honorary members, patrons, and associates. These categories made it possible to connect local scholarship with wider intellectual networks. A scholar who could not attend meetings might still participate through correspondence. A foreign member could link one society to another centre of science. A patron could supply prestige and resources. Membership was therefore both symbolic and practical. It helped define who possessed recognised competence, but it also created channels through which knowledge could move (*McClellan, 1985*; *Shapin, 1994*).

Regular meetings were another key inheritance from learned societies to modern academic organisation. The meeting transformed scholarship into a collective practice. It created a space where papers could be read, observations reported, discoveries discussed, objections raised, and institutional decisions made. Before such meetings became regularised, much scholarship depended on correspondence, private reading, university disputation, or patronage circles. The learned society gathered these energies into a repeating institutional rhythm. This rhythm mattered because it made inquiry continuous. A meeting calendar gave scholarship a temporal structure. Scholars were encouraged to prepare reports, present findings, respond to criticism, and remain connected to an intellectual community. The meeting also produced records: minutes, summaries, correspondence, and later printed proceedings. These records became part of the society's memory. In this way, the learned society created a bridge between oral discussion and archival preservation. Modern academic committees, seminars, colloquia, institute councils, peer-review panels, and academy assemblies all inherit something from this older culture of organised scholarly meeting.

Publication was perhaps the most decisive instrument through which learned societies became predecessors of modern academic organisation. A society that met but did not publish remained limited in its influence. Publication allowed local scholarship to become part of

wider intellectual circulation. Proceedings, memoirs, transactions, journals, reports, prize essays, and catalogues transformed temporary discussions into durable records. They also established a society's public reputation. The Royal Society's *Philosophical Transactions* became a classic example of how a learned body could support scientific communication through serial publication, while continental academies developed memoirs and proceedings that gave institutional authority to research outputs (*Royal Society, n.d.*; *McClellan, 1985*). In the Czech lands, publications of the Royal Czech Society of Sciences helped make Bohemian scholarship visible and preservable. Such publications were not only containers of information. They established standards of presentation, citation, disciplinary style, and institutional endorsement. A paper published under the auspices of a society carried a different kind of authority from a private pamphlet. It bore the mark of collective recognition.

Learned societies also created the early documentary habits of modern academic life. They preserved correspondence, minutes, lists of members, financial accounts, manuscript submissions, reports, and printed works. These documents may appear secondary to discoveries themselves, but they are essential for institutional continuity. Without them, the history of scholarship becomes a sequence of isolated names and texts. With them, it becomes possible to reconstruct networks, priorities, conflicts, procedures, and transformations. The archive of a learned society is therefore one of the foundations of academic memory. It allows later generations to understand not only what scholars knew, but how they organised knowing. The Czech academic tradition has depended heavily on such documentary preservation. The archival collections of the Masaryk Institute and Archives of the Czech Academy of Sciences, together with digital library collections, make visible the long continuity from learned societies to modern academy structures (*Masarykův ústav a Archiv AV ČR, n.d.*; *Digitální knihovna AV ČR, n.d.*). In this respect, learned societies were not only producers of knowledge. They were producers of the archive of knowledge.

Prize competitions and calls for essays represented another important organisational device. Many Enlightenments learned societies used prize questions to direct attention towards particular scientific, practical, moral, economic, linguistic, or historical problems. This practice allowed societies to shape research agendas without employing researchers in the modern sense. A society could ask a question and thereby stimulate inquiry across a wide intellectual field. Prize competitions encouraged scholars to respond to shared problems, compare methods, and present arguments in disciplined written form. They also connected scholarship with public usefulness. Questions could concern agriculture, medicine, industry, education, language, natural history, history, or political economy. The society thus became not only a receiver of knowledge but a generator of research direction. This is an important precursor of modern research programming. Contemporary academies and grant agencies use more elaborate procedures, but the older principle is recognisable: institutions define problems, invite responses, evaluate results, and distribute recognition. Learned societies therefore anticipated later academic mechanisms for steering research priorities (*McClellan, 1985*).

The committee was another institutional form that learned societies helped normalise. Committees could examine manuscripts, evaluate inventions, inspect collections, prepare reports, manage publications, arrange finances, or correspond with external authorities. In doing so, they transformed scholarly judgement into a collective administrative procedure. This was crucial for the development of modern academic organisation. A committee is not merely a bureaucratic convenience; it is a mechanism through which individual expertise

becomes institutional judgement. Early committees were often informal by contemporary standards, but they introduced the principle that scholarly matters could be delegated to recognised groups of competent members. Later academies, universities, grant agencies, and research institutes would develop this principle into elaborate systems of councils, boards, commissions, panels, and review bodies. The learned society therefore contributed to the proceduralisation of scholarship. It made academic judgement less purely personal and more institutional. This did not eliminate bias, faction, or hierarchy, but it created a framework in which decisions could be recorded and justified. Modern research governance still depends on this inherited logic.

Learned societies were also important because they mediated between amateurs and professionals before the modern scientific profession was fully consolidated. In the 18th and early 19th centuries, the boundaries between professional scientist, educated amateur, collector, physician, teacher, cleric, noble patron, state official, and university professor were often fluid. Learned societies could bring these figures together. This made them socially broad within elite limits. They allowed people with different forms of expertise and resources to contribute to scholarship. A noble might sponsor collections; a physician might report medical observations; a clergyman might collect linguistic or botanical data; a professor might present mathematical research; a librarian might provide access to sources. The modern research academy later became more professionalised and specialised, but it inherited from learned societies the idea that knowledge requires organised cooperation among different roles. In the Czech lands, this mixed social composition was especially important because early scholarly culture depended on university figures, clerical scholars, aristocratic patrons, and civic intellectuals. The learned society provided a common institutional frame for these otherwise dispersed actors.

The relationship between learned societies and universities was especially significant. Universities possessed older legal status, teaching functions, degrees, faculties, and established curricula. Learned societies were more flexible, often less bound by teaching obligations, and better suited to research, correspondence, publication, and public discussion. They did not replace universities; they complemented and sometimes challenged them. In Prague, this relationship was essential. Charles University gave the city deep scholarly continuity, but the Royal Czech Society of Sciences gave research and learned communication a different institutional form. It allowed inquiry to move beyond faculty structures and formal instruction. It created a place where natural sciences, history, philology, mathematics, and other fields could be discussed as part of a broader learned project. This relationship between university and learned society anticipated later tensions and collaborations between universities and academy-based research. The 20th-century relationship between Charles University and the Czechoslovak Academy of Sciences had very different political and institutional conditions, but it was not without historical precedent (*Jareš, Franc, & kol., 2018*). Czech science developed through the coexistence of educational and research institutions.

Learned societies also prepared the way for the modern academy by cultivating public authority. A society could speak in a collective voice. It could issue reports, publish volumes, award prizes, correspond with authorities, and represent scholarship before the public. This collective voice gave knowledge a public status that private scholarship lacked. It also made science and scholarship useful to state and civic life. Governments, municipal authorities, patrons, and educational institutions could treat a learned society as a source of recognised expertise. This was one of the early forms of the expert institution. The society stood between

individual scholars and political power. It could advise, inform, legitimise, and sometimes criticise. In the European Enlightenment, this role was especially important because states increasingly valued knowledge for reform, administration, economy, education, and public health (*Hahn, 1971*; *McClellan, 1985*). In the Czech lands, learned societies helped establish the idea that organised scholarship could serve the country. This idea would later reappear in national academies, state research institutes, and the modern Czech Academy's public-interest mission.

The learned society also created an institutional form for territorial knowledge. Many societies were concerned with the study of their own region: its history, language, natural resources, climate, flora, fauna, population, monuments, economy, and legal traditions. This territorial orientation was essential in the Czech lands. The Royal Czech Society of Sciences helped organise knowledge about Bohemia as a historical, natural, and cultural space. It supported the transformation of local materials into scholarly objects. A chronicle, manuscript, mineral collection, botanical observation, linguistic form, or historical document could acquire broader meaning when studied within a learned institutional framework. This was not yet modern national science in the full 19th-century sense, but it prepared the ground for it. Territorial scholarship created the evidence from which national scholarship could later build more self-conscious interpretations. The learned society therefore helped convert place into knowledge. In the Czech case, this meant that Bohemia and Moravia could be studied not only as provinces within larger political structures, but as historical and cultural lands with their own scholarly significance (*Franc, Kostlán, & Míšková, 2010*; *Pokorná, 2010*).

This territorial function also explains why learned societies often combined natural sciences and humanities. To understand a country meant to study both its natural environment and its historical-cultural inheritance. Natural history described plants, animals, minerals, climate, and landscape. Historical scholarship examined chronicles, charters, institutions, and political traditions. Philology studied language, literature, and textual memory. Statistics, medicine, agriculture, and technical knowledge addressed the practical improvement of society. The learned society could gather all these forms because it did not yet operate under the strong disciplinary separation characteristic of later modern research. This breadth was one of its strengths. It allowed knowledge of the land to be comprehensive. The modern academy later inherited this broad ambition, even though disciplines became more specialised. The Czech Academy of Sciences still contains natural, technical, medical, social, and human sciences within one institutional framework. That structure can be traced back, conceptually, to the learned society's broad understanding of knowledge as an integrated public good. The Royal Czech Society of Sciences was therefore an early institutional expression of the unity of scholarship.

The learned society also provided a form of continuity before the rise of modern national research systems. In the 18th century, there was no Czech state and no national research policy in the modern sense. Yet learned societies could preserve and develop scholarship across political conditions. They gave intellectual life a degree of stability independent of immediate political sovereignty. This was crucial for cultures whose political and cultural institutions did not fully coincide. In the Czech lands, scholarly institutions helped maintain cultural and intellectual continuity within the Habsburg Monarchy. They created spaces where the history, language, and nature of the Bohemian lands could be studied systematically. Later, when Czech national culture gained strength, these institutions could be reinterpreted as part of a national academic genealogy. The learned society thus functioned as a kind of cultural

infrastructure before modern statehood. It did not replace political institutions, but it supported the intellectual foundations from which political and cultural self-understanding could develop. This is one of the reasons why the history of Czech academies cannot be separated from the history of Czech national development (*Agnew, 2004*; *Sayer, 1998*).

At the same time, learned societies were not modern democratic institutions. Their membership was selective, often male, socially elite, and linguistically limited. They depended on patrons, rulers, educated classes, and established networks. Their authority was built partly on social hierarchy as well as scholarly competence. This fact must be acknowledged because it prevents the history of learned societies from becoming idealised. They opened new possibilities for collective knowledge, but they did not include everyone. They advanced scholarly communication, but they also reflected inequalities of access. They preserved knowledge, but they also preserved the perspectives of those admitted into their circles. Their publications and archives tell us much about elite scholarship but less about popular knowledge, women's intellectual labour, artisans' technical expertise, or marginal communities. Modern academic organisation inherited both the strengths and the exclusions of learned societies. The later professionalisation of science expanded certain forms of competence while creating new forms of exclusion. A critical history of academic organisation must therefore treat learned societies as both enabling and limited institutions (*Shapin, 1994*; *Burke, 2000*).

The development from learned society to modern academy involved increasing professionalisation. In early societies, scholars often held other positions as clergy, professors, physicians, officials, or patrons. Over time, research became more specialised, more technical, and more dependent on permanent institutional support. Laboratories, museums, observatories, archives, libraries, field stations, and technical equipment required funding and staff. The learned society could support publication and recognition, but it was not always sufficient for sustained research infrastructure. This is why the 19th and 20th centuries saw the growth of more formal academies, research institutes, university laboratories, state museums, and specialised societies. In the Czech lands, the Czech Academy of Sciences and Arts and later the Czechoslovak Academy of Sciences represented more advanced forms of academic organisation. Yet they did not emerge from nowhere. They developed out of the organisational grammar established by learned societies. Membership, publication, interdisciplinary representation, public authority, and institutional memory all remained central. Professionalisation changed the form of academic life, but it did not erase its learned-society origins.

The relationship between learned societies and modern academies can also be seen in their shared concern with recognition. Both types of institution define who and what counts as scholarly. Learned societies elected members and published papers; modern academies appoint researchers, evaluate institutes, support projects, award prizes, and issue expert statements. The procedures have changed, but the underlying function remains similar. Academic organisation is partly an economy of recognition. It identifies excellence, preserves reputations, establishes canons, and creates institutional memory. The Royal Czech Society of Sciences helped create this economy in the Czech lands. Its membership lists, publications, and commemorations gave scholarly work a recognised place. Later academies would inherit this function on a larger and more specialised scale. The modern Czech Academy of Sciences still performs recognition through institutional appointments, research evaluation, awards, public representation, and historical commemoration. This continuity shows that learned

societies were not merely predecessors in a chronological sense. They established functions that remain central to academic organisation today.

Learned societies also contributed to the development of academic self-narration. Institutions need histories in order to understand themselves. Anniversaries, commemorative volumes, lists of members, portraits, and historical essays create a sense of continuity. They tell later generations that they belong to a tradition. The Royal Czech Society of Sciences produced and inspired such commemorative memory, including 19th-century membership lists and later historical reflections (*Wegner, 1884*; *Vesmír, 1995*). This self-narration later became part of the broader history of the Czech Academy of Sciences and its predecessors. Institutional memory is not neutral, of course. It selects what to celebrate and what to omit. Yet it is essential to academic continuity. A modern academy does not only conduct research; it also preserves the story of why research matters. Learned societies helped create this narrative habit. They taught scholarly communities to remember themselves institutionally. This is especially important in the Czech case, where historical continuity across regime changes became central to academic legitimacy.

The transition from learned society to academy also involved a changing relation to the state. Early learned societies often sought patronage and recognition from rulers, nobles, or public authorities, but they usually remained relatively small and corporate. Modern academies, especially in Central and Eastern Europe, could become far more closely integrated with state research systems. The Czechoslovak Academy of Sciences, founded in 1952, represented a centralised state academy model very different from the older learned society. It had institutes, staff, budgets, planning structures, and political supervision. Yet it inherited the idea that organised knowledge should have a national institutional centre. This idea had been prepared by earlier learned societies and academies. The difference lay in scale, governance, and relation to power. The modern Czech Academy of Sciences after 1993 had to reinterpret this whole inheritance under democratic conditions. It inherited the long memory of learned society culture and the research infrastructure of the institute-based academy. Understanding learned societies as predecessors therefore helps explain why AV ČR is not merely a post-socialist institution, but a modern form built on older layers of academic organisation (*Dvořáčková, Franc, & kol., 2019*; *Akademie věd České republiky, n.d.*).

The learned society tradition also helps explain the Academy's connection with public culture. Modern research institutions sometimes risk appearing remote from society because of specialisation and technical language. Learned societies, however, emerged in a world where scholarship was tied closely to public improvement, civic prestige, education, and cultural identity. Their work often addressed educated publics, patrons, officials, and reformers. They helped create a public for knowledge. The Czech Academy's contemporary emphasis on public-interest research can be understood as a modern institutional reworking of this older learned-society ideal (*Strategie AV21, 2017*). Of course, the content has changed dramatically. Today, public-interest research may include climate change, energy, health, artificial intelligence, social resilience, cultural memory, and security. Yet the underlying principle is recognisable: knowledge should not remain sealed inside scholarly circles; it should contribute to the understanding and improvement of society. Learned societies were among the first institutions to give this principle a durable form.

Another important continuity concerns interdisciplinary communication. Learned societies often embraced several fields before modern disciplinary specialisation became rigid. This

made them natural predecessors of academies that later grouped multiple disciplines under one institutional structure. In the Czech lands, this breadth was especially significant because language, history, natural science, and public improvement were closely related. The Royal Czech Society of Sciences could include philology and astronomy, history and mathematics, natural history and cultural scholarship. Modern research has become far more specialised, but contemporary scientific challenges increasingly require interdisciplinary cooperation. Strategy AV21 and similar programmes show that the Academy now seeks to reconnect specialised institutes around broad societal problems (*Strategie AV21, 2017*). This does not mean that modern interdisciplinarity simply repeats Enlightenment encyclopaedism. The methods, disciplines, and institutional structures are very different. Yet there is a historical resonance. The learned society's broad conception of knowledge anticipated the academy's capacity to bring different fields into one public research mission.

The learned society also gave future academic organisation a model of scholarly independence, even when that independence was partial. Early societies often depended on patrons, rulers, and social elites, but they also cultivated internal standards of competence and judgement. Their authority depended on the seriousness of their members and the credibility of their publications. This created a space, however limited, where knowledge could be evaluated according to scholarly norms. Modern academies would later defend autonomy more explicitly, especially against political interference. In the Czech history of science, the question of autonomy became acute under authoritarian and totalitarian regimes, particularly after 1948 and during normalisation after 1968 (*Míšková, Barvíková, & Šmidák, 1998*). The older learned-society tradition cannot be romanticised as fully free, but it did contribute to the idea that scholarship has its own standards. That idea later became essential for the post-1989 reconstruction of academic legitimacy. The modern Academy's autonomy is therefore not only a legal principle; it has deep historical roots in the learned organisation of knowledge.

The preservation of collections, libraries, and archives further connects learned societies with modern academies. Many societies accumulated books, manuscripts, specimens, instruments, maps, and documents. These materials were not secondary to scholarship; they were the material basis of research. A naturalist needed specimens; a historian needed manuscripts; an astronomer needed instruments and records; a philologist needed texts; a geographer needed maps. The learned society could help gather, protect, and organise these resources. Later academies and research institutes greatly expanded this function. The Czech Academy's contemporary libraries, archives, digital collections, and specialised institutes continue this older work of preserving the material conditions of knowledge. This continuity is especially visible in the digital preservation of historical academy materials and the archival fonds of ČSAV and AV ČR (*Digitální knihovna AV ČR, n.d.*; *Masarykův ústav a Archiv AV ČR, n.d.*). The movement from cabinet and library to archive and digital repository is a long transformation, but the underlying institutional function remains: knowledge must have a durable material home.

The Czech learned-society tradition also shows that academic organisation is inseparable from cultural legitimacy. A society such as the Royal Czech Society of Sciences did not only organise research; it demonstrated that the Czech lands possessed learned institutions comparable to those of other European regions. This mattered for prestige, identity, and self-understanding. Later, the Czech Academy of Sciences and Arts would make this national-cultural function even more explicit. The Czechoslovak Academy of Sciences would transform it into a state-socialist research system. The Czech Academy of Sciences after 1993 would

reinterpret it as a democratic public research institution integrated into European and global science. Across these transformations, academic organisation remained connected with the question of how a society represents its knowledge to itself and to others. Learned societies were early vehicles of that representation. They allowed a territory, city, or cultural community to say: we do not merely receive knowledge from elsewhere; we produce, preserve, and judge it ourselves. This is one of the deepest historical meanings of the learned society as a predecessor of modern academic organisation.

The learned society was also a school of institutional habits. It trained scholars and administrators to work through statutes, elections, minutes, publications, reports, correspondence, budgets, collections, and commemorations. These habits may appear mundane, but institutions are made from such routines. Modern academic organisation depends on them. Research excellence alone cannot sustain an academy if there are no procedures for governance, communication, evaluation, preservation, and succession. Learned societies developed these procedures in early forms. They taught scholarly communities how to become institutions. In the Czech lands, this institutional learning was especially important because later academies and research bodies could draw on established precedents. The Royal Czech Society of Sciences provided not only intellectual outputs, but organisational experience. It demonstrated how scholarship could be coordinated across fields and generations. This is why its historical role remains relevant even though modern academic structures are much more complex. It supplied the organisational grammar of Czech learned life.

Learned societies also made possible a new relationship between scholarship and historical time. A private scholar may think in the time of one life; a society thinks across generations. It can preserve the work of predecessors, continue projects, commemorate anniversaries, revise earlier interpretations, and transmit standards. This temporal depth is one of the essential features of academic organisation. It distinguishes an institution from a temporary circle or informal group. The Royal Czech Society of Sciences survived long enough to become a historical actor in its own right. It could remember its founders, mark its anniversaries, publish its member lists, and become part of the memory of later institutions. Modern academies depend on this same temporal logic. They are not only organisations of present research; they are custodians of inherited scholarly time. The Czech Academy of Sciences' self-understanding as heir to older learned institutions reflects this temporal continuity (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*). The learned society made such continuity possible before the modern academy gave it new form.

For the broader argument of this book, the learned society should therefore be understood as a prototype rather than a primitive form. It was not an incomplete academy merely waiting to become modern. It had its own logic, appropriate to its period. It organised knowledge through sociability, membership, correspondence, publication, and public recognition. Later academies developed more formal research infrastructures, but they retained many learned-society functions. The Czech Academy of Sciences today is obviously not a learned society in the 18th-century sense. It is a complex public research institution with specialised institutes, legal statutes, evaluation systems, international projects, and strategic programmes. Yet its remote historical foundations lie in the learned society's answer to a basic problem: how can scholarship become collective, continuous, authoritative, and publicly meaningful? The Royal Czech Society of Sciences gave the first durable Czech lands answer to that question. The later academy system transformed the answer, but did not make the question obsolete.

Thus, learned societies were predecessors of modern academic organisation because they created the institutional habits through which knowledge became collective, recognised, documented, and continuous. They formalised membership, meetings, publications, correspondence, committees, collections, archives, and public authority. They mediated between universities and research, between private scholarship and public knowledge, between local inquiry and European communication, and between cultural identity and universal science. In the Czech lands, the Royal Czech Society of Sciences performed these functions with particular historical importance. It transformed Enlightenment learned sociability into a durable institutional body and provided the organisational grammar for later academic development. Its multilingual, interdisciplinary, and territorially rooted character made it a bridge between Prague's university tradition, Bohemian learned culture, Czech national scholarship, and the eventual academy system. Modern academic organisation in the Czech Republic cannot be understood without this learned-society inheritance. The Czech Academy of Sciences is modern in its structure and mission, but it rests on older forms of collective scholarly life that first made the institutional continuity of Czech science possible.

3. Scientific Collections, Publications, Correspondence, and Networks

Scientific collections, publications, correspondence, and scholarly networks formed the practical infrastructure through which learned societies became more than ceremonial associations of educated men. They gave knowledge a material body, a documentary memory, and a communicative reach beyond the room in which scholars met. A learned society could declare noble aims, elect members, and hold meetings, but without collections, books, manuscripts, instruments, printed memoirs, letters, and correspondents, its intellectual life would remain fragile. The history of the Royal Czech Society of Sciences and its European counterparts shows that early academic organisation depended on this infrastructure of preservation and circulation. Knowledge had to be gathered before it could be interpreted. It had to be recorded before it could be transmitted. It had to be exchanged before it could become part of a wider scientific conversation. Collections preserved objects; publications preserved arguments; correspondence preserved contact; networks preserved continuity across distance. Together, these elements transformed scholarship from isolated erudition into an organised cultural system. They also prepared the institutional practices later inherited by academies of sciences, including the Czech Academy of Sciences. In this sense, the prehistory of modern academic research is also the history of cabinets, libraries, archives, letters, journals, catalogues, specimens, instruments, and printed proceedings (*McClellan, 1985*; *Burke, 2000*).

Collections were among the earliest material foundations of organised scholarly life. Before the modern laboratory became the dominant symbol of scientific research, knowledge was often accumulated in cabinets, libraries, botanical gardens, mineral collections, anatomical preparations, numismatic collections, manuscript repositories, antiquarian archives, and astronomical observatories. These collections were not passive storerooms. They made comparison possible. A mineral could be classified only in relation to other minerals; a manuscript could be interpreted only against other manuscripts; a plant specimen became scientifically meaningful when placed within a wider taxonomy; an instrument became useful when embedded in routines of measurement. The collection therefore created the conditions for systematic inquiry. It allowed scholars to return to the same object, compare it with new

evidence, and transmit it to later generations. In the Czech lands, collections were especially important because they connected knowledge of the local territory with wider European scientific systems. Bohemian and Moravian nature, history, language, and material culture could become objects of organised research only when they were gathered, described, catalogued, and preserved. The learned society helped to give these practices institutional meaning (*Franc, Kostlán, & Míšková, 2010*; *Pokorná, 2010*).

Libraries were the most general and indispensable collections of scholarly culture. Prague's long university tradition, the Klementinum, monastic libraries, noble libraries, and later public and academic collections gave the Czech lands access to the accumulated memory of European scholarship. A library does not merely contain books. It organises intellectual time. It allows a scholar to speak with predecessors, compare authorities, trace the movement of concepts, and build new arguments from old sources. In a multilingual scholarly culture such as that of Bohemia and Moravia, libraries were especially important because they preserved texts in Latin, German, Czech, French, Italian, Hebrew, and other languages. They connected local scholarship to transnational learning and allowed Czech intellectual culture to develop through translation, comparison, and adaptation. The historical development of libraries in the Czech lands therefore belongs directly to the institutional prehistory of the Academy. Without libraries, learned societies would have lacked documentary depth. Without documentary depth, the study of history, philology, law, theology, medicine, natural history, and mathematics would have remained fragmentary. The later academy tradition inherited the library as a central instrument of continuity, not merely as a supporting service (*National Library of the Czech Republic, 2007*; *Burke, 2000*).

The Klementinum provides one of the clearest examples of how collections, instruments, library culture, and observation could converge in Prague. It was not simply an architectural monument or a repository of books, but a major intellectual space in which Jesuit education, university learning, library accumulation, astronomy, mathematics, and meteorological observation intersected. The astronomical tower of the Klementinum, associated with 18th-century observation and measurement, shows how Prague participated in the empirical culture of the Enlightenment. Observational science required instruments, trained observers, records, and continuity over time. It also required a place where observations could be preserved and compared. This made the observatory a kind of scientific collection in temporal form: a collection not of objects only, but of measurements. Such measurements became meaningful when they could be arranged into series, compared with observations elsewhere, and transmitted through publications or correspondence. The Klementinum therefore represents a bridge between older learned culture and modern scientific infrastructure. Its importance for the history of Czech academic science lies in showing that knowledge was becoming increasingly dependent on organised spaces, instruments, and records (*Prague City Tourism, n.d.*; *UNESCO Astronomy and World Heritage Webportal, n.d.*).

Natural history collections were equally significant for the Czech lands. The 18th and 19th centuries were periods in which European scholars classified plants, animals, minerals, fossils, and landscapes with new intensity. These activities were not simply descriptive. They helped transform local territory into scientific knowledge. A mineral from Bohemia, a plant from Moravia, or a fossil from a particular region could be placed within broader European classificatory systems. This gave local observations international relevance. At the same time, natural history collections contributed to economic and administrative knowledge. Minerals mattered for mining, plants for agriculture and medicine, climate for public planning, and

geological knowledge for infrastructure and industry. Learned societies often valued such work because it connected scholarship with improvement. In the Czech lands, this connection between local nature and European science helped create a territorial basis for academic knowledge. The land itself became a field of inquiry. Later research institutes in geology, biology, ecology, and environmental sciences would professionalise these forms of knowledge, but their deeper roots lie in the collection-based culture of learned societies and Enlightenment natural history (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*).

Historical and philological collections were no less important than natural collections. Manuscripts, chronicles, charters, early printed books, inscriptions, coins, maps, and linguistic materials gave scholars access to the historical memory of the Czech lands. The national and cultural importance of such materials was enormous, but their scholarly value depended on critical method. A manuscript had to be authenticated, dated, compared, edited, and interpreted. A charter had to be read with legal, linguistic, palaeographic, and historical competence. A word, dialect form, or literary fragment had to be placed within a broader linguistic and cultural history. Learned societies provided a setting in which such materials could be discussed, published, and preserved. In the Czech context, this was directly connected with the rise of critical historiography and philology. Scholars such as Gelasius Dobner and Josef Dobrovský represented this movement from inherited memory towards disciplined source analysis. The Society's role was to give this work institutional recognition. It helped convert cultural memory into scholarly evidence (*Pokorná, 2010*; *Franc, Kostlán, & Míšková, 2010*).

The importance of collections also reveals why academic institutions are never purely intellectual abstractions. They depend on material arrangements: shelves, catalogues, cabinets, drawers, labels, instruments, rooms, preservation techniques, curators, librarians, copyists, printers, and later archivists and technicians. The history of science sometimes privileges ideas, discoveries, and theories, but learned societies remind us that knowledge must be housed. It must be protected from decay, loss, dispersal, and forgetfulness. A collection that is not catalogued may be nearly useless; a manuscript that is not preserved may disappear; an instrument that is not maintained may become decorative; a specimen without provenance may lose scientific meaning. Early scholarly institutions therefore had to develop routines of care. These routines later became professional functions within museums, libraries, archives, and research institutes. The modern Academy's archival and library systems are much more advanced, but they continue this older responsibility. They preserve the conditions under which scholarship can be verified, extended, and reinterpreted. Academic continuity depends on such material care as much as on intellectual brilliance.

Publications were the second great infrastructure of learned societies. If collections gathered knowledge, publications released it into circulation. The printed proceedings, memoir, transaction, report, catalogue, or journal transformed the internal life of a society into a public intellectual record. This was one of the most important changes in early modern and Enlightenment scholarship. Before regular learned publications, much knowledge circulated through manuscripts, books, letters, lectures, or private reports. Learned societies created serial forms of publication that could carry smaller, more specialised, and more current contributions. The Royal Society's *Philosophical Transactions* became a famous model of this new scientific periodical culture, while continental academies developed their own memoirs and proceedings (*Royal Society, n.d.*; *McClellan, 1985*). Such publications did not simply report science; they helped define what a scientific contribution looked like. They encouraged

concise argument, documentary evidence, observation reports, methodological explanation, and citation of prior work. In doing so, they created early forms of scholarly accountability. A printed paper entered a world in which it could be read, criticised, preserved, and compared.

For the Royal Czech Society of Sciences, publication was essential to public authority. A learned institution in Prague needed to show that it produced knowledge worthy of circulation beyond its meetings. Its publications made Bohemian scholarship visible to members, correspondents, libraries, and later historians. They also preserved the changing intellectual profile of the Society. Through published materials, one can trace interests in history, philology, mathematics, natural history, and other fields. The printed record allowed the Society to function as more than a local circle. It became part of the European learned economy of texts. Publication also created institutional memory. Later generations could return to the Society's volumes and reconstruct its priorities, methods, members, and networks. The fact that many such materials are now accessible through digital libraries further extends their historical significance. Digital access does not merely preserve old publications; it renews them as sources for contemporary scholarship. The Society's publications therefore link 18th- and 19th-century learned culture with the modern research practices of the Czech Academy of Sciences and its archival institutions (*Digitální knihovna AV ČR, n.d.*; *Masarykův ústav a Archiv AV ČR, n.d.*).

The language of publication mattered greatly. In the Czech lands, scholarly works could appear in Latin, German, Czech, French, or other languages depending on period, discipline, and intended audience. This linguistic plurality shaped the circulation of knowledge. A German-language paper might reach Central European readers more easily than a Czech-language text in the 18th or early 19th century. A Latin text might connect with older scholarly conventions. A Czech publication might strengthen national cultural life and domestic education. A French reference or text might signal participation in Enlightenment or elite European culture. Learned societies had to operate within this linguistic field. Their publications were therefore also acts of audience selection. To publish in one language was to address one public more directly than another. This became increasingly important as Czech developed into a modern scholarly language. The publication practices of learned societies and later academies contributed to the gradual transformation of Czech from an object of philological study into a medium of scientific and scholarly communication (*Sayer, 1998*; *Macura, 1995*).

Correspondence formed the third major infrastructure of learned societies. Before the age of rapid transport, telecommunication, and digital exchange, letters were the arteries of European scholarship. They transmitted observations, books, specimens, requests, criticism, news, recommendations, and personal trust. The republic of letters was not only a metaphor; it was a real communicative system sustained by correspondence. Learned societies institutionalised this system by appointing corresponding members, exchanging publications, and maintaining contacts with scholars in other cities and countries. Correspondence allowed a society in Prague to participate in conversations beyond Prague. It linked local scholarship to Vienna, German university towns, Paris, London, Rome, and other centres. It also made it possible to gather information from people who could not attend meetings. A correspondent might send a weather observation, a manuscript copy, a mineral specimen, a historical note, or a report on foreign publications. The society thus became a node in a wider network. Its authority depended partly on how well it could receive and redistribute knowledge (*Burke, 2000*; *McClellan, 1985*).

Correspondence also helped create trust across distance. A scholar known only through print could become more familiar through letters. A society could judge the reliability of observations partly through the reputation and style of correspondents. This mattered because early modern and Enlightenment science depended heavily on testimony. Not every observation could be repeated immediately by every reader. A report from another region required confidence in the observer, the method, and the channel of communication. Learned societies therefore acted as trust-making institutions. They did not eliminate uncertainty, but they gave correspondence a framework of recognition. A letter addressed to a society had a different status from a purely private note. It could be read aloud, recorded, answered, published, or archived. It could enter institutional memory. This transformed personal communication into part of the public record of scholarship. Modern academic communication still depends on trust, though it now operates through peer review, institutional affiliation, citation systems, digital repositories, and international projects. The older correspondence networks were the ancestors of these later systems.

Networks extended the reach of collections, publications, and correspondence. A learned society was never only a local body; it belonged to a wider map of institutions, persons, libraries, journals, courts, universities, museums, and patrons. These networks allowed knowledge to move horizontally between scholars and vertically between scholars and authorities. They also allowed local institutions to compare themselves with foreign models. The Royal Czech Society of Sciences developed in a Europe already shaped by the prestige of academies in London, Paris, Berlin, Vienna, and other centres. Its members and supporters knew that learned societies were part of the recognised institutional culture of Enlightenment Europe. To found and maintain such a society in Prague was therefore to place the Czech lands on this map. Networks also created standards. A society aware of foreign academies had to think about publication quality, membership prestige, institutional dignity, and scholarly seriousness. It could not remain merely provincial if it wanted recognition. The history of the Society is therefore also a history of Prague's insertion into European networks of learned legitimacy (*Hahn, 1971*; *McClellan, 1985*).

The exchange of publications between learned societies was one of the most practical forms of networking. Societies often sent their proceedings or memoirs to other institutions and received publications in return. This created libraries of institutional exchange. Through such exchanges, scholars could learn what was being studied elsewhere, compare methods, follow debates, and become aware of new discoveries. A publication sent from Prague to another city could make local scholarship visible abroad; a publication received in Prague could influence local research. This system created an early international academic economy that did not depend solely on commercial bookselling. It was based on reciprocity, institutional prestige, and the shared expectation that knowledge should circulate among recognised bodies. Modern academy libraries and exchange systems inherited this logic. International journal subscriptions, interlibrary cooperation, digital repositories, and institutional partnerships are technologically different, but they continue the older principle that knowledge moves most effectively when institutions are connected. Learned societies helped establish this principle long before modern research infrastructures appeared.

Networks were also personal. Institutions may exchange publications, but people create meaning from them. Members of learned societies often belonged to several networks at once: university, ecclesiastical, noble, administrative, national, linguistic, and scientific. A Prague scholar might correspond with a Vienna official, a German professor, a French naturalist, a

Moravian collector, and a Czech philologist. These overlapping networks made Bohemian and Moravian scholarly culture dynamic. They also prevented knowledge from being contained within one language or institution. Personal networks could compensate for weak formal structures; formal societies could strengthen personal networks by giving them institutional form. The Royal Czech Society of Sciences emerged from precisely such interaction between personal sociability and public institution. Its members were not abstract representatives of disciplines. They were actors in multiple worlds of learning, patronage, language, and reform. The modern historian must therefore reconstruct both institutional structures and social networks. Academic organisation is made by people moving through institutions, not by statutes alone.

Collections and networks were especially important for natural history. Specimens often travelled through correspondence and exchange. A mineral, plant, shell, fossil, or animal sample could be collected in one locality, identified by another scholar, compared with specimens elsewhere, and described in a publication. Such movement transformed local objects into scientific evidence. The Czech lands, with their varied geology, flora, and landscapes, offered rich material for natural-historical study. Learned societies could coordinate and publicise such work. They could also connect local collectors with more specialised scholars. This was particularly important before professional scientific institutions were fully developed. A clergyman, physician, teacher, noble collector, or local official might contribute valuable observations if connected to a learned network. The society gave such contributions a path into recognised scholarship. Later professional science would become more specialised, but it continued to depend on field networks, collections, and exchange. The logic was already visible in Enlightenment learned society culture (*McClellan, 1985*).

Historical and linguistic research also depended on networks of collectors and correspondents. Manuscripts, folk songs, dialect words, inscriptions, local chronicles, and archival notices were often dispersed across towns, monasteries, parishes, noble estates, and private holdings. No single scholar could easily access all of them alone. Learned networks made it possible to locate, copy, compare, and discuss such materials. This was especially important for the development of Czech historical and philological scholarship. The study of language and history required not only interpretative skill, but the gathering of evidence from many places. Correspondence with priests, teachers, librarians, archivists, nobles, and local scholars could bring unknown materials into view. A learned society could give this work authority and continuity. It could encourage collection, preserve copies, publish findings, and connect individual discoveries to a wider scholarly project. This practice helped transform cultural memory into research material. The later academy tradition in history, ethnology, linguistics, and archaeology inherited this dependence on networks of evidence.

The creation of catalogues was another crucial practice. A collection without a catalogue is only partially usable. Catalogues organise objects, texts, and specimens into searchable knowledge. They identify, classify, describe, and locate materials. In learned societies, catalogues could apply to libraries, membership, manuscripts, natural collections, publications, and correspondence. They turned accumulation into order. This was one of the fundamental intellectual operations of Enlightenment scholarship. Classification was not limited to natural history; it shaped the organisation of all knowledge. A catalogue made a society's resources visible to members and sometimes to external scholars. It also preserved institutional memory when people changed or died. Modern academic infrastructures still depend on cataloguing, though in digital and specialised forms. Databases, metadata, archival

finding aids, bibliographies, and digital catalogues are contemporary descendants of this older practice. The Czech Academy's digital library and archival tools continue the same historical function: they make accumulated knowledge retrievable and usable (*Digitální knihovna AV ČR, n.d.*; *Masarykův ústav a Archiv AV ČR, n.d.*).

The archive developed from these practices as an indispensable institution of scholarly memory. Learned societies produced records in the course of ordinary work: minutes, correspondence, drafts, submissions, accounts, membership files, and printed materials. Over time, these records became historical sources. They allow later scholars to reconstruct not only intellectual achievements, but institutional life itself. This is particularly important for the history of the Czech Academy of Sciences and its predecessors. The Masaryk Institute and Archives of the Czech Academy of Sciences preserve fonds related to the Czechoslovak Academy of Sciences and the Czech Academy of Sciences, while digital collections preserve earlier academy-related materials. Such archival continuity makes it possible to study institutional transformation across centuries. It also allows historians to examine ruptures, not only continuities. Archives preserve evidence of reform, conflict, exclusion, ideological pressure, and renewal. The archive is therefore both a memory of achievement and a record of vulnerability. Learned societies helped produce the archival habit from which modern academic self-knowledge depends.

The material and communicative infrastructure of learned societies also supported the development of disciplinary identities. Disciplines did not become modern only because scholars invented new theories. They became modern because they acquired journals, collections, societies, curricula, methods, instruments, and networks. Natural history, philology, history, astronomy, mathematics, medicine, and later specialised sciences developed through such institutional supports. The Royal Czech Society of Sciences offered a broad learned framework before disciplines separated more sharply. Within that framework, different fields could begin to develop their own materials, publications, correspondents, and standards. Later, as disciplines professionalised, more specialised institutions and journals emerged. Yet the earlier society culture remained important because it created habits of communication across fields. It also preserved the idea that different kinds of knowledge belonged to one larger scholarly order. This is one reason why academy traditions often maintain broad disciplinary representation. They are heirs to an older institutional world in which science and scholarship were differentiated but still connected.

The relationship between collections and identity was especially strong in the Czech lands. A collection of Bohemian manuscripts, Czech linguistic materials, regional minerals, Moravian plants, local maps, or historical documents did not merely serve specialised research. It helped define the land as knowable and historically meaningful. Collections made the Czech lands visible as a scholarly object. They allowed a community to gather evidence of its past, environment, language, and cultural production. This evidence could then support education, public culture, and eventually national identity. However, the scholarly value of such collections depended on critical treatment. A manuscript had to be edited carefully; a specimen had to be identified accurately; a linguistic form had to be analysed historically; a historical claim had to be supported by sources. Learned societies helped to discipline the relationship between collection and identity. They made it possible to love the country through evidence rather than myth alone. This was one of their most important contributions to Czech cultural modernity (*Macura, 1995*; *Sayer, 1998*).

The publication of collected materials also changed their meaning. A manuscript in a monastery archive might be known to a few people; an edited text could become part of national and European scholarship. A local natural observation might remain anecdotal; a printed report could enter scientific comparison. A membership list could remain administrative; a published list could become a document of institutional memory. Print converted possession into communication. It also imposed standards of presentation. Editors had to decide how to transcribe, translate, annotate, classify, and contextualise materials. This editorial labour was a major part of academic culture. It was especially significant in the Czech lands, where historical and linguistic materials played a central role in cultural development. The later academy tradition in critical editions, dictionaries, archival publications, and scholarly series grew from these practices. Publications did not simply disseminate finished knowledge. They helped create knowledge by organising evidence into shareable forms.

Correspondence also carried emotional and intellectual communities. Scholars wrote not only to exchange data, but to seek recognition, friendship, advice, encouragement, and belonging. For scholars in regions outside the most powerful centres of European science, correspondence could overcome marginality. It allowed them to participate in broader conversations and to feel part of a learned world. Prague and Moravian scholars could thereby connect their local work to European debates. This was important for intellectual confidence. A learned society strengthened this confidence by giving correspondents an institutional address. Instead of writing only to individuals, scholars could write to a society representing a collective scholarly presence. This helped Prague appear as a centre rather than merely a periphery. The Royal Czech Society of Sciences therefore changed the geography of communication. It made the Czech lands more visible in European scholarly networks. Such visibility was a precondition for later academic development and international recognition.

The learned society's networks also linked scholarship with patronage and power. Collections, publications, and correspondence required resources. Patrons could provide money, books, spaces, instruments, social prestige, and political protection. State authorities could grant recognition and legal status. Noble households could support libraries and collections. University and church institutions could provide trained scholars and documentary materials. These connections were productive, but they also meant that scholarly life was not fully autonomous. The infrastructure of knowledge depended on social and political conditions. This dependence would remain a central theme in the history of academies. The Czechoslovak Academy of Sciences later received far greater state support than any 18th-century learned society, but also faced far greater political control. The modern Czech Academy of Sciences after 1993 operates within democratic public funding, evaluation, and accountability. Across these different periods, the basic issue remains: organised knowledge needs resources, and resources create relationships of obligation. Learned societies were early laboratories of this problem (*Hahn, 1971*; *Míšková, Barvíková, & Šmidák, 1998*).

The transformation of learned-society infrastructure into modern academic infrastructure was gradual. Collections became museums, institute collections, archives, digital repositories, and research databases. Publications became journals, monographs, proceedings, annual reports, policy papers, and open-access platforms. Correspondence became institutional partnerships, international projects, peer-review communication, conference networks, and digital exchange. Membership became professional appointment, academy fellowship, research evaluation, project participation, and disciplinary recognition. The forms changed, but the underlying functions remained recognisable. Academic organisation still depends on

preserving materials, publishing results, maintaining communication, and belonging to networks. The Czech Academy of Sciences is therefore modern not because it abandoned the learned society tradition, but because it transformed that tradition into contemporary research infrastructure. The Academy's institutes, libraries, archives, annual reports, digital collections, and strategic programmes all continue older functions in new forms. This continuity helps explain why the history of the Royal Czech Society of Sciences remains relevant for understanding AV ČR.

The digital age has given new life to older learned-society materials. Digital libraries allow scholars to access proceedings, books, journals, membership lists, and historical documents that were once available only in specialised collections. This changes the historiography of academic science. Sources that were previously difficult to consult can now be integrated more easily into research, teaching, and international scholarship. The Digital Library of the Czech Academy of Sciences and related institutional repositories therefore do more than preserve documents; they renew the communicative function of old publications. They allow 18th- and 19th-century learned culture to re-enter scholarly networks in digital form. This is historically appropriate, because learned societies were themselves communication institutions. Their publications were designed to circulate. Digitalisation extends that circulation across time and space. It also supports the Academy's modern public mission by making scientific heritage more accessible. In this sense, digital infrastructure is not the opposite of historical continuity. It is one of its contemporary forms (*Digitální knihovna AV ČR, n.d.*).

The study of collections, publications, correspondence, and networks also guards against a purely heroic history of science. Scientific development is often narrated through great individuals, discoveries, and institutions. These are important, but they can obscure the collective infrastructure that makes knowledge possible. A brilliant scholar needs books, instruments, readers, correspondents, printers, archives, and institutions. A discovery becomes historically effective only when it is communicated and preserved. A national scientific culture becomes durable only when it has mechanisms of transmission. Learned societies supplied many of these mechanisms before modern academies existed. Their history shows that science is not simply the product of individual genius. It is also the result of organised memory and communication. This perspective is especially valuable for the history of the Czech Academy of Sciences, because the Academy's significance lies not only in famous names, but in the institutional continuity that made many forms of research possible. The Society and its successors built the channels through which Czech knowledge could endure.

For the Czech lands, these infrastructures were also instruments of cultural self-definition. Collections preserved evidence of the land; publications made scholarship visible; correspondence connected local work to Europe; networks gave Prague and other centres a place in the republic of letters. Together, they supported the emergence of a scholarly culture capable of becoming Czech in a modern national sense. This process was slow and multilingual. It involved Latin erudition, German scholarly communication, Czech revival, French Enlightenment prestige, and later other linguistic orientations. The Royal Czech Society of Sciences stood within this layered environment. Its historical role was to organise the materials and communications through which a territorial learned culture could become an academic tradition. Later institutions would nationalise, professionalise, centralise, democratise, and internationalise this tradition in different ways. Yet the infrastructure of

collections, publications, correspondence, and networks remained essential. Without it, there would be no durable academic memory to inherit.

Thus, scientific collections, publications, correspondence, and networks were the practical foundations of early academic organisation in the Czech lands and across Europe. Collections gave scholarship material evidence; publications gave it public and archival form; correspondence gave it movement across distance; networks gave it social and institutional reach. The Royal Czech Society of Sciences depended on all these elements and helped transform them into a durable learned infrastructure. Through libraries, manuscripts, instruments, specimens, memoirs, letters, membership ties, and exchanges, Bohemian and Moravian scholarship became part of a wider European knowledge system while retaining a strong territorial and later Czech cultural meaning. These infrastructures prepared the way for later academies by creating habits of preservation, communication, evaluation, and continuity. The modern Czech Academy of Sciences still rests on these inherited functions, even though it expresses them through research institutes, digital libraries, archives, international projects, annual reports, open science, and strategic programmes. The history of early collections and communications therefore belongs directly to the history of modern academic science. It shows that an academy is not only a body of scholars, but a living system of memory, evidence, publication, and exchange.

The Long-Term Meaning of the Early Academic Tradition

1. Institutional Memory and the Formation of Czech Scholarly Identity

Institutional memory is one of the least visible, yet most decisive, foundations of academic life. It is not identical with archives, although archives are among its most important material forms. It is not identical with tradition, although tradition is one of the ways in which institutions narrate their own continuity. It is not identical with nostalgia, because serious institutional memory requires criticism, documentation, and the ability to distinguish historical inheritance from myth. In the history of Czech academic science, institutional memory means the capacity of scholarly bodies to preserve names, practices, languages, methods, collections, publications, disputes, achievements, exclusions, and reforms across generations. It allows a society of scholars to recognise itself as part of a longer intellectual line rather than as a temporary professional group. It gives science a past that can be investigated, not merely celebrated. It also helps explain why the Czech Academy of Sciences can present itself not only as a post-1993 institution, but as the heir to older learned societies, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy of Sciences (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*). The formation of Czech scholarly identity cannot therefore be understood without analysing the institutions that preserved, organised, and reinterpreted scholarly memory.

The concept of institutional memory belongs to a wider family of ideas concerning cultural memory, collective identity, and historical continuity. Jan Assmann's work on cultural memory emphasises that cultures remember not only through living communication, but also through

externalised forms such as writing, monuments, rituals, archives, and institutions (*Assmann, 2011*). Pierre Nora's idea of *lieux de mémoire* likewise shows how memory becomes attached to places, symbols, documents, and institutions when spontaneous continuity weakens or requires conscious preservation (*Nora, 1989*). These concepts are valuable for the history of academies because academic institutions are among the most sophisticated memory-forming structures of modern societies. They preserve books, manuscripts, minutes, collections, research programmes, names of members, commemorative practices, and disciplinary standards. They also decide which pasts deserve institutional recognition and which remain marginal. In the Czech lands, learned societies and academies did not merely support research; they created memory frameworks through which Czech scholarship could understand its own historical depth. The Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, ČSAV, and AV ČR are therefore not only institutional stages. They are memory layers through which Czech science has repeatedly redefined itself.

The early learned tradition in the Czech lands became a source of identity because it gave scholarship a durable institutional form before modern Czech statehood existed. The Royal Czech Society of Sciences, founded in the Enlightenment context and later recognised as the oldest long-lasting predecessor of the modern Academy, made it possible to speak of organised scholarly life in the Bohemian lands as something continuous and institutionally embodied (*Akademie věd České republiky, n.d.*; *Pokorná, 2010*). This was crucial because Czech scholarly identity did not arise from political sovereignty alone. For much of its modern prehistory, Czech intellectual life developed within larger imperial and multilingual frameworks. In that situation, learned institutions performed a function that exceeded ordinary scholarship. They preserved the evidence that the Czech lands possessed their own traditions of research, erudition, scientific communication, historical inquiry, and cultural self-knowledge. They made it possible for later generations to say that Czech science had roots deeper than the institutions of the 20th century. Institutional memory therefore preceded and supported national academic self-consciousness. It created continuity where political history often produced rupture.

The formation of Czech scholarly identity depended especially on the relationship between memory and language. A language becomes a scholarly language not only when it is spoken or written, but when it accumulates grammars, dictionaries, terminologies, editions, textbooks, bibliographies, journals, and recognised institutions. Czech identity as a scholarly identity required exactly this kind of accumulation. Philologists and historians such as Josef Dobrovský helped transform Czech from an object of cultural attachment into an object of critical knowledge and, gradually, into a medium of scholarly expression (*Macura, 1995*; *Sayer, 1998*). Learned societies provided institutional settings where such work could be recognised and preserved. The study of Czech language, literature, historical sources, and cultural memory became part of a broader academic project. This meant that Czech scholarly identity was not simply emotional patriotism translated into academic form. It was built through documentary practices, source criticism, lexicography, grammar, and publication. The institution made language memorable as a scholarly object and usable as a scholarly instrument. In this sense, institutional memory and linguistic modernisation were inseparable.

The Czech lands' multilingual scholarly culture made institutional memory more complex. Latin, German, Czech, French, and later Russian and English all contributed to the intellectual history of Bohemia and Moravia. The memory of Czech science is therefore not written in one language only. Many foundational texts, records, membership lists, catalogues, and

publications of earlier scholarly institutions were produced in Latin or German, while later Czech national scholarship reinterpreted them within a Czech academic genealogy. This is not a contradiction; it is one of the defining features of Central European scholarly identity. Czech science emerged from a multilingual historical matrix and gradually transformed that inheritance into a national academic culture. Institutional memory had to mediate this process. It had to preserve older German- and Latin-language materials while also supporting the growth of Czech as a modern scholarly language. The result was a layered memory rather than a pure origin story. The Czech Academy's historical self-understanding is strongest when it acknowledges this complexity rather than flattening it into a simple national narrative (*Agnew, 2004*; *Franc, Kostlán, & Míšková, 2010*).

The Royal Czech Society of Sciences contributed to Czech scholarly identity by creating a corporate memory of learned work. Its membership lists, publications, proceedings, and later commemorations made scholarship visible as a continuing activity rather than a sequence of isolated achievements. A society that records its members and publishes its work creates a lineage. It tells later generations who belonged, what they studied, how they communicated, and how they understood their public mission. Wegner's 19th-century list of members of the Royal Czech Society of Sciences is an example of this memory work: it does not merely enumerate names, but fixes a century of scholarly belonging in documentary form (*Wegner, 1884*). Such documents become instruments through which later historians reconstruct academic continuity. They also allow institutions to remember themselves. The Society therefore helped establish one of the basic conditions of Czech scholarly identity: the existence of a recognised learned community with a documented past. Without such memory forms, later claims of continuity would be much weaker.

Institutional memory also depends on places. Prague, Charles University, the Klementinum, the meeting spaces of learned societies, libraries, archives, and later academy buildings functioned as physical anchors of scholarly continuity. Places matter because they give memory spatial form. A university building, a library hall, an observatory tower, or an academy headquarters can become a symbol of intellectual duration. Nora's notion of memory sites is useful here because academic places are not merely locations; they are repositories of institutional meaning (*Nora, 1989*). The Klementinum, for example, connects library culture, Jesuit education, astronomical observation, and Prague's Enlightenment scientific life. Charles University connects the Czech lands to medieval European learning and later national university culture. The Royal Czech Society of Sciences connects Enlightenment sociability with later academy genealogy. These places and institutions do not tell one simple story. They hold several histories at once. Czech scholarly identity was formed by the ability to attach memory to such places and to reinterpret them across political and cultural transformations.

The continuity between learned societies and modern academies is therefore not only legal or organisational. It is mnemonic. The modern Czech Academy of Sciences gains historical depth by remembering earlier institutions as predecessors. This does not mean that the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, ČSAV, and AV ČR were the same kind of institution. They differed in legal status, political environment, language, organisational structure, disciplinary profile, and relation to the state. Yet they can be connected through the memory of organised scholarship in the Czech lands. The act of connecting them is itself historically meaningful. It creates a long narrative in which Czech science appears as a continuous effort to organise knowledge, preserve scholarly authority, and serve society. Such narratives must be handled carefully because institutional genealogies can sometimes

smooth over conflict and rupture. Nevertheless, without them, academic identity becomes thin and presentist. The task is to write continuity critically: to show both inheritance and transformation (*Franc & Mádlová, 2013*; *Mádlová, 2024*).

The Czech Academy of Sciences and Arts, founded in the late 19th century, represented a new and more explicitly national stage in the development of institutional memory. Unlike the earlier Royal Czech Society of Sciences, which arose from a multilingual Bohemian Enlightenment context, ČAVU was more directly connected with Czech cultural ambition, language, scholarship, and artistic representation. Its foundation expressed the desire to give Czech intellectual life a prestigious institutional centre capable of supporting sciences, humanities, literature, and the arts. Vlasta Mádlová's study of ČAVU emphasises its long existence from 1891 to 1952 and its role as an important Czech learned institution before the creation of the Czechoslovak Academy of Sciences (*Mádlová, 2024*). This institution strengthened Czech scholarly identity by making national academic memory more formal, visible, and prestigious. It connected patronage, research support, publication, prizes, membership, and cultural symbolism. It also showed that Czech scholarship no longer needed to exist only as a movement within a multilingual imperial framework. It could present itself as an organised national intellectual force. ČAVU therefore became a major memory bridge between 19th-century national revival and 20th-century academic institutionalisation.

The role of Josef Hlávka in the foundation of ČAVU also illustrates how personal memory becomes institutional memory. A patron, organiser, or founder can become a symbolic figure through whom an institution narrates its origins. Hlávka's support for Czech science and culture gave the Academy a founding figure who embodied civic responsibility, cultural patronage, and national scholarly ambition. Such figures matter because institutions often remember themselves through names. Founders, presidents, secretaries, academicians, reformers, and benefactors become points of identification. Yet the historian must distinguish between symbolic memory and historical analysis. Hlávka's role was significant not because he can be transformed into a simple heroic icon, but because his patronage shows how Czech academic identity required material support, institutional vision, and cultural legitimacy. The creation of an academy was not a purely intellectual event. It required money, social influence, legal recognition, organisational design, and public confidence. Institutional memory preserves the founder, but historical interpretation explains why founding was possible.

The creation of Czechoslovakia in 1918 added another layer to Czech scholarly identity. Czech academic memory now operated within a new state that needed to represent itself as modern, democratic, educated, and European. Scientific and scholarly institutions became part of state-building. They supplied expertise, trained elites, preserved cultural memory, and gave international visibility to the new republic. At the same time, Czechoslovakia was not simply a Czech national state. It was multilingual, multiethnic, and politically complex. Czech scholarly identity therefore had to negotiate its relationship with Slovak scholarship, German-speaking communities, Jewish intellectual culture, and other social groups. Institutional memory could either simplify this complexity or preserve it critically. The most valuable academic memory is the one that recognises layered inheritance. For the later Academy, the First Czechoslovak Republic became an important reference point because it represented a democratic interwar moment of scholarly and cultural development. Yet that memory must be understood within the full diversity and tension of the republic's intellectual life (*Agnew, 2004*; *Sayer, 1998*).

The catastrophes of the 20th century demonstrated that institutional memory is fragile. Nazi occupation, the closure of Czech universities, repression of scholars, destruction of communities, and political violence disrupted academic life profoundly. Later, communist rule transformed scientific institutions again, imposing ideological frameworks and reorganising research under state-socialist conditions. The establishment of the Czechoslovak Academy of Sciences in 1952 represented both continuity and rupture. It absorbed older institutional inheritances, including the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts, but it did so within a new centralised and politically supervised model (*Dvořáčková, Franc, & kol., 2019*). This moment is crucial for understanding institutional memory. Memory was not simply preserved; it was reorganised. Older traditions were incorporated into a socialist academy structure that claimed scientific modernity while subjecting scholarship to ideological and administrative control. The result was an ambivalent inheritance. ČSAV preserved major research capacities, institutes, collections, and scientific careers, but it also reflected the political constraints of its time.

The history of ČSAV shows that institutional memory can be both productive and compromised. It maintained scientific work, developed research infrastructure, supported important discoveries, and preserved many forms of scholarly competence. Yet it also operated within a political system that limited autonomy, especially in the humanities and social sciences, and that could exclude or marginalise scholars for ideological reasons. After 1968, normalisation damaged academic life through purges, dismissals, restrictions, and restoration of political control (*Míšková, Barvíková, & Šmidák, 1998*). Institutional memory must therefore include not only achievements, but also injuries. A mature scholarly identity cannot be built only on success. It must also remember exclusion, exile, compromise, silence, and later rehabilitation. The work of Štrbáňová and Kostlán on Czech scholars in exile is particularly important because it restores to Czech academic memory those whose careers were displaced beyond domestic institutions (*Štrbáňová & Kostlán, 2011*). Scientific identity becomes fuller when it recognises both institutional centres and dispersed intellectual lives.

Exile is one of the most painful forms of interrupted institutional memory. A scholar who leaves or is forced out of an institution may disappear from official domestic narratives, while continuing to contribute to science abroad. This creates a split memory: the institution remembers its internal continuity, while the nation's intellectual capital continues elsewhere. In Czech history, exile after 1938, 1948, and 1968 deeply affected scholarly life. Some scientists, humanists, and intellectuals built careers abroad, entered foreign institutions, and contributed to international science while remaining connected, in various ways, to Czech scholarly identity. The restoration of their memory after 1989 became an important task. It showed that Czech academic identity was not confined to the territory of the state or to officially recognised domestic institutions. It included a wider diaspora of knowledge. Institutional memory had to expand to include those who had been excluded, silenced, or displaced. This expansion made post-1989 academic identity more honest and historically complete.

The transformation after 1989 and the establishment of the Czech Academy of Sciences after the dissolution of Czechoslovakia required a major reworking of institutional memory. The new Academy had to define itself as a democratic research institution while inheriting the institutes, personnel, collections, buildings, archives, and scientific capital of ČSAV. It could not simply reject the entire socialist academy, because that would have meant rejecting genuine scientific achievements and institutional capacities. Yet it could not simply continue ČSAV unchanged,

because that would have ignored the ideological distortions and political dependencies of the previous system. The task was therefore one of selective continuity. The Academy had to preserve research competence while reconstructing legitimacy. It had to remember predecessors without becoming captive to their political conditions. This made institutional memory an active process of reform. Memory was not only about the past; it became a tool for building a new institutional future (*Franc & Mádlová, 2013*; *Akademie věd České republiky, n.d.*).

The official historical self-presentation of AV ČR plays an important role in this process. By linking the present Academy to the Royal Czech Society of Sciences, ČAVU, and ČSAV, the institution constructs a long genealogy of Czech scholarly organisation (*Akademie věd České republiky, n.d.*). This genealogy gives AV ČR historical depth and public legitimacy. It shows that the Academy is not merely an administrative product of the 1990s, but the contemporary form of a much older academic tradition. However, the genealogy also requires interpretation. The institutions in this line had different meanings: Enlightenment learned society, national academy of sciences and arts, socialist state academy, and democratic public research organisation. The continuity between them is real but mediated through transformation. The historian's task is to explain how these different forms can belong to one narrative without making them identical. The strongest interpretation of AV ČR's identity is therefore not linear continuity, but continuity through institutional reinvention.

Institutional memory is formed not only through official histories, but also through annual reports, commemorative publications, exhibitions, public lectures, photographs, portraits, anniversary speeches, and digital archives. Franc and Mádlová's *History of the Czech Academy of Sciences in Pictures* is a revealing example because visual materials often communicate institutional continuity more immediately than analytical prose (*Franc & Mádlová, 2013*). Photographs of buildings, members, laboratories, meetings, instruments, and documents make the Academy visible as a historical community. They help readers imagine institutional time. Yet visual memory also needs critical framing. Images can monumentalise, simplify, or aestheticise the past. They may show official events more readily than hidden conflicts. They may preserve the faces of recognised figures while leaving invisible the labour of technicians, librarians, assistants, junior researchers, and excluded scholars. Institutional memory must therefore combine visual, textual, archival, and critical modes. Only then can it avoid becoming either propaganda or antiquarianism.

The formation of Czech scholarly identity also depended on disciplinary memory. Different fields remember themselves in different ways. Historians remember archives, editions, schools of interpretation, and major syntheses. Linguists remember grammars, dictionaries, corpora, theories, and debates over standard language. Natural scientists remember laboratories, instruments, discoveries, experimental techniques, and international collaborations. Mathematicians remember problems, proofs, schools, and lines of mentorship. Archaeologists remember excavations, collections, sites, and typologies. A national academy must integrate these different disciplinary memories into a broader institutional identity. This is not easy because each discipline has its own chronology and heroes. The Royal Czech Society of Sciences and later academies provided frameworks within which these diverse memories could coexist. The modern AV ČR continues this integrative function by housing many disciplines under one institutional structure. Czech scholarly identity is therefore plural from within. It is not one memory, but an organised constellation of memories.

The humanities played a particularly central role in forming Czech scholarly identity because they gave the nation access to its past, language, texts, and cultural self-understanding. Historical scholarship, philology, literary studies, archaeology, ethnology, philosophy, and later social sciences all contributed to the intellectual articulation of Czech identity. This does not mean that natural sciences were less important. Rather, the humanities supplied many of the symbolic and documentary foundations through which a Czech scholarly community could understand itself. The study of Czech language, medieval history, early modern documents, national literature, folklore, and political thought gave institutional memory a cultural depth. Academic institutions preserved this work through publications, archives, dictionaries, editions, and research programmes. In the modern Academy, the humanities continue to serve as guardians of cultural memory, but their role is not merely preservative. They also critically examine memory, question inherited narratives, and open the past to reinterpretation. This critical function is essential for a democratic scholarly identity.

The natural sciences contributed to Czech scholarly identity in a different but equally important way. They demonstrated that Czech research could participate in universal scientific knowledge and produce results recognised beyond national culture. Astronomy, mathematics, chemistry, physics, biology, medicine, geology, and technical disciplines linked Czech scholars with international standards and networks. The memory of scientific achievement therefore served as evidence that Czech scholarship was not merely cultural or historical, but fully scientific in the European sense. This was especially important for a smaller nation seeking intellectual equality. Internationally visible achievements strengthened national confidence and institutional legitimacy. At the same time, natural science in the Czech lands often remained connected with local territory: geology, botany, climate, health, agriculture, and later environmental research all involved knowledge of the country itself. Thus natural sciences also contributed to identity by making the Czech lands scientifically knowable. The Academy's identity was formed through the combination of universal contribution and local expertise.

The relation between memory and national identity requires caution. Benedict Anderson's concept of nations as imagined communities is useful because it reminds us that national identity is not simply natural or given; it is produced through shared narratives, print culture, institutions, and collective imagination (*Anderson, 2006*). Hobsbawm and Ranger's work on invented traditions likewise warns that traditions are often constructed, formalised, and projected backwards in order to create continuity (*Hobsbawm & Ranger, 1983*). These insights are valuable for writing the history of Czech academic institutions. The Academy's genealogy should not be treated as a timeless essence that simply unfolded from the 18th century to the present. It is a historically constructed continuity, assembled through documents, commemorations, institutional narratives, and scholarly interpretation. Yet constructed does not mean false. Institutional continuities can be real and constructed at the same time. The historian's task is to show how memory was made, why it mattered, and what it included or excluded.

Czech scholarly identity was formed through both remembering and forgetting. Institutions remember founders, presidents, famous members, major publications, anniversaries, buildings, and achievements. They often forget administrative labour, failed projects, marginal figures, women's contributions, politically inconvenient episodes, internal conflicts, and forms of dependence. Some forgetting is accidental; some is structural; some is political. A critical history of the Academy must therefore examine not only what Czech scholarly institutions

chose to remember, but also what later scholarship needs to recover. This includes the memory of German-speaking scholars in the Czech lands, Jewish intellectual contributions, Slovak relations within Czechoslovak structures, émigré scholars, purged researchers, and the everyday labour of research institutions. Institutional memory becomes stronger when it becomes more inclusive and more self-critical. It should not weaken identity to admit complexity. On the contrary, a mature academic identity is able to remember contradiction without losing continuity. This is especially important for a book that seeks to distinguish itself from celebratory institutional chronicle.

Archives are central to this critical reconstruction. The Masaryk Institute and Archives of the Czech Academy of Sciences preserves fonds related to ČSAV and AV ČR, and such archival collections make it possible to study the Academy not only through official summaries, but through documents of administration, correspondence, personnel, planning, and institutional change (*Masarykův ústav a Archiv AV ČR, n.d.*). Archival memory is different from commemorative memory. It is less selective in intention, although still shaped by preservation practices and access conditions. It can reveal tensions that official narratives minimise. It can show how decisions were made, how reforms were discussed, how institutions responded to pressure, and how scientific life was organised in practice. For the history of Czech scholarly identity, archives are indispensable because they allow identity to be grounded in evidence. They prevent memory from becoming purely rhetorical. The Academy's own archival institutions therefore play a double role: they preserve the past and make possible the critical study of that past. This is one of the deepest forms of institutional self-awareness.

Digitalisation has changed the public meaning of institutional memory. Older publications, bulletins, journals, proceedings, and archival materials that once required specialised access can now be consulted more widely through digital libraries. The Digital Library of the Czech Academy of Sciences extends the communicative life of older academy-related materials and makes them part of contemporary research infrastructure (*Digitální knihovna AV ČR, n.d.*). This is not merely a technical improvement. It changes the relationship between institutional memory and public knowledge. A society can study its own scientific past more openly when sources are digitally accessible. International scholars can also engage more easily with Czech academic history, even when language barriers remain. Digital access therefore supports the internationalisation of Czech scholarly memory. It also strengthens continuity by allowing old texts to be re-read, reinterpreted, and integrated into new research. Digital memory is not a replacement for archives, but a new layer of institutional remembrance.

The modern Czech Academy of Sciences also forms institutional memory through its public mission. Annual reports, strategy documents, public lectures, popularisation activities, exhibitions, and media communication all contribute to how the Academy is remembered in the present. Memory is not only retrospective. Institutions are constantly producing the materials through which they will later be studied. The Academy's contemporary emphasis on research in the public interest, especially through Strategy AV21, will itself become part of future institutional memory (*Strategie AV21, 2017*). It records how the Academy understood its role in relation to society, state, innovation, crisis, and interdisciplinary research in the early 21st century. This means that the Academy is not only inheriting memory; it is actively creating the memory that future historians will analyse. The same was true of earlier learned societies and academies. Their publications and reports became sources because they were originally instruments of communication and self-representation. Institutional memory is always being made.

The formation of Czech scholarly identity also has a European dimension. Czech academic institutions did not develop in isolation. They were shaped by European models of learned societies, Habsburg administrative structures, German-language scholarship, French Enlightenment culture, Slavic philology, socialist academy models, and later European research integration. Czech scholarly identity is therefore not opposed to European identity. It was formed through European connections. The Royal Czech Society of Sciences placed Prague within the European learned society movement. ČAVU gave Czech scholarship a national academy form comparable to other European cultural-scientific institutions. ČSAV connected Czechoslovak research with the socialist academy model. AV ČR after 1993 entered democratic European and global research systems. Across these stages, Czech identity was repeatedly redefined through international comparison. The Academy's memory must therefore be national and European at the same time.

This dual identity is especially important for the period after 1993. The Czech Academy of Sciences had to become a modern national research institution while proving itself in international science. Its institutional memory helped stabilise this transition. By invoking older predecessors, the Academy could show that it had historical depth. By reforming its structures and participating in international research, it could show that historical depth did not mean backwardness. This balance between memory and modernisation became central to its post-socialist legitimacy. The Academy could not live only from tradition, but it could not be understood without tradition. Its identity after 1993 therefore rested on the transformation of inherited memory into contemporary research capacity. That is one of the central arguments of this book. The Academy's modernity is not a rejection of the past; it is a reorganisation of the past for new scientific and public purposes.

Institutional memory also supports resilience. Institutions that understand their own history can better survive crisis, because they possess narratives, records, and standards that help them interpret change. This does not guarantee wise decisions, but it gives reform a deeper foundation. The Czech academic tradition has survived imperial transformation, national revival, democratic statehood, Nazi occupation, communist rule, federal dissolution, and European integration. Such survival would be impossible without institutions capable of preserving at least some continuity across ruptures. Memory does not remove trauma or conflict, but it prevents total discontinuity. It allows later generations to recover suppressed names, reinterpret old achievements, and rebuild damaged legitimacy. The Academy's history is therefore a history of resilience through memory. Its institutional identity was repeatedly threatened, but never entirely erased. This resilience is one of the strongest reasons for treating the history of the Academy as a major subject in the study of Czech science.

Institutional memory, however, must remain open to revision. A fixed memory becomes ideology. A critical memory becomes scholarship. The history of the Czech Academy and its predecessors should therefore avoid both heroic linearity and cynical fragmentation. It should not present every institution as a simple step towards the present, as if AV ČR were the predetermined culmination of Czech scholarly history. Nor should it dissolve continuity entirely by treating every period as disconnected from the others. The better approach is to examine how institutions remembered, transformed, and reinterpreted what came before them. The Royal Czech Society of Sciences, ČAVU, ČSAV, and AV ČR each inherited something and changed it. Each also produced new memory for later periods. Czech scholarly identity was formed through this chain of inheritance and reinterpretation. It is a historical process, not a fixed essence.

Thus, institutional memory was central to the formation of Czech scholarly identity because it gave Czech science a documented past, a sense of continuity, and a framework for interpreting change. Learned societies, academies, libraries, archives, publications, collections, membership lists, commemorations, and digital repositories made it possible for Czech scholarship to understand itself as a historical community rather than as a temporary arrangement of researchers. This memory was multilingual, European, national, disciplinary, and often politically contested. It preserved achievements, but it also contains ruptures, exclusions, ideological pressures, exile, and reform. The Czech Academy of Sciences inherits this complex memory from the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy of Sciences, while also creating its own post-1993 memory through democratic transformation, internationalisation, and public-interest research. The formation of Czech scholarly identity therefore cannot be separated from the institutions that recorded, selected, criticised, and transmitted knowledge across generations. In the long history of Czech science, institutional memory is not a passive archive of the past, but an active force that enables continuity, legitimacy, renewal, and future-oriented academic self-understanding.

2. Continuity between Learned Societies and Later Academies

The continuity between learned societies and later academies should not be understood as a simple institutional succession in which one organisation disappears and another mechanically takes its place. In the history of Czech academic science, continuity is more complex, more layered, and more intellectually interesting. It consists not only in legal inheritance, names, archives, buildings, or membership records, but also in the transmission of functions. Learned societies created forms of scholarly sociability, collective recognition, publication, correspondence, archival preservation, and public authority that later academies transformed into more professional and specialised structures. Modern academies did not merely replace learned societies; they absorbed, reorganised, and sometimes reinterpreted their practices. The Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, the Czechoslovak Academy of Sciences, and the Czech Academy of Sciences represent different institutional types, but they are connected by a continuing effort to give scholarship a durable public form in the Czech lands. The present Czech Academy of Sciences explicitly places itself in this longer genealogy, identifying earlier learned institutions as its predecessors (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*). This claim of continuity is historically meaningful, but it needs careful interpretation. The institutions were not identical, and the political worlds in which they operated were very different. Yet they participated in a shared historical process: the organisation of knowledge as a collective, documented, authoritative, and socially significant activity.

The earliest form of this continuity can be seen in the movement from private scholarly circles to the Royal Czech Society of Sciences. This movement already contained the basic logic of later academic development. A loose community of scholars, patrons, university figures, clerics, and learned amateurs gradually became a recognised institution with membership, publications, meetings, and public legitimacy. The Royal Society did not yet possess the structure of a modern research academy, but it created an institutional grammar that later academies could inherit. It established that scholarship in the Czech lands should not depend only on isolated individuals or temporary patronage. It should have a corporate body capable

of preserving and representing learned work across time. This was a decisive shift because it made scholarship institutionally visible. It allowed the Czech lands to participate in the European learned society movement while developing a local centre of intellectual authority. Later academies would expand this function through formal classes, institutes, research programmes, salaried staff, and state recognition. Yet the basic idea that knowledge required a stable learned institution was already present in the Society (*Pokorná, 2010*; *McClellan, 1985*).

One of the strongest lines of continuity was the practice of membership. Learned societies elected members and thereby created communities of recognised competence. Later academies formalised and expanded this principle, often distinguishing full members, corresponding members, foreign members, honorary members, research staff, institute directors, academy officials, and other categories. The function remained similar: to define a recognised body of scholarly authority. Membership was never merely social decoration. It signalled belonging to a community of judgement and gave scholars a place within institutional memory. In the Royal Czech Society of Sciences, membership linked individuals to a learned tradition; in the Czech Academy of Sciences and Arts, it became part of national scholarly prestige; in the Czechoslovak Academy of Sciences, it was connected with the authority of a state research system; in AV ČR, recognition is mediated through the structures of a modern public research organisation. The categories changed, but the logic persisted. Scholarly identity was not only individual; it was institutional. This is why membership lists, biographies, commemorations, and academy portraits are not trivial records. They show how knowledge communities remembered themselves.

Publication formed another durable bridge between learned societies and academies. Learned societies created proceedings, memoirs, reports, prize essays, and serial publications that turned meetings and papers into public records. Later academies professionalised this publication culture through journals, monographs, annual reports, institutional histories, digital repositories, and specialised series. The difference in scale is enormous, but the underlying function is continuous. A scholarly institution must make knowledge communicable and preservable. Publication gives research a public form and allows later scholars to evaluate, cite, criticise, and extend it. The Royal Czech Society of Sciences began this work in the Czech lands by publishing learned contributions within an institutional frame. ČAVU continued it through more nationally defined academic support and publication activities. ČSAV and AV ČR developed far larger publication and documentation systems, reflecting the growth of professional science. Digital libraries now extend this tradition into the 21st century by making older academic publications newly accessible (*Digitální knihovna AV ČR, n.d.*; *Masarykův ústav a Archiv AV ČR, n.d.*). The medium has changed, but the scholarly principle remains: an academy exists partly to give knowledge durable form.

The continuity between learned societies and academies also involved the preservation of archives and collections. Learned societies accumulated books, manuscripts, correspondence, member records, natural specimens, instruments, and documentary materials. Later academies inherited and expanded this archival function through libraries, institute collections, research archives, historical fonds, and digital infrastructures. The material preservation of knowledge is one of the deepest continuities in academic history. Without archives and collections, institutional memory becomes rhetoric rather than evidence. The Czech academic tradition is especially dependent on such preservation because its early learned culture was multilingual, documentary, and historically layered. The

materials of the Royal Czech Society of Sciences, ČAVU, ČSAV, and AV ČR together make it possible to reconstruct the long history of Czech scholarship. The Masaryk Institute and Archives of the Czech Academy of Sciences plays a crucial role in this continuity by preserving fonds related to the Czechoslovak Academy of Sciences and the Czech Academy of Sciences (*Masarykův ústav a Archiv AV ČR, n.d.*). The archive connects institutional periods that would otherwise appear separate. It allows continuity and rupture to be studied together.

The transition from learned society to academy also involved increasing specialisation. Early learned societies were broad in scope, often gathering mathematics, natural history, philology, history, medicine, astronomy, and antiquarian scholarship within one learned body. Later academies had to deal with the expansion of disciplines, the rise of laboratory science, professional research careers, technical infrastructures, and the growing complexity of scientific administration. This did not destroy continuity; it changed its form. The broad learned society became the ancestor of an academy divided into classes, sections, institutes, and research areas. The Czech Academy of Sciences and Arts gave stronger institutional expression to Czech national scholarship while still preserving a broad conception of sciences and arts. ČSAV developed an institute-based model organised around large-scale research capacities and state planning. AV ČR later restructured this inheritance within a democratic, European, and competitive research environment. Across these changes, one principle remained: the academy should provide an institutional frame within which different branches of knowledge can coexist. The learned society's broad intellectual horizon was transformed into the academy's differentiated structure.

The Czech Academy of Sciences and Arts represents a particularly important intermediate stage in this continuity. Founded in the late 19th century, it was not simply a continuation of the Royal Czech Society of Sciences under another name. It embodied a new national-cultural ambition and a more explicit Czech scholarly identity. Yet it inherited from the earlier society the idea that science, scholarship, literature, and cultural achievement required institutional support and public recognition. ČAVU gave this idea a stronger national form, connected with patronage, membership, publication, prizes, and prestige. Vlasta Mádlová's study of ČAVU emphasises the institution's long existence from 1891 to 1952 and its role in supporting Czech science and culture before its dissolution into the new socialist academy structure (*Mádlová, 2024*). The continuity here was both intellectual and symbolic. ČAVU did not merely preserve older learned traditions; it nationalised and modernised them. It translated the Enlightenment learned society model into the language of Czech cultural maturity. This made it a crucial bridge between the multilingual Bohemian learned tradition and 20th-century Czech academic institutionalisation.

The role of patronage also changed but did not disappear. Learned societies often depended on aristocratic, royal, ecclesiastical, or civic support. The Czech Academy of Sciences and Arts was deeply associated with the patronage and institutional vision of Josef Hlávka. Later, the Czechoslovak Academy of Sciences depended on the socialist state, while the Czech Academy of Sciences after 1993 depends on democratic public funding, legal statutes, research evaluation, and European scientific cooperation. These forms of support are very different, but all show that organised scholarship requires resources. Continuity therefore includes the changing relationship between knowledge and funding. A learned society needed patrons and subscribers; a national academy needed foundations, state recognition, and public legitimacy; a socialist academy needed centralised state resources; a modern public research institution needs budgetary stability, competitive funding, accountability, and international partnerships.

Each model creates possibilities and risks. Patronage can support scholarship but also shape priorities. State funding can enable major research infrastructure but also threaten autonomy. The history of academies is therefore also the history of how scholarly institutions negotiate dependence while trying to preserve authority.

The connection between learned societies and later academies is also visible in their public mission. Enlightenment learned societies often justified themselves through useful knowledge: improvement of agriculture, medicine, mining, education, history, language, administration, and public culture. Later academies developed more complex and specialised missions, but the idea that organised knowledge should benefit society remained important. The Czech Academy of Sciences after 1993 expresses this mission in contemporary language through research excellence, public-interest science, expert advice, innovation, and interdisciplinary programmes such as Strategy AV21 (*Strategie AV21, 2017*). The distance between an 18th-century learned society and a 21st-century strategic research programme is obvious. Yet there is a real continuity in the belief that scholarship should not remain purely private or ornamental. It should serve the broader intellectual and practical life of society. The meaning of service has changed. It no longer means obedience to rulers or simple improvement rhetoric; it means independent, high-quality research addressing complex public challenges. But the genealogy of public scholarly responsibility reaches back to learned society culture.

Continuity was also carried by the relationship between scholarship and national identity. The Royal Czech Society of Sciences arose in a multilingual Bohemian environment and cannot be treated as a fully national Czech institution in the later sense. However, its work in history, philology, natural history, and territorial knowledge contributed to the materials from which Czech scholarly identity later developed. ČAVU then gave Czech science and culture a more explicit national academy form. ČSAV operated within a Czechoslovak and socialist state framework, but it preserved many Czech research institutions and disciplines. AV ČR after 1993 became the public research institution of an independent Czech Republic. Across these stages, the connection between scholarship and identity was repeatedly redefined. Learned societies supplied historical and linguistic foundations; national academies supplied cultural prestige; state academies supplied research infrastructure; modern academies supply international competitiveness and public expertise. The continuity is therefore not ideological sameness. It is the recurring effort to give Czech scholarly life an institutional form appropriate to changing historical conditions (*Franc, Kostlán, & Míšková, 2010*; *Franc & Mádlová, 2013*).

A further line of continuity concerns the relationship between universities and academy-type institutions. Learned societies developed beside universities because universities were not sufficient for all forms of research, correspondence, publication, and public scholarly representation. Later academies inherited this position as institutions partly distinct from universities. In the Czech lands, this relationship became especially significant in the 20th century, when ČSAV developed as a major non-university research system and entered into both cooperation and competition with Charles University and other universities (*Jareš, Franc, & kol., 2018*). The roots of this dual structure go back much further. Prague's scholarly life had long involved both university learning and learned association. The academy model therefore did not arise against the university alone, but as a complementary form of organised research. The modern Czech Academy of Sciences continues this relationship by functioning as a public research organisation distinct from, but connected with, universities. It collaborates in

doctoral training, research projects, infrastructure, and expert activity. This is a modern form of an older institutional division of labour between teaching and research.

The continuity between learned societies and later academies can also be traced through the treatment of disciplines. In early learned societies, disciplinary boundaries were fluid and often organised around broad fields of curiosity. Natural history, history, philology, mathematics, medicine, and astronomy could coexist in a single corporate body. Modern academies had to respond to increasing disciplinary differentiation. They created classes, sections, institutes, committees, and research areas. Yet they retained the ambition to represent knowledge as a whole. This is one of the most important inherited features of academy organisation. A university may be divided into faculties; a research institute may specialise in one field; a grant agency may distribute funds by programme. An academy, at least in the classical sense, claims to hold together a wider intellectual order. The Czech Academy of Sciences still reflects this heritage through its broad coverage of natural, technical, medical, social, and human sciences. The learned society's encyclopaedic impulse has become institutional multidisciplinarity. The historical form has changed, but the integrative aspiration remains.

The transfer of institutional memory from learned societies to academies was never automatic. It required active acts of remembrance: histories, commemorations, inventories, membership lists, catalogues, exhibitions, and official narratives. Wegner's list of members of the Royal Czech Society of Sciences, Franc and Mádlová's pictorial history of the Academy, and modern AV ČR historical summaries are all examples of such memory work (*Wegner, 1884*; *Franc & Mádlová, 2013*; *Akademie věd České republiky, n.d.*). These texts and records do not merely describe continuity; they help create it. They select predecessors, arrange chronology, assign meaning, and connect institutions across time. This does not make continuity artificial in a negative sense. All institutional continuity must be narrated to become intelligible. The historian's responsibility is to examine how that narration was constructed and what it includes or excludes. In the Czech case, the continuity narrative is persuasive because there are real institutional, archival, and functional links. But it remains a historical construction that must be treated analytically, not repeated uncritically.

The year 1952 represents a particularly important moment of both continuity and rupture. The establishment of the Czechoslovak Academy of Sciences brought older institutions, including the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts, into a new centralised socialist research system (*Dvořáčková, Franc, & kol., 2019*). This was not a simple continuation of learned society or national academy traditions. It was a structural transformation shaped by the Soviet model, state planning, ideological expectations, and the ambition to organise science as a major productive force. At the same time, ČSAV inherited personnel, collections, research traditions, scholarly authority, and institutional memories from earlier Czech learned life. The rupture was political and organisational; the continuity was intellectual and material. This duality is essential. If one emphasises only rupture, one loses the genuine scientific capital carried into ČSAV. If one emphasises only continuity, one overlooks the ideological and administrative transformation imposed after 1948. The history of Czech academy institutions must hold both together.

The post-1989 and post-1993 transformation represents another moment of continuity through rupture. The Czech Academy of Sciences inherited much from ČSAV: institutes, researchers, buildings, collections, archives, expertise, and disciplinary traditions. Yet it had to redefine its mission under democratic conditions and in a newly independent Czech Republic. It could not

simply remain ČSAV under another name. It had to reform governance, legitimacy, evaluation, international orientation, and public accountability. This transformation resembles earlier transitions in one important respect: continuity was preserved by changing institutional form. The Royal Czech Society of Sciences became part of a later academy genealogy because its functions were transformed. ČAVU gave learned culture a national academy structure. ČSAV turned academy organisation into a state research system. AV ČR transformed that system into a democratic public research institution. The pattern is not one of unchanged survival. It is one of repeated institutional reinvention. That is why continuity is best understood as a process rather than as a static inheritance.

The learned society's culture of correspondence also has a later counterpart in academy internationalisation. Early learned societies maintained networks through letters, exchanges of publications, foreign members, and personal contacts. Modern academies operate through international projects, European research programmes, visiting fellowships, joint laboratories, conferences, data infrastructures, and global publication networks. The scale and technology differ, but the principle is the same: scholarship must communicate beyond local boundaries. The Royal Czech Society of Sciences helped connect Prague with European learned culture; AV ČR connects Czech research with the European Research Area and global science. This is a powerful line of continuity. Czech science has always needed to be both local and international. Its institutions have repeatedly created mechanisms for moving knowledge across borders. Correspondence has become collaboration; publication exchange has become digital access; foreign membership has become international partnership. The older network logic survives in modern form.

The learned society's publication culture also has a counterpart in modern research evaluation. Early societies used publication to make knowledge visible and credible. Modern academies use publications, citations, peer review, project outcomes, annual reports, and institutional evaluations to assess research quality. The methods have become much more formal and quantitative in some respects, but the fundamental principle remains: scholarship must be made public in forms that allow judgement. The Czech Academy's recent emphasis on reforming research evaluation continues this long history under contemporary conditions (*Akademie věd České republiky, 2024*). Evaluation is not an alien bureaucratic addition to academic life; it is a modern version of a very old academic function. Learned societies evaluated papers, prize essays, inventions, and membership. Modern academies evaluate institutes, projects, careers, and outputs. The challenge is to ensure that evaluation supports quality without reducing scholarship to mechanical indicators. This challenge is contemporary, but its roots are historical.

There is also continuity in the moral vocabulary of scholarship. Learned societies cultivated ideals of credibility, civility, accuracy, useful knowledge, and contribution to a collective enterprise. Later academies developed stronger ideals of professional integrity, autonomy, objectivity, public responsibility, and research ethics. These ideals changed historically, but they share a belief that scholarship requires standards beyond private opinion or political convenience. This moral continuity was severely tested in periods of ideological control, especially under communist rule and during normalisation after 1968 (*Míšková, Barvíková, & Šmidák, 1998*). Post-1989 academic reform therefore had to restore not only institutional structures, but also moral confidence in scholarly autonomy. The modern Academy's legitimacy depends on its ability to embody independent, evidence-based, publicly responsible knowledge. This ideal has deep roots in learned society culture, even though the

language of modern research ethics is much newer. Academic continuity includes ethical memory as well as organisational memory.

The relationship between learned societies and later academies also reveals the importance of scale. Learned societies were relatively small, elite, and flexible. Modern academies are larger, more bureaucratic, and more dependent on complex funding and administration. Scale changes institutional behaviour. A small society can rely on personal trust and informal scholarly judgement; a large academy needs statutes, councils, budgets, evaluations, employment structures, and strategic planning. Yet scale does not abolish the earlier functions. It formalises them. Membership becomes institutional affiliation; meetings become assemblies and councils; correspondence becomes international cooperation; publications become research outputs; collections become research infrastructures; patronage becomes public funding. The modern academy is therefore not a different species entirely. It is an enlarged and professionalised descendant of learned organisation. The challenge is that growth can produce bureaucracy and distance from scholarly life. A successful academy must preserve the intellectual seriousness of the learned society while managing the complexity of modern research.

The learned society tradition also helps explain why academy institutions are often concerned with prestige. Prestige may appear superficial, but in academic history it has practical power. Prestige attracts members, patrons, students, collaborators, funding, and public attention. Learned societies cultivated prestige through royal charters, distinguished members, publications, anniversaries, and international correspondence. Later academies cultivated it through major discoveries, awards, institutional rankings, international partnerships, and public representation. The Czech Academy's long historical genealogy contributes to its prestige because it shows that Czech science has deep institutional roots. Prestige becomes problematic only when it replaces substance. In its best form, prestige is the public recognition of real scholarly authority. Learned societies taught future academies how to create and preserve such authority through visible institutional forms. The task of modern academies is to ensure that prestige remains tied to research quality, intellectual independence, and public value.

Continuity also depends on the preservation of failure and conflict. Learned societies and academies did not develop smoothly. They experienced disputes, language tensions, political pressures, financial difficulties, institutional rivalries, and moments of decline. Later academy history includes ideological control, purges, exile, reform conflicts, funding disputes, and debates over evaluation. These episodes are part of continuity because they shaped how institutions changed. A history that remembers only achievements creates a false tradition. A history that remembers only conflicts destroys the meaning of institutional endurance. The Czech academy tradition requires a balanced account. The Royal Czech Society of Sciences, ČAVU, ČSAV, and AV ČR each contributed to Czech scholarly development, but each also reflected the limitations of its time. Continuity between them is therefore not a chain of perfection. It is a chain of adaptation, compromise, recovery, and renewal. This makes the history more serious and more useful.

The transformation of learned society functions into modern academy functions can be summarised through several continuities. The learned society's membership became the academy's structures of recognition. Its meetings became assemblies, councils, seminars, and expert panels. Its publications became journals, monographs, reports, and digital

repositories. Its correspondence became international collaboration. Its collections became research infrastructures, archives, and databases. Its public usefulness became public-interest research and expert advice. Its territorial scholarship became national and European research identity. Its commemorations became institutional historiography. Its multilingual culture became modern bilingual and international science. These transformations show that the line from learned societies to academies is not superficial. It is embedded in the practical operations of academic life. The modern Academy is not a museum of learned society traditions, but it continues to perform many of their functions under new historical conditions.

For the Czech Academy of Sciences, this continuity provides an important interpretative advantage. It allows the Academy to be understood not only as an organisation created after 1993, nor only as the successor of ČSAV, but as the current form of a much longer Czech lands effort to organise knowledge. This long perspective helps prevent the post-1993 Academy from appearing as a purely administrative product of post-socialist reform. It also prevents ČSAV from appearing as the sole origin of academy-based research in the Czech lands. The Academy's genealogy is deeper and more varied. It includes Enlightenment learned society, national academy, socialist research system, and democratic public research institution. Each layer contributed something different. The strength of the modern Academy lies partly in its ability to carry these layers without being reduced to any one of them. This is why the continuity between learned societies and later academies is central to the whole book.

Thus, the continuity between learned societies and later academies in the Czech lands was not a simple sequence of institutional replacements, but a long transformation of scholarly functions. Learned societies created membership, publication, correspondence, collections, archives, public authority, disciplinary breadth, and institutional memory. Later academies professionalised these functions, attached them to national culture, expanded them into research infrastructures, reorganised them under state systems, and eventually reinterpreted them within democratic and European science after 1993. The Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, the Czechoslovak Academy of Sciences, and the Czech Academy of Sciences differ profoundly in structure and political context, but they are linked by the continuing task of making knowledge collective, durable, authoritative, and publicly meaningful. This continuity is strongest when understood critically, with attention to rupture, ideological pressure, multilingual inheritance, professionalisation, and reform. The modern Czech Academy of Sciences is therefore not merely the last institution in a chronological chain. It is the current expression of a long Czech and Central European tradition of organised scholarship, repeatedly transformed in order to preserve the public life of science.

3. Why the 18th and 19th Centuries Matter for the Modern Academy

The 18th and 19th centuries matter for the modern Czech Academy of Sciences because they created the institutional, linguistic, cultural, and intellectual conditions through which Czech science could later become a modern public research system. Without these centuries, the Academy's history would appear to begin abruptly with the Czechoslovak Academy of Sciences in 1952 or with the Czech Academy of Sciences after 1993. Such a beginning would be historically misleading. The Academy's modern structure belongs to the 20th and 21st centuries, but its deeper logic was prepared much earlier. The 18th century gave the Czech lands the learned society as a durable form of organised scholarship. The 19th century transformed that learned culture into a more explicitly Czech national and academic project.

Together, these centuries created the bridge between university-based erudition, Enlightenment sociability, national scholarly identity, and later academy-based research. They explain why the Czech Academy of Sciences can legitimately situate itself within a genealogy that includes the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy of Sciences (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*). The modern Academy is therefore not merely an institution founded after a political transition; it is the current form of a long Czech and Central European process of organising knowledge.

The 18th century matters first because it introduced a new institutional form for scholarship in the Czech lands. Before the rise of learned societies, Prague and the broader Bohemian and Moravian environment already possessed universities, libraries, clerical scholarship, noble collections, correspondence networks, and private erudition. These were important, but they did not yet create a stable learned corporation comparable to the academies and societies developing elsewhere in Europe. The Royal Czech Society of Sciences changed that situation. It gave scholarly life a public body, a membership structure, publications, meetings, and a recognised place within European learned culture. The Society transformed knowledge from a dispersed activity into an institutional practice. This is why the present Academy's official historical narrative begins with that learned society as one of its predecessors (*Akademie věd České republiky, n.d.*). The 18th century is therefore not a remote cultural background. It is the moment when the institutional grammar of Czech academic science began to take shape. Later academies would become more specialised, more national, more professional, and more state-supported, but the principle of organised scholarship had already been established.

The 18th century also matters because it located Czech lands scholarship within the European Enlightenment. The learned society was not an exclusively local invention. It belonged to a wider European movement in which knowledge was increasingly organised through academies, societies, journals, prize questions, correspondence, and public claims of usefulness (*McClellan, 1985*). The Czech lands participated in this movement from a specific Central European position. They were part of the Habsburg Monarchy, multilingual in culture, shaped by Prague's old university tradition, and increasingly influenced by the idea that knowledge could improve society. The Royal Czech Society of Sciences therefore connected Prague to broader European patterns while adapting them to Bohemian conditions. It showed that scholarship in the Czech lands could be both local and European. This duality would become a lasting feature of Czech academic life. The modern Czech Academy of Sciences still lives within that duality: it serves Czech society while participating in international research. The 18th-century learned society was the first durable institutional form of this double orientation.

The 19th century matters because it transformed the earlier learned tradition into a national scholarly project. The Royal Czech Society of Sciences had emerged in a multilingual Bohemian Enlightenment environment, where German, Latin, Czech, and other languages shaped intellectual exchange. It was not originally a modern Czech national academy in the later sense. The 19th century changed the meaning of scholarship by placing language, history, literature, cultural memory, and national representation at the centre of Czech intellectual life. Czech scholars and cultural organisers worked to prove that Czech was not merely a language of everyday life or literature, but a language capable of scholarship, science, education, and public reason (*Macura, 1995*; *Sayer, 1998*). This transformation was decisive for the later

Academy. A modern national academy could not exist without a modern scholarly language, a trained readership, a publication culture, and a sense of collective intellectual mission. The 19th century created these conditions. It converted learned Bohemian scholarship into Czech academic self-consciousness.

The connection between language and institutional development is particularly important. The modern Academy rests on the assumption that Czech scholarship has its own historical legitimacy, but that legitimacy had to be constructed over time. Czech had to acquire grammar, dictionaries, terminology, textbooks, scientific prose, critical editions, and specialised vocabularies. This was not a secondary cultural matter; it was one of the foundations of scientific modernisation. A language that lacks scholarly instruments cannot easily sustain a full academic culture. 19th-century philology, lexicography, literary scholarship, and historical research therefore prepared the ground for later institutional science. The work of scholars connected with the Czech national revival made it possible for Czech to become a language of higher learning and public knowledge (*Macura, 1995*; *Dvořáčková, 2024*). The Academy's present capacity to communicate with Czech society, support Czech-language scholarship in the humanities, and preserve national intellectual memory depends on this 19th-century linguistic labour. The language of the modern Academy is therefore historically built, not naturally given.

The 18th and 19th centuries also matter because they established the broad intellectual profile of Czech academic science. From the beginning, Czech learned institutions did not separate the natural sciences from the humanities in a rigid way. The Royal Czech Society of Sciences gathered historical, philological, mathematical, astronomical, natural-historical, and other forms of inquiry within one scholarly framework (*Pokorná, 2010*). Later, the Czech Academy of Sciences and Arts united sciences, scholarship, literature, and the arts in a more explicitly national institutional form (*Mádlová, 2024*). This breadth is essential for understanding the modern Academy. AV ČR is not only a natural-scientific institution, nor only a network of laboratories. It includes humanities, social sciences, historical research, language studies, cultural memory, natural sciences, technical fields, and life sciences. The roots of this broad conception lie in the 18th- and 19th-century understanding of knowledge as a connected cultural and scientific enterprise. The modern Academy's multidisciplinarity is therefore not merely a contemporary organisational choice. It has deep historical foundations.

The 18th century gave Czech lands scholarship a culture of useful knowledge, while the 19th century connected that usefulness with national development. Enlightenment learned societies often justified their work by reference to improvement: better agriculture, better medicine, better education, better administration, better knowledge of nature, and better understanding of history (*McClellan, 1985*). In the Czech lands, this language of usefulness gradually interacted with the national revival. Knowledge was useful not only because it served administration or economy, but because it helped form a modern cultural nation. Historical research, language study, natural history, and education all contributed to the intellectual development of Czech society. This connection between scholarship and public purpose remains vital for the modern Academy. Strategy AV21's language of "top research in the public interest" belongs to a different historical world, but it echoes a very old academic theme: organised knowledge should matter to society (*Strategie AV21, 2017*). The modern form is democratic, interdisciplinary, and research-based, but the deeper tradition of public scholarly responsibility reaches back to the Enlightenment and national revival.

The 18th and 19th centuries also created the documentary foundations of Czech scientific memory. Learned societies, libraries, publications, membership lists, correspondence, catalogues, collections, and later academy records made scholarship preservable. This documentary culture is central to institutional continuity. Without printed memoirs, proceedings, archives, and lists of members, the early history of Czech academic science would be much more difficult to reconstruct. The Royal Czech Society of Sciences and later institutions produced the materials through which they could be remembered. Wegner's 19th-century membership list, for example, is not merely an administrative record; it is a document of scholarly continuity (*Wegner, 1884*). The same applies more broadly to the collections preserved by Czech academic and archival institutions. The modern Academy's historical self-understanding depends on the survival and reinterpretation of such documents. In this sense, the 18th and 19th centuries matter because they created not only scholarship, but also the evidence of scholarship.

The history of collections is equally important. Scientific collections, manuscript collections, natural history specimens, libraries, instruments, maps, and archival materials gave scholarship a material basis. These objects allowed knowledge to become cumulative and comparative. They also connected local Czech lands materials with European systems of classification and interpretation. A manuscript from Bohemia, a mineral from Moravia, a meteorological record from Prague, or a linguistic form from Czech oral culture could become part of a larger scholarly project only when collected, preserved, described, and circulated. Learned societies and related institutions helped create this culture of collection. The modern Academy's institutes, archives, digital libraries, and research infrastructures are much more advanced, but they continue the same basic function: preserving the material conditions of knowledge (*Digitální knihovna AV ČR, n.d.*; *Masarykův ústav a Archiv AV ČR, n.d.*). The 18th and 19th centuries therefore matter because they show how Czech science became rooted in objects, texts, instruments, and records.

The 19th century is also essential because it produced a more explicit connection between science and Czech cultural identity. The national revival did not create scholarship out of nothing, but it reinterpreted earlier learned work as part of a Czech cultural project. Language, history, literature, folklore, archaeology, and philology became central fields through which Czech society understood itself. This mattered for later academic institutions because a national academy cannot exist merely as a technical body. It also represents a culture's belief in its own intellectual capacity. The Czech Academy of Sciences and Arts embodied this belief by creating a prestigious institution devoted to sciences and arts in a national framework (*Mádlová, 2024*). The modern Czech Academy of Sciences is different in structure and mission, but it still inherits the idea that scholarship contributes to cultural self-understanding. Its institutes in history, language, literature, archaeology, philosophy, law, sociology, and related fields continue to preserve and critically examine Czech cultural memory. This function has 19th-century roots.

At the same time, the 18th and 19th centuries matter because they prevent us from writing a narrow nationalist history. Czech scholarly identity emerged from a multilingual and European environment. Latin, German, Czech, French, and other languages all shaped the development of science in Bohemia and Moravia. German-language scholarship, Habsburg reform, French Enlightenment culture, Latin university tradition, and European learned societies all contributed to the intellectual foundations of Czech science (*Agnew, 2004*; *Burke, 2000*). The modern Academy's Czech identity was not produced by isolation, but by transformation within

a shared Central European scholarly space. Recognising this fact makes the history more accurate and more intellectually mature. It shows that Czech scholarship became national by engaging with transnational resources. The Academy's history is therefore Czech and European at the same time. The 18th and 19th centuries are the period in which this dual identity was formed most visibly.

The significance of Prague also becomes clearer when viewed through these centuries. Prague was not merely the later capital of Czech academic life; it was an old university city, a library centre, a site of astronomical observation, a centre of printing and learned communication, and eventually a place where learned society culture acquired institutional form. Charles University gave Prague medieval scholarly depth, while the Royal Czech Society of Sciences gave it Enlightenment academic sociability (*Charles University, n.d.*; *Pokorná, 2010*). The 19th century then transformed Prague into a symbolic centre of Czech national scholarship. This long urban continuity matters for the modern Academy. AV ČR's presence in Prague is not just an administrative fact; it belongs to a historical geography of knowledge. The city's scholarly identity was built through universities, libraries, observatories, societies, academies, archives, and public institutions. The modern Academy stands within that urban memory, even as its research networks extend far beyond Prague.

Moravia also matters in this long perspective. The development of Czech academic science was not exclusively Prague-centred. Moravian learned culture, including Olomouc, Brno, monastic libraries, noble collections, and regional scholarly networks, contributed to the broader scientific life of the Czech lands. The 18th-century culture of learned sociability and the 19th-century national revival had Moravian dimensions as well as Bohemian ones. This is important because modern Czech science is geographically plural. The Czech Academy of Sciences includes institutes and research activities beyond Prague, and Czech scholarship has always depended on several regional centres. The 18th and 19th centuries help us see this plurality. They show that Czech academic identity was formed through a network of places, not through a single city alone. Prague had central symbolic and institutional importance, but it did not exhaust the scientific culture of the Czech lands. This regional dimension strengthens the interpretation of the Academy as a national institution with deep territorial roots.

The 18th and 19th centuries also matter because they introduced the problem of balancing autonomy and patronage. Learned societies depended on royal, aristocratic, civic, ecclesiastical, or state recognition, while also cultivating scholarly authority. ČAVU depended on patronage, especially the role of Josef Hlávka, while aiming to support independent Czech science and culture (*Mádlová, 2024*). This tension between support and autonomy would become one of the central problems of later academy history. ČSAV received extensive state support but was also subject to political and ideological control. AV ČR after 1993 operates within democratic public funding and research evaluation, but still has to defend scientific autonomy while proving public value. The roots of this problem lie in the earlier history of learned institutions. Scholarship needs resources, but resources create relationships of dependence. The 18th and 19th centuries reveal the first Czech forms of this structural tension. Understanding them helps explain why institutional autonomy is so important for the modern Academy.

The 19th century also matters because it prepared the idea of a non-university research institution. Universities remained central to scholarship, but learned societies and academies created forms of research organisation distinct from teaching. This distinction became

increasingly important as science professionalised and specialised. The Royal Czech Society of Sciences and ČAVU showed that scholarship could have institutional homes outside the university faculty structure. Later, ČSAV would turn this idea into a powerful institute-based research system, and AV ČR would inherit and reform that system. The modern Academy's role as a public research institution therefore has roots in the older separation between teaching-centred and research-centred forms of knowledge organisation. This does not imply hostility between universities and academies. Czech science has repeatedly depended on their interaction. Yet the idea that research requires institutions of its own was already developing long before the 20th century. The 18th and 19th centuries prepared that idea conceptually and practically.

These centuries also matter because they show how scholarly authority became institutional rather than merely personal. Great scholars were important, but their work gained durability through societies, academies, publications, archives, and commemorative practices. Josef Dobrovský, Gelasius Dobner, Joseph Stepling, Josef Hlávka, and many others became part of Czech scholarly memory not only because of individual achievement, but because institutions preserved and interpreted their roles. Academic identity is built through such institutionalised memory. The modern Academy continues to function as a place where scholarly authority is collectively recognised. This includes not only present-day researchers, but also historical figures whose work has become part of academic lineage. The 18th and 19th centuries supplied many of the founding figures, symbolic precedents, and intellectual models later used to narrate Czech academic history. They therefore provide the human and symbolic foundations of the Academy's identity.

The relationship between science and society also became more visible during these centuries. Enlightenment scholarship increasingly claimed that knowledge should improve the country, while 19th-century scholarship connected knowledge with national education, public culture, and civic life. These developments helped make science a matter of public significance. The modern Academy's social role cannot be understood only through contemporary innovation policy or research evaluation. It also reflects an older conviction that organised scholarship belongs to the public life of a society. The Academy's current communication with citizens, schools, policymakers, and cultural institutions is a modern form of this older relationship. Of course, the public of the 18th century was much narrower than today's democratic public. The 19th-century national public was also selective and shaped by its own exclusions. Nevertheless, these earlier periods created the expectation that scholarship should not be hidden from society. That expectation remains central to the modern Academy.

The 18th and 19th centuries also shaped Czech academic culture through the practice of commemoration. Learned societies and academies marked anniversaries, published lists, celebrated founders, preserved portraits, and narrated their histories. These practices created institutional self-awareness. They also made continuity visible. The modern Academy's own commemorative publications and historical overviews continue this practice (*Franc & Mádlová, 2013*). Commemoration is not neutral, and it can become overly celebratory. Yet it is also necessary because institutions without memory become administratively presentist. The 18th- and 19th-century tradition of recording, listing, commemorating, and publishing made it possible for Czech academic life to develop a historical consciousness. That consciousness is one of the reasons why the Academy can now be studied as a long institution rather than as a sequence of disconnected organisations.

The importance of these centuries becomes even clearer when considering the ruptures of the 20th century. Nazi occupation, communist transformation, ideological control, purges, exile, and post-1989 reform all altered Czech academic life dramatically. If the history of Czech science began only in the 20th century, these ruptures might seem to define everything. The longer 18th- and 19th-century perspective shows that Czech scholarly identity had deeper roots and could therefore survive institutional disruption. Earlier learned societies, academies, publications, archives, and linguistic traditions provided resources for recovery and reinterpretation. After 1989, the modern Academy could appeal not only to ČSAV's research infrastructure, but also to older traditions of Czech scholarly autonomy, culture, and public knowledge. This long memory helped legitimate transformation. It showed that democratic Czech science was not being invented from nothing, but restored and renewed through older intellectual lineages (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*).

The 18th and 19th centuries also matter for understanding the difference between institutional continuity and political continuity. Political regimes changed repeatedly, but scholarly institutions preserved certain functions across change. The Royal Czech Society of Sciences survived through Habsburg rule and into the modern era. ČAVU developed in the late imperial and later Czechoslovak context. Their inheritances were absorbed into ČSAV in 1952 and later remembered by AV ČR. This continuity does not mean that politics were irrelevant. On the contrary, politics shaped institutions profoundly. But scholarly continuity operated through documents, collections, disciplines, languages, and professional memory that could outlast political structures. The modern Academy's identity is built on this distinction. It belongs to the Czech Republic, but its institutional memory reaches beyond the current state. The 18th and 19th centuries make this deeper continuity visible.

These centuries also explain why the modern Academy is not only a research institution, but also an institution of cultural heritage. Its history includes the preservation of language, archives, documents, collections, scientific traditions, and scholarly biographies. The Academy's role in cultural memory is not secondary to its scientific mission; it is part of that mission. This is particularly important in the Czech context, where historical scholarship, philology, archaeology, literature, and national culture played such important roles in the formation of academic identity. The modern Academy's humanities institutes continue this heritage, while its natural and technical institutes extend the tradition of empirical and experimental research. Together, they show that academic heritage includes both cultural and scientific forms. The 18th and 19th centuries created the institutional conditions for this broad heritage. They allow the modern Academy to be understood as an institution of knowledge, memory, and innovation at once.

The 19th century also provides the immediate background for the foundation of the Czech Academy of Sciences and Arts. This institution represents one of the clearest links between early learned society culture and later academy organisation. It expressed the maturity of Czech scholarly and cultural ambitions, and it gave institutional form to the idea that Czech science and art deserved national support and public recognition (*Mádlová, 2024*). Without the 19th-century development of language, literature, history, education, patronage, civic culture, and scholarly networks, ČAVU would not have been possible. Without ČAVU, the later institutional memory of Czech academies would be significantly poorer. The modern Academy's genealogy therefore depends heavily on 19th-century institutional achievement. The 18th century created learned society; the 19th century created national academy. Together, they prepared the 20th-century academy system.

The 18th and 19th centuries also matter because they reveal the Czech Academy's deep European character. Modern AV ČR is integrated into European and global science, but this international orientation is not new. Czech scholarly institutions were European from the beginning because they emerged through Latin university culture, German Central European scholarship, French Enlightenment models, Slavic philology, and international correspondence. The modern Academy's participation in European research networks can therefore be interpreted as a renewed form of an old orientation rather than a recent innovation. What changed after 1993 was the political and institutional framework: democratic governance, European integration, open international collaboration, research evaluation, and English-language global science. But the deeper pattern of connecting Czech scholarship with wider European knowledge has 18th- and 19th-century roots. This perspective prevents the history of internationalisation from being reduced to post-1989 policy. It places contemporary Europeanisation within a long history of scholarly exchange.

The same centuries also explain why the Academy's modern public mission must include both excellence and identity. A national academy in a smaller European country cannot justify itself only by producing internationally visible research, although that is essential. It must also preserve and develop the intellectual resources of its own society: language, historical memory, expert knowledge of the country, public trust, cultural continuity, and long-term scientific capacity. The 18th and 19th centuries show how these functions first emerged. Learned societies studied the land, language, history, and nature of the Czech lands; national institutions turned scholarship into a component of cultural maturity. The modern Academy performs these functions under very different conditions, but it still depends on the same broad logic. It must be excellent enough to belong to world science and rooted enough to serve Czech society. This double task has been present from the earliest stages of Czech academic institutionalisation.

The 18th and 19th centuries therefore matter not as a decorative preface, but as an explanatory foundation. They show why the Academy has a long genealogy, why language matters, why the humanities are central, why collections and archives are indispensable, why public usefulness is a recurring theme, why universities and academies coexist, why international communication is structurally necessary, and why modernisation must be understood through continuity. They also show that Czech academic science was formed through adaptation rather than isolation. It borrowed European institutional forms, transformed them in Central European conditions, and gradually gave them a Czech national meaning. This process is the foundation on which all later developments rested. ČSAV could not have emerged in a country without previous academic traditions. AV ČR could not have reconstructed legitimacy after 1993 without a deeper memory than the socialist academy. The early centuries therefore explain the modern institution's historical depth.

Thus, the 18th and 19th centuries matter for the modern Czech Academy of Sciences because they created the institutional grammar, linguistic capacity, documentary memory, disciplinary breadth, public mission, and national-cultural legitimacy of Czech academic life. The 18th century gave the Czech lands a durable learned society tradition through which scholarship became collective, public, and connected with European Enlightenment science. The 19th century transformed this inherited learned culture into a more explicitly Czech scholarly identity, supported by language modernisation, historical research, public education, patronage, and the foundation of national academic institutions. These centuries show that the modern Academy is not merely the successor of ČSAV or the product of post-1993 reform,

but the contemporary expression of a much longer process of organising knowledge in the Czech lands. They also reveal that continuity does not mean institutional sameness; it means the repeated transformation of scholarly functions across changing political and cultural conditions. The Czech Academy of Sciences inherits this early tradition in its broad disciplinary structure, its archival and publication culture, its public responsibility, its European orientation, and its role as a guardian of scientific and cultural memory. For this reason, any serious history of the modern Academy must begin not with 1952 or 1993, but with the 18th- and 19th-century foundations that made Czech academic science historically possible.

References:

Académie des sciences. (n.d.). *History of the Academy*.

Agnew, H. (2004). *The Czechs and the lands of the Bohemian Crown*. Hoover Institution Press.

Akademie věd České republiky. (2024). *The Academy presents Action Plan to reform research evaluation at the CAS*. CAS.

Akademie věd České republiky. (n.d.). *Historie* [History]. CAS.

Akademie věd České republiky. (n.d.). *History overview*. CAS.

ALLEA. (2008). *The Academy of Sciences of the Czech Republic*. ALLEA.

Anderson, B. (2006). *Imagined communities: Reflections on the origin and spread of nationalism* (Rev. ed.). Verso.

Assmann, J. (2011). *Cultural memory and early civilization: Writing, remembrance, and political imagination*. Cambridge University Press.

Burke, P. (2000). *A social history of knowledge: From Gutenberg to Diderot*. Polity Press.

Československá akademie věd. (1965–1992). *Věstník Československé akademie věd* [Bulletin of the Czechoslovak Academy of Sciences]. Academia.

Charles University. (n.d.). *About*.

Charles University. (n.d.). *History*.

Daston, L., & Galison, P. (2007). *Objectivity*. Zone Books.

Digitální knihovna AV ČR. (n.d.). *Akademie věd České republiky* [Czech Academy of Sciences].

Digitální knihovna AV ČR. (n.d.). *Královská česká společnost nauk* [Royal Czech Society of Sciences].

Dvořáčková, V. (2024). *The origins of Czech academic lexicography: From foreign-language textual comments to institutional language scholarship*. *Studi Slavistici*.

Dvořáčková, V., Franc, M., & et al. (2019). *Dějiny Československé akademie věd I: 1952–1962* [History of the Czechoslovak Academy of Sciences I: 1952–1962]. Academia.

Franc, M., & Mádlová, V. (2013). *Dějiny Akademie věd ČR v obrazech* [History of the Czech Academy of Sciences in pictures]. Academia.

Franc, M., Kostlán, A., & Míšková, A. (Eds.). (2010). *Bohemia docta: K historickým kořenům vědy v českých zemích* [Bohemia docta: The historical roots of science and scholarship in the Czech lands]. Academia.

Gordin, M. D. (2015). *Scientific Babel: How science was done before and after global English*. University of Chicago Press.

Hahn, R. (1971). *The anatomy of a scientific institution: The Paris Academy of Sciences, 1666–1803*. University of California Press.

Hobsbawm, E., & Ranger, T. (Eds.). (1983). *The invention of tradition*. Cambridge University Press.

Jareš, J., Franc, M., & kol. (2018). *Mezi konkurencí a spoluprací: Univerzita Karlova a Československá akademie věd 1945–1969* [Between competition and cooperation: Charles University and the Czechoslovak Academy of Sciences, 1945–1969]. Karolinum.

King, J. (2002). *Budweisers into Czechs and Germans: A local history of Bohemian politics, 1848–1948*. Princeton University Press.

Kostlán, A. (2010). *The idea of an Academy of Sciences in the Czech lands during the early modern era (16th–18th centuries)*. In M. Franc, A. Kostlán, & A. Míšková (Eds.), *Bohemia docta: K historickým kořenům vědy v českých zemích* [Bohemia docta: The historical roots of science in the Czech lands]. Academia.

Macura, V. (1995). *Znamení zrodu: České národní obrození jako kulturní typ* [The sign of birth: The Czech National Revival as a cultural type]. H & H.

Mádlová, V. (2024). *Stálé vojsko vědecké: Česká akademie věd a umění 1891–1952* [A permanent army of science: The Czech Academy of Sciences and Arts, 1891–1952]. Academia.

Masarykův ústav a Archiv AV ČR. (n.d.). *Bohemia docta: The historical roots of science and scholarship in the Czech lands*.

Masarykův ústav a Archiv AV ČR. (n.d.). *Fondy Československé akademie věd (ČSAV) a Akademie věd ČR (AV ČR)* [Fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences].

McClellan, J. E., III. (1985). *Science reorganized: Scientific societies in the 18th century*. Columbia University Press.

Míšková, A., Barvíková, H., & Šmidák, M. (1998). *Československá akademie věd 1969–1972: Restaurace komunistické moci ve vědě* [The Czechoslovak Academy of Sciences 1969–1972: Restoration of communist power in science]. Ústav pro soudobé dějiny AV ČR.

National Library of the Czech Republic. (2007). *Libraries and librarianship in the Czech Republic*.

Nora, P. (1989). Between memory and history: Les lieux de mémoire. *Representations, 26*, 7–24.

Ornstein, M. (1938). *The role of scientific societies in the 17th century*. University of Chicago Press.

Pokorná, M. (2010). *Královská česká společnost nauk* [The Royal Czech Society of Sciences]. In M. Franc, A. Kostlán, & A. Míšková (Eds.), *Bohemia docta: K historickým kořenům vědy v českých zemích* [Bohemia docta: The historical roots of science in the Czech lands]. Academia.

Pokorná, M. (n.d.). *The Royal Bohemian Society of Learning: Its place in the state, in the nation and in the public*. Learned Society of the Czech Republic.

Prague City Tourism. (n.d.). *The Clementinum Astronomical Tower and Baroque Library*.

Rhodes, R. (2002). *Libraries have existed in the Czech Republic for centuries*. University of North Carolina at Chapel Hill.

Royal Society. (n.d.). *History of the Royal Society*. https://royalsociety.org/about-us/who-we-are/history/

Sayer, D. (1998). *The coasts of Bohemia: A Czech history*. Princeton University Press.

Shapin, S. (1994). *A social history of truth: Civility and science in 17th-century England*. University of Chicago Press.

Strategie AV21. (2017). *Strategy AV21: Top research in the public interest*. Czech Academy of Sciences.

Štrbáňová, S., & Kostlán, A. (Eds.). (2011). *Sto českých vědců v exilu: Encyklopedie významných vědců z řad pracovníků Československé akademie věd v emigraci* [One hundred Czech scholars in exile: Dictionary of foremost Czech émigré scholars from the Czechoslovak Academy of Sciences]. Academia.

Učená společnost České republiky. (n.d.). *Dějinná tradice Učené společnosti* [The historical tradition of the Learned Society].

UNESCO Astronomy and World Heritage Webportal. (n.d.). *Astronomical Tower in Clementinum, Prague*.

Vesmír. (1995). *Královská česká společnost nauk* [The Royal Czech Society of Sciences]. *Vesmír*.

Wegner, G. (1884). *Seznam členů Královské české společnosti nauk r. 1784–1884* [List of members of the Royal Czech Society of Sciences, 1784–1884]. Nákladem Královské české společnosti nauk.

Chapter Two

The Czech Academy of Sciences and Arts, 1891–1952: National Science before the Socialist Academy

The Foundation of the Czech Academy of Sciences and Arts

1. Josef Hlávka, patronage, and the institutional vision of Czech science

Josef Hlávka occupies a singular place in the history of Czech academic institutions because he was not simply a donor who helped finance one learned body. He was an architect, builder, public figure, organiser, and cultural strategist whose patronage gave institutional form to a broader Czech ambition: the creation of a national centre for science, literature, and the arts. The foundation of the Czech Academy of Sciences and Arts at the end of the 19th century cannot be understood without his financial support and institutional persistence. The modern Czech Academy of Sciences itself identifies Hlávka as the first chairman of the Academy in the period 1890–1908, and contemporary institutional summaries stress his decisive role in the Academy's establishment (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*). Yet the importance of Hlávka's role goes beyond one act of foundation. His patronage expressed a historical transition from learned society culture to a more ambitious national academic institution. The Royal Czech Society of Sciences had already created a durable learned tradition in the Czech lands, but the late 19th century required a different kind of institution. Czech science, literature, and art needed not only scholarly continuity, but also public prestige, financial stability, national representation, and an institutional structure capable of supporting research and creative work. Hlávka's achievement was to recognise this need and to convert private wealth into a public intellectual foundation.

The foundation of the Czech Academy of Sciences and Arts was therefore part of a larger transformation in Czech cultural life. By the late 19th century, Czech society had moved far beyond the earlier phase of national revival, when the main tasks were the defence of language, the recovery of historical memory, and the creation of a modern literary culture. The problem was no longer only whether Czech could function as a language of scholarship. The problem was whether Czech scholarship, science, literature, and the arts could possess institutions equal in dignity to those of larger European nations. This was an institutional question as much as a cultural one. A modern nation could not rely only on enthusiastic writers, individual scholars, patriotic associations, or university departments. It required academies, foundations, publication programmes, prizes, research support, and mechanisms of public recognition. Hlávka's project responded precisely to this level of national development. His patronage translated cultural aspiration into institutional architecture. In this sense, the Czech Academy of Sciences and Arts was not merely founded; it was built as a symbolic and practical instrument of national intellectual maturity (*Mádlová, 2024*; *Franc & Mádlová, 2013*).

Hlávka's biography helps explain why he understood institution-building so concretely. He was trained as an architect and builder, and his professional life taught him that large structures do not emerge from intention alone. They require design, resources, coordination, legal forms,

endurance, and the ability to connect vision with practical execution. This practical intelligence shaped his cultural patronage. He did not merely admire science and art from a distance; he sought to create the conditions in which they could be organised and sustained. His career also placed him within the world of Czech civic elites who understood national development as a matter of institutions. Architecture, philanthropy, education, and scholarship were not separate domains for him. They belonged to a single programme of cultural construction. The metaphor is almost literal: the founder of buildings became a founder of academic structures. The Academy was, in this sense, one of his most important constructions, although its materials were not stone and brick alone, but statutes, finances, membership, publications, and scholarly authority.

Hlávka's patronage should also be understood in the broader European context of learned and cultural philanthropy. Throughout the 19th century, the expansion of science and scholarship depended not only on states and universities, but also on patrons, foundations, civic associations, industrial fortunes, municipal support, and private donors. In smaller nations and stateless or semi-autonomous cultural communities, patronage could become especially important because political institutions did not always provide adequate support for national scholarship. The Czech lands were part of the Habsburg Monarchy, and Czech intellectual life had to develop within an imperial framework in which linguistic and national questions remained politically sensitive. A donor such as Hlávka could therefore play a role that was at once civic, cultural, and quasi-political. He could support Czech scholarship without waiting for a fully sovereign Czech state. His patronage created institutional capacity before political sovereignty existed. This made the Academy a kind of intellectual infrastructure of national life within the monarchy. It helped Czech society behave as a mature cultural nation even before it possessed its own independent state.

The establishment of the Czech Academy of Sciences and Arts in 1890, with its active public life beginning in the following years, must be seen as a culmination of decades of Czech cultural institutionalisation. The Academy's full original designation, connected with Emperor Franz Joseph, reflected the political framework of the Habsburg Monarchy, while its Czech national function reflected the aspirations of Czech scholarly and artistic life. This duality is important. The Academy was not created outside the imperial order; it had to be legally and symbolically situated within it. At the same time, its meaning for Czech society was unmistakably national. It offered a prestigious institutional centre for Czech science, literature, and art. This combination of imperial recognition and Czech cultural ambition was characteristic of late 19th-century Czech institutional development. It allowed Czech elites to build national structures through available legal and political channels. The Academy therefore embodied both accommodation and aspiration. It was loyal enough to exist within the monarchy, but Czech enough to serve the long-term development of national scholarship.

The Academy's title is itself revealing. It joined sciences, literature, and the arts in one institution, expressing a broad conception of cultural and intellectual life. This was not accidental. The Czech national project did not separate science from language, literature, history, and artistic creation as sharply as later disciplinary structures might suggest. A nation seeking intellectual recognition needed to demonstrate excellence across several domains. Scientific research showed participation in universal knowledge. Literature and language showed cultural maturity. The arts expressed aesthetic and symbolic creativity. Historical scholarship grounded collective memory. The Academy's institutional design therefore reflected a holistic vision of Czech culture. Hlávka's patronage supported this broad vision

rather than a narrowly technical or natural-scientific institution. This is one reason why the Academy became such an important predecessor of the modern Czech Academy of Sciences, even though the present institution no longer includes the arts in the same formal way. The older Academy preserved the idea that science belongs to a wider cultural order (*Mádlová, 2024*).

The Academy also represented a shift from association-based scholarship to structured academic patronage. The Royal Czech Society of Sciences had provided a learned framework, but ČAVU offered a new level of financial and symbolic support. It was intended not only to gather scholars, but to actively encourage research, publication, and creative work. Patronage here did not mean occasional generosity. It meant the creation of an institutional mechanism through which resources could be distributed to intellectual purposes. This was a decisive development because modern scholarship increasingly required material support: publishing funds, research subsidies, prizes, collections, travel, editorial work, and long-term projects. Individual enthusiasm could no longer sustain the growing demands of science and culture. Hlávka's institutional vision recognised that Czech scholarship needed durable financial structures. The Academy therefore linked recognition with support. It did not merely honour achievement; it helped create conditions for future achievement.

Hlávka's first presidency of the Academy also mattered symbolically. A founder who remains involved in institutional leadership can shape not only the creation but also the early ethos of an organisation. Hlávka's position as first chairman from 1890 to 1908, recorded in the Academy's own historical materials, gave the new institution a founding continuity during its formative years (*Akademie věd České republiky, n.d.*). His presence helped stabilise the Academy's authority and connect it with his public reputation as a benefactor of Czech intellectual life. This mattered because new institutions need credibility. They must persuade scholars, patrons, state authorities, and the public that they are not temporary projects. Hlávka's personal authority helped the Academy acquire that credibility. He embodied the link between wealth, civic responsibility, national culture, and institutional seriousness. The early Academy therefore drew strength not only from its statutes and membership, but from the symbolic capital of its founder. Institutional foundations often depend on such figures, especially in cultures where public trust in new scholarly bodies must be built gradually.

The Academy's foundation also reflected the growing differentiation of Czech and German scholarly institutions in the late 19th century. The Czech lands were still deeply multilingual, and German-language scholarship remained important in universities, learned societies, and public life. By the end of the 19th century, however, Czech and German institutional cultures were increasingly differentiated. Institutional portraits of the Czech Academy of Sciences note that the Czech Academy of Sciences and Arts was established in 1890, while the Association for the Fostering of German Science, Arts and Literature in Bohemia was established in 1891 (*ALLEA, 2008*). This sequence reveals the nationalisation of scholarly organisation. Science and art were no longer only territorial Bohemian concerns; they were increasingly organised through language-defined cultural communities. The Czech Academy therefore formed part of a broader reconfiguration of intellectual life in Bohemia. It gave Czech scholarship an institutional centre comparable to the German-language structures developing alongside it. The Academy's creation must therefore be read within the cultural politics of language, prestige, and representation.

At the same time, the Academy was not a rejection of Europe or of transnational science. On the contrary, its purpose was to allow Czech scholarship to enter European intellectual life with greater institutional strength. National academies often develop precisely because a cultural community wants to participate in universal knowledge through its own organised institutions. Hlávka's Academy was Czech in language and cultural mission, but European in aspiration. It sought to show that Czech intellectual life could produce knowledge and art worthy of international recognition. This is one of the central paradoxes of national academies: they strengthen national identity by making a nation more capable of participating in universal culture. The Czech Academy of Sciences and Arts did not aim to isolate Czech science. It aimed to give it institutional dignity and visibility. The modern Czech Academy of Sciences continues this logic in a different historical context: it serves Czech society while integrating Czech research into European and global science. Hlávka's project can therefore be seen as an early national form of a continuing Czech academic ambition.

The role of patronage in Hlávka's project also illuminates the relationship between private wealth and public knowledge. In modern societies, science is often assumed to be supported by the state, universities, grant agencies, or industry. In the 19th century, however, private patronage remained crucial, especially for cultural and scholarly institutions of smaller nations. Hlávka's wealth became historically significant because it was converted into durable public goods. He did not merely collect art, sponsor isolated publications, or support individual scholars informally. He helped create institutions that could outlive him. This is the essential difference between charity and institutional philanthropy. Charity may relieve a temporary need; institutional philanthropy builds a structure. Hlávka's support for the Academy belongs to the latter category. It created a framework in which Czech science and art could continue to receive recognition and support beyond the founder's own lifetime. This long-term orientation is one of the reasons his patronage remains so important in Czech institutional memory.

The later Hlávka Foundation further confirms this long-term vision. Hlávka's philanthropic legacy did not end with the Academy; it continued through foundation structures devoted to supporting Czech intellectual and cultural life. The survival of the Josef, Marie and Zdeňka Hlávka Foundation, often described as an exceptional example of continuity in Czech foundation history, reinforces the interpretation of Hlávka as an institutional thinker rather than merely a generous donor. His patronage was designed for duration. It aimed to provide future generations with resources for study, research, and cultural work. This is directly relevant to the history of the Academy because it shows that Hlávka understood intellectual development as a long-term national investment. He did not treat scholarship as a decorative luxury. He treated it as a foundation of cultural strength. This view links him with the broader 19th-century belief that nations are built through schools, academies, libraries, theatres, museums, and scholarly institutions. His philanthropy belongs to the architecture of national modernity.

The Academy's early vision was also connected with the problem of scholarly prestige. Czech society in the late 19th century needed institutions that could publicly recognise excellence. Recognition matters because it shapes careers, creates role models, and establishes standards of achievement. A national academy can declare that certain scholars, writers, artists, and scientists represent the highest levels of intellectual work. It can also distribute awards, sponsor publications, and preserve the names of leading figures in institutional memory. This function was especially important for Czech scholarship because recognition from older imperial or German-language structures could not fully satisfy the need for Czech cultural self-representation. Hlávka's Academy provided a forum in which Czech intellectual

achievement could be honoured on Czech terms. This did not mean abandoning international standards. It meant creating a national institution capable of evaluating and supporting work that aspired to those standards. The Academy therefore helped produce a Czech economy of scholarly prestige.

The Academy's foundation also shows how science and art were connected in Czech national development. Modern research systems often separate sciences, humanities, and arts into different institutional domains. In the late 19th-century Czech context, however, this separation was less absolute. Science, literature, scholarship, and art all contributed to national cultural maturity. A scientific discovery, a historical edition, a literary work, a musical composition, an architectural project, and a linguistic study could all be understood as contributions to the elevation of Czech culture. Hlávka's own life as an architect and patron embodied this unity. He understood that buildings, institutions, scholarships, research, and the arts belonged to the same national civilising project. The Academy's broad title and mission reflected that vision. This breadth is important for the modern reader because it prevents a narrow interpretation of academic history. The Czech Academy of Sciences and Arts was not simply an ancestor of a research bureaucracy; it was part of a larger cultural infrastructure.

The Academy's institutional vision also depended on the idea of permanence. The title of Mádlová's recent monograph, *Stálé vojsko vědecké* — "A permanent army of science" — captures an important dimension of the Academy's self-understanding and historical function (*Mádlová, 2024*). A modern national culture could not rely on temporary enthusiasm. It needed a permanent corps of scholars, institutions, publications, and supporters. The metaphor of permanence is essential. It suggests discipline, continuity, service, and collective organisation. Hlávka's patronage helped create this permanence. It transformed scattered energies into an institution capable of enduring across generations. The Academy's later history would not be free from crisis, political change, or eventual dissolution into ČSAV in 1952, but its existence for more than six decades shows that the project achieved substantial durability. Permanence, in this context, does not mean immobility. It means institutional capacity to adapt while preserving a recognisable mission.

The Academy's foundation must also be placed within the changing Czech university environment. The division of Prague's university into Czech and German branches in 1882 had already strengthened the institutional basis of Czech higher education. Yet a university, even a national university, could not fulfil all the functions of a learned academy. Universities teach, grant degrees, train professionals, and conduct research, but academies support scholarly recognition, publications, prizes, long-term cultural projects, and public representation beyond the curriculum. Hlávka's Academy therefore complemented the university rather than simply duplicating it. It provided a national scholarly body able to support fields across sciences, literature, and art. This distinction between university and academy would later become even more important in the 20th century, especially with the emergence of institute-based research. In the late 19th century, however, the distinction already mattered. Czech science needed both university education and academy-level recognition. Hlávka's vision helped supply the latter.

The Academy was also a response to the problem of Czech scholarly visibility. A scholar may produce valuable work, but without institutions, publications, and networks, that work can remain fragmented or insufficiently recognised. A national academy provides a platform through which scholarship becomes visible to domestic and foreign audiences. It also allows

a cultural community to present its intellectual achievements collectively. The Czech Academy of Sciences and Arts served this representative function. It demonstrated that Czech culture possessed not only writers, teachers, and individual scientists, but a structured institution devoted to the highest forms of knowledge and creativity. This visibility mattered within the Habsburg Monarchy and beyond it. It was a claim to parity. The Academy effectively stated that Czech scholarship belonged among the organised scholarly cultures of Europe. Hlávka's patronage therefore had diplomatic and symbolic effects, even if it was not diplomacy in the formal sense. It gave Czech science an institutional face.

The institutional vision of the Academy also involved the production of future scholarship. A learned institution is not only a memorial to existing achievement; it is a mechanism for generating new work. By supporting publications, prizes, research projects, and recognition, the Academy could encourage further scholarly production. This prospective function distinguishes an academy from a purely commemorative society. Hlávka's project was future-oriented. It aimed to create conditions under which Czech science and culture would continue to grow. The Academy would preserve memory, but it would also stimulate new achievement. This double orientation — memory and future — remains central to academy institutions. The modern Czech Academy of Sciences similarly preserves historical continuity while supporting contemporary research and future-oriented programmes. In this sense, Hlávka's Academy introduced a structural logic that continues in transformed form: academic institutions exist to honour the past, organise the present, and make future knowledge possible.

The Academy's broad mission also meant that it contributed to the development of Czech public culture. Public culture is not created only by newspapers, theatres, schools, or political associations. It also depends on institutions that define standards of intellectual seriousness. An academy can shape public expectations by signalling that research, critical scholarship, linguistic precision, artistic excellence, and scientific inquiry matter to national life. In late 19th-century Czech society, this was a powerful message. The Academy helped place science and art at the centre of cultural self-respect. It also helped educate the public imagination: a modern nation should not be satisfied with folklore, sentiment, or political mobilisation alone; it should cultivate research, criticism, creativity, and institutional excellence. Hlávka's patronage thus had a pedagogical dimension at the level of society. It taught that national culture requires disciplined structures. The Academy was one of those structures.

The relationship between Hlávka's Academy and the earlier Royal Czech Society of Sciences reveals both continuity and transformation. The Royal Society had provided a learned framework rooted in Enlightenment sociability and multilingual Bohemian scholarship. The Czech Academy of Sciences and Arts introduced a stronger national-cultural, financial, and symbolic architecture. It did not erase the older tradition; it built upon and reinterpreted it. The two institutions coexisted for a time, and both were later incorporated into the broader genealogy of the present Academy (*Akademie věd České republiky, n.d.*). This coexistence shows that academic development is rarely a clean replacement of one form by another. Older and newer institutions overlap, compete, cooperate, and gradually change meaning. Hlávka's Academy became dominant as a symbol of Czech national scholarly ambition, but the older learned society remained part of the institutional landscape. Together they formed a layered academic culture. The modern Academy's historical memory draws on both.

The eventual dissolution of ČAVU in 1952 and the creation of the Czechoslovak Academy of Sciences changed the meaning of Hlávka's legacy. The socialist academy system absorbed

older institutions into a new centralised research structure based on different ideological and administrative principles. This did not erase the historical importance of Hlávka's Academy, but it transformed its institutional afterlife. ČAVU became part of the prehistory of ČSAV and later AV ČR. Its memory survived through archives, publications, historical studies, and institutional narratives. The modern Czech Academy of Sciences now looks back to ČAVU as one of its predecessors, but from a very different political and scientific environment. This retrospective continuity must be understood critically. The Academy founded with Hlávka's support was not the same as the socialist ČSAV or the post-1993 AV ČR. Yet its role in creating national academic prestige, supporting scholarship, and institutionalising Czech science makes it indispensable to the whole genealogy. The rupture of 1952 does not cancel the continuity of function and memory (*Dvořáčková, Franc, & kol., 2019*; *Mádlová, 2024*).

Hlávka's significance also lies in the fact that he represents a Czech model of civic intellectual responsibility. He was not a scientist in the narrow professional sense, yet he profoundly shaped the conditions of Czech science. This reminds us that the history of science is not made only by researchers. It is also made by patrons, organisers, architects, publishers, librarians, politicians, teachers, and institutional founders. Without such figures, scholarly life lacks structure. Hlávka's importance therefore challenges a purely discovery-centred history of science. His contribution was infrastructural and institutional. He did not produce a scientific theory that transformed a discipline; he helped create an institution that could support many disciplines. Such contributions are easy to underestimate because they are indirect. Yet they are historically decisive. A research culture needs people who build the frameworks within which researchers can work.

The Academy's foundation also reveals the moral dimension of patronage. Patronage can be self-serving, decorative, or socially strategic, but it can also be a form of responsibility. Hlávka's philanthropy belongs to the latter category because it converted personal fortune into durable cultural capacity. He invested in institutions rather than only in reputation. This gave his patronage a public ethical character. It implied that wealth should support the intellectual life of the community. Such an idea was particularly powerful in a national culture still building its institutional foundations. The Academy therefore became not only a scholarly body, but also a moral statement about the obligations of elites to national development. The modern Academy no longer depends on private patronage in the same way, but the ethical principle remains relevant: science requires public commitment, long-term support, and institutions that outlive individual interests. Hlávka's example continues to symbolise that principle.

The foundation of the Czech Academy of Sciences and Arts also helps explain why the modern Czech Academy of Sciences retains such a strong sense of historical identity. AV ČR does not present itself simply as an administrative research organisation; it situates itself within a long chain of predecessors. Hlávka's Academy is one of the central links in that chain. It provides a national academy stage between the Enlightenment learned society and the Czechoslovak state academy. Without ČAVU, the genealogy would move too abruptly from the Royal Czech Society of Sciences to ČSAV. The Academy founded through Hlávka's support gives the history a crucial 19th- and early 20th-century institutional centre. It shows how Czech scholarship moved from learned society culture into national academic form before the socialist transformation of 1952. This is why the chapter on ČAVU is not a digression in a book about AV ČR. It is one of the key explanations of AV ČR's deeper identity.

The modern relevance of Hlávka's institutional vision is also visible in contemporary discussions about science funding, public value, and research autonomy. Today, science is supported through state budgets, competitive grants, European programmes, private partnerships, and foundations. Yet the basic question remains similar: how can a society create stable conditions for long-term intellectual work? Hlávka answered this question through patronage and institutional foundation. The modern Academy answers it through public research organisation, strategic programmes, open science, evaluation, and international cooperation. The forms have changed dramatically, but the underlying need has not. Science requires structures that protect continuity beyond immediate political or commercial pressures. Hlávka's vision was historically specific, but it anticipated this broader principle. His Academy was a 19th-century solution to a problem that remains modern: the organisation of knowledge as a long-term public good.

It is also important not to romanticise the Academy's foundation. The institution emerged within a society marked by class hierarchy, gender exclusion, national tensions, and unequal access to education. Its membership and leadership reflected the elite structure of late 19th-century scholarly life. Women, lower social classes, and many marginal communities were largely excluded from formal academic authority. German-Czech tensions shaped the institutional field. The Academy's national mission could be inspiring, but it also belonged to a period in which national cultures increasingly defined separate institutional spaces. A balanced interpretation must recognise both the achievement and the limitations of the project. Hlávka's Academy was progressive in creating a Czech national scholarly institution, but it was not democratic in the contemporary sense. Its historical greatness lies not in perfection, but in its capacity to create a durable framework for Czech science and culture within the conditions of its time.

The Academy's founding vision also contained an important lesson about the relationship between culture and infrastructure. National culture is often imagined through language, literature, symbols, and memory. Hlávka's project shows that culture also requires endowments, buildings, statutes, administration, publishing mechanisms, and financial planning. Without infrastructure, cultural ambition remains fragile. The Czech Academy of Sciences and Arts was therefore a form of cultural infrastructure. It turned intangible aspirations into tangible and administrative reality. This point is highly relevant for the larger theme of the book. The history of the Czech Academy of Sciences is not only a history of ideas and people; it is a history of institutions that make ideas and people effective. Hlávka understood this with unusual clarity. His Academy stands as evidence that the development of science depends on material and organisational foundations.

Thus, Josef Hlávka's role in the foundation of the Czech Academy of Sciences and Arts was decisive because he transformed Czech scholarly and cultural aspiration into a durable institution. His patronage joined architecture, philanthropy, national responsibility, and academic vision in a single historical project. The Academy founded with his support in the late 19th century gave Czech science, literature, and art a prestigious institutional centre, strengthened the public authority of Czech scholarship, and created a bridge between the older Royal Czech Society of Sciences and the later academy-based research system. Hlávka's importance lies not in a narrow act of donation, but in his understanding that national intellectual life requires permanent structures of support, recognition, publication, and memory. His Academy belonged to the Habsburg political framework, but it expressed Czech cultural maturity and prepared the institutional ground for later forms of academic

organisation. It also showed that science and art were not decorative achievements, but essential components of national development. For the modern Czech Academy of Sciences, Hlávka's legacy remains a key historical layer: it demonstrates that the Academy's roots lie not only in state research policy, but also in civic patronage, cultural responsibility, and the long Czech effort to build institutions worthy of European science.

2. The Relationship between Science, Arts, Language, and National Culture

The foundation of the Czech Academy of Sciences and Arts cannot be understood if science is treated as a separate sphere detached from literature, language, artistic creation, and national culture. In the late 19th-century Czech lands, the very idea of an academy had a broader meaning than the later idea of a specialised research organisation. It was expected to represent the intellectual maturity of a nation whose political sovereignty was still incomplete, but whose cultural and scholarly ambitions had become unmistakably modern. The Academy's title was therefore programmatic: it joined science and art in one institutional form because Czech national development required both rigorous knowledge and symbolic creativity. Scientific research demonstrated that Czech society could participate in universal European knowledge. Literature and language showed that Czech culture possessed an autonomous expressive and intellectual medium. The arts gave visible and emotional form to national self-representation. Historical scholarship, philology, archaeology, and literary studies supplied the documentary foundations of collective memory. The Academy was thus founded not merely as a technical body for researchers, but as an institution of cultural completeness. Its mission was to show that Czech intellectual life could sustain the full range of modern high culture: science, scholarship, language, literature, and artistic production (*Mádlová, 2024*; *Franc & Mádlová, 2013*).

This broad conception reflected the historical experience of Czech national revival. During the 19th century, Czech society had to demonstrate that it was not only a linguistic community, but a culturally and intellectually mature nation. The revival had begun with the defence, codification, and literary elevation of the Czech language, but it could not remain confined to grammar, poetry, folklore, or patriotic sentiment. It required institutions capable of supporting advanced scholarship, historical criticism, scientific education, and artistic excellence. The Academy responded to that mature phase of national development. It institutionalised the idea that language, knowledge, and culture were mutually dependent. Czech could not become a fully modern national language without scholarship and science. Science could not become nationally rooted without public communication, terminology, and educational structures in Czech. Art could not become a national symbol without institutions that recognised and preserved it. The Academy therefore stood at the point where the cultural revival became institutional modernity. It transformed earlier national energies into a durable scholarly and artistic framework (*Macura, 1995*; *Sayer, 1998*).

The relationship between science and national culture in this context should not be reduced to propaganda or patriotic ornamentation. Czech intellectual elites did not seek merely to decorate national identity with scientific prestige. They understood that a modern culture required real knowledge, rigorous method, and durable institutions. Historical scholarship had to be based on sources, not legend alone. Philology had to describe language critically, not merely praise it. Natural science had to meet European standards, not simply serve national pride. Artistic production had to achieve quality, not merely symbolic usefulness. This is why

the Academy's combination of sciences and arts was serious rather than ornamental. It placed Czech national culture under the discipline of scholarship and creative excellence. It also placed scholarship within a wider cultural mission. The Academy therefore represented a double movement: national culture required science, and science acquired national meaning through culture. This double movement is essential for understanding the Academy's distinctive role in the Czech institutional landscape (*Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

Language was at the centre of this relationship. A national academy in the Czech context could not be merely an academy located in the Czech lands; it had to support the development of Czech as a language of high intellectual work. The Czech language had passed through a long process of revival, codification, expansion, and standardisation. By the late 19th century, it was increasingly capable of serving education, literature, journalism, scholarship, and public debate, but this capacity still required institutional support. Academic institutions helped stabilise terminology, encourage scholarly publication, and raise the prestige of Czech prose. Scientific and humanistic language had to be cultivated through dictionaries, textbooks, translations, editions, lectures, and specialised publications. The Academy contributed to this process by recognising Czech-language scholarship as a legitimate and prestigious form of intellectual production. It thereby helped move Czech from cultural recovery to academic normality. A language becomes fully modern when it can sustain research, criticism, abstraction, and artistic refinement. The Academy was one of the institutions that made this possible (*Dvořáčková, 2024*; *Macura, 1995*).

The language question also reveals why the Academy's foundation was inseparable from the broader Czech-German cultural environment. The Czech lands were not linguistically homogeneous, and German-language scholarship had long held a powerful position in universities, administration, print culture, and elite intellectual life. Czech national institutions emerged in dialogue, competition, and differentiation from this German-speaking environment. The Academy of Sciences and Arts was therefore not created in an empty institutional space. It was part of a larger reorganisation of scholarly and cultural authority in Bohemia, where Czech and German intellectual communities increasingly developed separate institutions. This does not mean that Czech science was anti-European or anti-German in essence. Rather, Czech scholars needed institutional space in which their language and cultural tradition could carry the same dignity as German-language scholarship. The Academy answered that need by giving Czech science and culture a high-status national body. It helped transform linguistic equality from an aspiration into an institutional fact. This process was central to the modernisation of Czech scholarly identity (*Agnew, 2004*; *Sayer, 1998*).

The inclusion of the arts in the Academy's name and mission reflected a particularly Czech understanding of national culture. Art, literature, architecture, music, and visual culture were not secondary to political or scientific development. They were treated as essential expressions of national maturity. This was typical of many Central European national movements, where culture often had to perform functions that, in sovereign states, might have been carried by political institutions. Before full political independence, a nation could assert itself through theatres, museums, schools, journals, associations, libraries, and academies. The arts gave visible form to this cultural assertion. Science supplied intellectual seriousness; the arts supplied symbolic presence. Together they formed a national cultural infrastructure. The Academy therefore joined scientific and artistic production because Czech society needed both to demonstrate its place in Europe. This unity also reflected the personal world of Josef

Hlávka, whose architectural and philanthropic career linked artistic form, civic responsibility, and institutional construction (*Franc & Mádlová, 2013*; *Mádlová, 2024*).

The Academy's broad mission can also be seen as a response to the limitations of older learned societies. The Royal Czech Society of Sciences had created a durable learned framework, but it belonged to an earlier Enlightenment and multilingual Bohemian world. By the late 19th century, Czech society required a more explicitly national institution that could support not only scholarship in general, but Czech science, literature, and art as interconnected forms of national achievement. The Academy did not simply replace the older society; it transformed the learned tradition into a more ambitious cultural programme. The shift was from learned sociability to national academic representation. This shift matters because it shows how institutional forms adapt to historical needs. In the 18th century, the key problem was how to organise scholarship in the Czech lands within European learned culture. In the 19th century, the key problem became how to give Czech scholarship and art institutional dignity within a multilingual imperial setting. The Academy was the answer to the second problem. It preserved the learned society's concern with knowledge but placed it within a stronger national-cultural frame (*Pokorná, 2010*; *Mádlová, 2024*).

Science within this Academy had a dual function. It was part of universal knowledge and part of national representation. Czech scientists and scholars had to meet standards that were not merely local; their work had to be credible in the wider European scientific world. At the same time, their achievements had cultural significance for Czech society. A strong scientific field could show that Czech intellectual life was not provincial or derivative. It could demonstrate that a smaller nation within an empire could participate in the highest forms of modern knowledge. This symbolic function did not make the science less scientific. On the contrary, it increased the pressure to produce work of genuine quality. National prestige could not be built sustainably on weak scholarship. The Academy therefore had to connect national ambition with rigorous standards. Its long-term credibility depended on this connection. It was precisely because science claims universality that scientific achievement could serve national dignity.

The humanities occupied a particularly important position in the Academy's cultural mission. Historical research, philology, literary scholarship, archaeology, and philosophy helped articulate the past and meaning of Czech culture. They produced critical editions, linguistic studies, historical interpretations, and scholarly narratives that shaped national self-understanding. In a culture whose modern identity was deeply tied to language and historical memory, these fields were not peripheral. They were foundational. The Academy's support for humanistic scholarship therefore contributed directly to the intellectual consolidation of Czech national culture. Yet the best form of such scholarship was not myth-making. It required source criticism, methodological discipline, and engagement with European scholarship. The humanities helped the nation know itself, but they also disciplined national memory. This distinction is crucial. The Academy's role was not merely to celebrate Czech history and language, but to make them objects of serious scholarship (*Franc, Kostlán, & Míšková, 2010*; *Macura, 1995*).

Literature also played a central role in the relationship between language and national culture. Czech literature had been one of the principal vehicles of revival, but by the late 19th century it needed institutions of recognition and evaluation. A national academy could canonise, support, and honour literary achievement. It could help distinguish lasting cultural work from temporary public enthusiasm. It could also connect literature with scholarship by supporting

literary history, textual editing, criticism, and the study of language. This was important because literature was not only artistic expression; it was also one of the means by which Czech became a modern public language. The Academy's inclusion of literature and the arts recognised this fact. It treated literary culture as part of the same national intellectual system as science and scholarship. This broad cultural understanding helped define Czech academic identity before the 20th-century separation of research institutions from artistic academies became more pronounced.

The arts supplied another dimension of national culture: visibility. Paintings, sculpture, architecture, music, and public monuments could express national ideals in ways that scholarship alone could not. In the 19th century, the visual and performing arts were central to national representation across Europe. They made collective identity tangible and emotionally accessible. The Czech lands were no exception. An academy that included the arts could support the development of national aesthetic standards and publicly recognise artistic excellence. This was not only a matter of cultural pride. It also helped place Czech art within European artistic conversations. Just as scientific work needed institutional support to enter European scholarship, artistic work needed institutions to develop reputation, continuity, and public authority. The Academy therefore functioned as a bridge between intellectual production and cultural representation. It showed that science and art were two complementary ways in which a nation became visible to itself and to others.

The Academy's mission also reflected a holistic 19th-century understanding of Bildung, or cultural formation. A modern nation was expected to cultivate educated citizens, historical consciousness, scientific knowledge, artistic taste, linguistic refinement, and public responsibility. Science, art, and language were not isolated professional sectors; they were elements of a broader project of cultural formation. Czech society's institutional development — schools, universities, museums, theatres, learned societies, journals, foundations, and academies — can be read through this lens. The Academy of Sciences and Arts was one of the highest expressions of this culture of formation. It did not educate citizens directly in the manner of a school, but it helped define what intellectual excellence meant. It also supplied models of achievement and standards of seriousness. In this sense, the Academy shaped the symbolic hierarchy of Czech public culture. It helped answer the question: what should a modern Czech culture value?

The Academy's relationship with national culture also included the problem of memory. Nations require memory, but academic institutions must transform memory into researchable knowledge. The Czech Academy of Sciences and Arts inherited a tradition in which historical scholarship, language study, and cultural preservation were deeply connected. It supported the idea that cultural identity should be documented, edited, interpreted, and preserved through scholarly methods. This was a crucial step beyond romantic revival. It meant that the nation's past was not only to be loved, but investigated. The Academy therefore contributed to the professionalisation of national memory. This function remained important in later Czech academic institutions, including the modern Czech Academy of Sciences, whose humanities institutes continue to work on history, language, archaeology, literature, and cultural heritage. The 19th-century Academy thus created one of the main bridges between national memory and modern scholarship (*Franc & Mádlová, 2013*; *Mádlová, 2024*).

The relation between science, arts, and language also shaped the Academy's public legitimacy. A purely specialised scientific institution might have appeared remote from broader

society. An institution that embraced literature and art could speak more directly to the public imagination. It could appeal to educated citizens who saw national culture as a unified field of endeavour. This broad legitimacy was especially important in a society where science still needed patrons, readers, supporters, and public recognition. The Academy's cultural breadth helped make it socially meaningful. It was not only a body of experts; it was an emblem of Czech intellectual life. This public meaning strengthened its authority. It also helped justify support for scholarship by showing that science belonged to the same national project as language, literature, and art. In the modern period, the Academy's public legitimacy is built differently, through research excellence, expert advice, popularisation, and public-interest programmes. Yet the older lesson remains: science becomes stronger when society understands it as part of its own cultural life.

The Academy also contributed to the creation of a Czech scholarly canon. An academy selects, honours, supports, and remembers. Through membership, prizes, publications, commemorations, and institutional patronage, it helps define which figures and works are considered central. This canon-forming function can be productive, but it must be handled critically. It gives culture continuity and standards, but it may also marginalise those who do not fit dominant institutional expectations. In the late 19th century, the Academy's canon was shaped by the values and limitations of elite Czech society. It reflected gender, class, linguistic, and disciplinary hierarchies. Nevertheless, it provided Czech culture with a high-status mechanism of recognition. It helped transform individual achievements into collective heritage. The modern historian must analyse this process both appreciatively and critically. The Academy's canon helped build Czech intellectual identity, but it also reveals the social boundaries of that identity at the time.

The relationship between Czech and European culture was central to the Academy's mission. The Academy was national, but it did not aim at isolation. Its purpose was to make Czech science and art strong enough to stand in European comparison. This is why the national and European dimensions should not be opposed. Czech scholarship needed its own language and institutions precisely so that it could participate more fully in Europe. A culture without institutions risks invisibility; a culture without European standards risks provincialism. The Academy sought to avoid both dangers. It grounded scholarship and art in Czech national culture while orienting them towards broader standards of excellence. This dual orientation remains one of the defining features of Czech academic life. The modern Czech Academy of Sciences operates in a global research environment, but it continues to serve a national public. The 19th-century Academy of Sciences and Arts established an earlier form of that same balance.

The Academy's foundation also reveals the importance of cultural infrastructure in the absence of full political sovereignty. Before 1918, Czech society did not possess its own independent state, but it built institutions that anticipated statehood in cultural and intellectual form. Schools, associations, theatres, museums, journals, foundations, and academies created a dense national infrastructure within the Habsburg Monarchy. The Academy of Sciences and Arts was among the most prestigious of these institutions. It helped Czech society behave as an intellectually sovereign community before political sovereignty arrived. This is one reason why its importance exceeds the history of scholarship alone. It was part of a broader process of cultural state-building. The Academy did not make political independence inevitable, but it helped create the intellectual conditions in which Czech

national life could imagine itself as institutionally complete. Science, art, and language were all instruments of this cultural statehood (*Agnew, 2004*; *Sayer, 1998*).

The Academy's broad cultural function also helps explain why its later incorporation into the Czechoslovak Academy of Sciences in 1952 was such a major historical rupture. ČAVU had united science, scholarship, literature, and art within a national cultural framework. ČSAV, by contrast, belonged to a socialist model of state-organised research, with a stronger emphasis on scientific planning, institutes, and the political management of knowledge. The shift was not merely administrative; it altered the relationship between science and culture. The arts and literature no longer occupied the same institutional position within the academy structure. The Academy's older holistic national-cultural mission was replaced by a more centralised research system shaped by 20th-century ideology and state policy (*Dvořáčková, Franc, & kol., 2019*). Yet the memory of ČAVU remained important because it preserved a different model of academic culture. The modern Czech Academy of Sciences inherits the research infrastructure line through ČSAV, but it also inherits the cultural memory of ČAVU. This dual inheritance is crucial for the book's larger argument.

The relationship between science and art in ČAVU also complicates contemporary assumptions about innovation. Today, innovation is often associated with technology, patents, industry, digitalisation, biotechnology, artificial intelligence, or applied research. The 19th-century academy reminds us that cultural innovation also matters. The development of a modern scholarly language, the creation of national artistic institutions, the professionalisation of historical research, and the formation of literary criticism were all forms of innovation in their own historical context. They changed how Czech society thought, remembered, taught, created, and represented itself. The Academy supported these transformations by giving them institutional authority. This broader understanding of innovation is useful for interpreting the modern Academy as well. AV ČR contributes to technological and scientific innovation, but it also contributes to cultural, social, linguistic, and historical self-understanding. The older connection between science and art therefore expands the meaning of academic contribution.

The Academy's founding vision also helps explain why the modern Academy's humanities and social sciences should not be treated as secondary to natural and technical sciences. In the Czech academic tradition, the humanities were present at the foundation of institutional scholarly identity. They helped create the language, history, and cultural memory through which Czech science itself became socially meaningful. A modern research academy that preserves humanities alongside natural sciences is therefore not merely maintaining disciplinary diversity for administrative reasons. It is continuing a deep historical structure of Czech academic life. The Academy's present research into history, archaeology, language, literature, philosophy, sociology, law, and contemporary society belongs to the same long tradition that linked knowledge with cultural self-understanding. This does not mean that the humanities should be protected from evaluation or methodological rigour. On the contrary, their historical importance makes rigour essential. They are central because they critically examine the very culture in which science operates.

The relationship between science, arts, language, and national culture also raises the question of who was included in the national academic project. Late 19th-century institutions were largely shaped by male elites, educated classes, and dominant national narratives. Women's access to formal scholarly and artistic recognition was limited. Lower social groups were

largely represented as objects of education, folklore, or social concern rather than as equal participants in academic authority. German-speaking, Jewish, and other communities occupied complicated positions in the Czech national institutional story. These limitations must be acknowledged because they reveal the historical boundaries of the Academy's cultural mission. The institution helped build Czech scholarly identity, but that identity was not socially universal. A mature account must recognise both the Academy's nation-building significance and the exclusions embedded in its age. This critical perspective does not diminish the institution's importance. It makes its history more accurate and more human.

The Academy's public authority depended on a delicate balance between national mission and scholarly independence. If scholarship became merely an instrument of national celebration, it would lose intellectual credibility. If it detached itself completely from national culture, it would lose much of its public meaning. The Academy's strongest role lay between these extremes. It could support Czech language, history, literature, art, and science while still requiring seriousness and quality. This balance was not always easy to maintain. National institutions are often tempted to favour symbolic usefulness over critical truth. Yet the long-term value of the Academy depended precisely on its ability to give national culture scholarly discipline. It had to support the nation by raising its standards, not by flattering it. This tension between public mission and critical independence remains relevant for the modern Academy as well.

The Academy also functioned as an institution of translation between specialised knowledge and public culture. Scientists, historians, philologists, writers, and artists do not always speak the same language, even when they share a national language. An academy that gathered several domains created opportunities for mutual visibility. It allowed different forms of intellectual work to be perceived as parts of one cultural project. This was especially important in a society still building its institutional foundations. The Academy could show that scientific discovery, historical research, literary achievement, and artistic creation all contributed to the same national ascent. This integrative function is less obvious in modern specialised research systems, but it remains important. Contemporary interdisciplinary programmes and public communication efforts continue, in another form, the older need to connect specialised knowledge with broader cultural meaning. The Academy of Sciences and Arts was an early Czech institution of such integration.

The legacy of this broad relationship is still visible in the modern Czech Academy of Sciences, even though the institutional boundaries have changed. AV ČR is a research institution rather than an academy of arts, but it continues to carry a broad conception of knowledge. It includes humanities, social sciences, natural sciences, life sciences, technical fields, archives, libraries, digital collections, and public communication. Its historical genealogy includes ČAVU precisely because the older Academy helped define Czech scholarship as a cultural and national enterprise. The modern Academy's work on cultural memory, language, history, archaeology, philosophy, and society continues the older mission in a research-based form. Its natural and technical sciences continue the universal scientific ambition that was also part of ČAVU's vision. The unity of science, culture, and public responsibility has therefore not disappeared. It has been reorganised under contemporary institutional conditions (*Akademie věd České republiky, n.d.*; *Strategie AV21, 2017*).

Thus, the relationship between science, arts, language, and national culture was central to the foundation and meaning of the Czech Academy of Sciences and Arts. The Academy was

created in a historical moment when Czech society needed more than individual scholars, writers, and artists; it needed a prestigious institution capable of representing the full maturity of national intellectual life. Science connected Czech culture with universal European knowledge, while language, literature, history, and the arts gave that knowledge national depth and public meaning. The Academy transformed the achievements of the national revival into an institutional system of recognition, support, publication, and memory. It linked rigorous scholarship with cultural self-understanding and artistic creativity, while also exposing the tensions of national representation, elite authority, linguistic differentiation, and social exclusion. Its importance for the modern Czech Academy of Sciences lies in this broad legacy: it shows that Czech academic science developed not as an isolated technical enterprise, but as part of a wider cultural project of language, memory, creativity, and European intellectual participation. The modern Academy no longer reproduces the exact institutional unity of science and art created by ČAVU, but it still inherits the deeper principle that research institutions serve society not only by producing knowledge, but by sustaining the cultural and intellectual conditions through which a nation understands itself and contributes to the world.

3. The Academy as a Symbol of Czech Intellectual Maturity

The Czech Academy of Sciences and Arts was more than a new scholarly institution founded at the end of the 19th century; it was a public sign that Czech intellectual life had entered a mature institutional stage. Its establishment marked the moment when Czech science, scholarship, literature, and art could be represented not merely by individual achievements, patriotic associations, university departments, or learned circles, but by a prestigious academy with a national mission. This symbolic function was essential because the Czech lands still existed within the Habsburg Monarchy, where questions of language, representation, cultural status, and institutional parity remained deeply significant. The Academy demonstrated that Czech culture no longer needed to argue only for linguistic survival or historical recognition. It could now claim the capacity to organise advanced knowledge, reward excellence, preserve memory, and support future research. In this sense, the Academy was a declaration of intellectual adulthood. It showed that Czech society possessed not only a revived language and a developing public sphere, but also the institutional means to sustain high scholarship and artistic creation across generations (*Mádlová, 2024*; *Franc & Mádlová, 2013*).

The notion of intellectual maturity is particularly important here because the Czech national revival had passed through several phases before the Academy appeared. Earlier generations had focused on the recovery and codification of language, the collection of historical and literary materials, the cultivation of Czech books and journals, and the creation of patriotic cultural associations. These were indispensable achievements, but they did not yet amount to a full academic infrastructure. A mature scholarly culture requires more than enthusiasm, memory, and linguistic commitment. It requires institutions able to evaluate quality, support research, publish results, maintain archives, distribute prestige, and represent intellectual work in public. The Czech Academy of Sciences and Arts answered this need. It provided a higher level of organisation for a culture that had already developed schools, journals, museums, theatres, associations, and university structures. Its foundation therefore represented a transition from revival to consolidation, from cultural mobilisation to academic institution-building (*Macura, 1995*; *Sayer, 1998*).

The Academy's symbolic importance was amplified by its connection with Josef Hlávka. Hlávka's patronage gave material form to Czech intellectual ambition, but it also gave the Academy a moral meaning. His support demonstrated that Czech civic elites were prepared to invest in the long-term development of science, literature, and art. This mattered because intellectual maturity is not proven by declarations alone; it is proven by the willingness to build institutions that outlive their founders. Hlávka's role showed that Czech culture had acquired not only scholars and artists, but also patrons capable of thinking in institutional terms. He did not merely celebrate existing achievements; he helped create conditions for future achievement. In that sense, the Academy became a monument not only to knowledge, but to civic responsibility. It revealed that the Czech national project had reached a stage at which private wealth, public mission, cultural ambition, and scholarly organisation could be joined in a durable form (*Akademie věd České republiky, n.d.*; *Radio Prague International, 2021*).

The Academy also symbolised maturity because it stood above the level of ordinary association. 19th-century Czech society was rich in clubs, societies, reading circles, publishing initiatives, educational organisations, and patriotic institutions. These organisations were vital to national development, but an academy carried a different weight. It implied a hierarchy of recognised excellence and a capacity for long-term scholarly judgement. It could elect members, sponsor publications, award prizes, and represent Czech intellectual achievement in a more authoritative way than a voluntary association. This did not make it socially universal or democratically inclusive in the modern sense. It remained an elite institution shaped by the values and limitations of its age. Yet precisely because it was elite, it marked a new stage in Czech cultural self-representation. It signalled that Czech intellectual life could produce not only broad national participation, but also institutions of the highest scholarly and artistic distinction (*Mádlová, 2024*).

The Academy's foundation also had symbolic force because it placed Czech science and art within the European academy tradition. Throughout Europe, academies functioned as institutions of recognition, intellectual prestige, and cultural authority. To possess an academy meant to participate in a recognised institutional language of modern civilisation. The Czech Academy of Sciences and Arts therefore allowed Czech culture to appear not only as a national movement, but as a European scholarly culture with its own high institution. This was crucial for a smaller nation within a multilingual empire. Czech scholarship needed to demonstrate that it could stand beside German, Austrian, French, Italian, Polish, Hungarian, and other European intellectual traditions. The Academy gave institutional form to that claim. It was a national academy, but its symbolic logic was European. It stated that Czech science and art belonged to the same civilisational order as the academies and learned institutions of larger nations (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*).

The Academy's title itself expressed the breadth of Czech intellectual maturity. It did not isolate science from literature or art, but joined them in a single institution. This unity reflected the historical conditions of Czech cultural development. A nation whose modern identity had been built through language, history, literature, education, and public culture could not define intellectual maturity through natural science alone. It needed to demonstrate achievement across the entire field of high culture. Science showed methodological seriousness and participation in universal knowledge. Literature and language showed cultural self-expression. The arts gave national culture visible and symbolic form. Historical and philological scholarship provided documentary depth. The Academy therefore represented Czech intellectual maturity as a whole, not as a narrow disciplinary achievement. Its broad structure

was itself a statement about what a modern nation should be able to produce and preserve (*Franc & Mádlová, 2013*; *Mádlová, 2024*).

The Academy also signalled that Czech had become a language capable of high scholarly and cultural use. This point is fundamental. A national language achieves maturity not when it is merely spoken by a population, but when it becomes capable of supporting advanced education, science, criticism, literature, administration, and public debate. The 19th-century Czech revival had worked intensively to expand the expressive and conceptual capacity of Czech through grammar, lexicography, translation, terminology, literary production, and education. By the time the Academy was founded, Czech could increasingly function as a serious scholarly language. The Academy strengthened this process by giving Czech-language intellectual work a prestigious institutional home. It helped transform Czech from a revived national language into a normal medium of academic authority. The Academy therefore symbolised linguistic maturity as much as institutional maturity (*Dvořáčková, 2024*; *Macura, 1995*).

This linguistic maturity was especially significant because Czech scholarship developed in close relation to German-language intellectual life. German had long been powerful in universities, administration, print culture, and scientific communication in the Czech lands. Czech scholars did not simply inherit a monolingual national academic space; they had to build one within a multilingual environment. The Academy's foundation showed that Czech intellectual life could no longer be treated as secondary to German-language scholarship in Bohemia and Moravia. It provided a prestigious institutional counterweight and a national centre of recognition. Yet this should not be interpreted as isolation from German or European science. Czech academic maturity consisted precisely in the ability to build institutions of its own while remaining engaged with wider scholarly standards. The Academy was both a symbol of Czech differentiation and a vehicle of European participation (*Agnew, 2004*; *Sayer, 1998*).

The Academy also represented the maturation of Czech historical consciousness. National cultures often begin by collecting memories, legends, literary fragments, and symbols, but mature scholarship requires critical historical method. Czech historians, philologists, archivists, and antiquarians had already done important work in reconstructing the Czech past, but the Academy gave this labour a higher institutional status. It recognised that national memory needed research, editions, source criticism, and documentary seriousness. This was especially important for a culture whose identity was deeply connected with medieval history, language history, religious movements, state traditions, and the memory of political loss. The Academy could help transform historical memory into scholarly knowledge. It therefore contributed to the disciplining of national identity. Czech maturity lay not only in remembering the past, but in studying it critically (*Franc, Kostlán, & Míšková, 2010*).

In the natural sciences, the Academy symbolised another form of maturity: the ability of Czech researchers to participate in universal scientific inquiry. The Czech national project would have remained incomplete if it had been confined to language, literature, and history. A modern intellectual culture also needed mathematics, physics, chemistry, biology, medicine, geology, astronomy, and technical knowledge. The Academy's scientific dimension made clear that Czech scholarship aspired to more than cultural preservation. It sought to contribute to knowledge that transcended national boundaries. This was essential because scientific credibility depends on standards that cannot be purely national. A Czech scientist could serve national culture most effectively by producing work of genuine international quality. The

Academy's role was to support and recognise such work. It therefore connected Czech national maturity with universal scientific standards.

The Academy's symbolic role was also connected with the division of labour among Czech institutions. Charles University, museums, theatres, schools, publishing houses, and civic associations all contributed to national development. The Academy did not replace these institutions, but added a higher level of scholarly and cultural authority. It stood as an institution of recognition and support above ordinary educational or associational structures. This position gave it a representative function. It could speak for the highest aspirations of Czech science and art, even though it did not encompass all intellectual activity. Its existence helped complete the institutional architecture of Czech national culture. A modern nation required universities to educate, museums to preserve, theatres to perform, schools to teach, journals to circulate ideas, and academies to recognise and support excellence. The Academy was one of the final pieces in this 19th-century cultural architecture.

The Academy's establishment also had a political meaning, even if it was not a political party or state institution in the modern national sense. Within the Habsburg Monarchy, Czech elites used cultural institutions to express national capacity and claim public dignity. An academy of sciences and arts could function as a form of cultural statehood before political sovereignty. It did not govern territory, but it represented intellectual autonomy. It did not make laws, but it helped define cultural authority. It did not command armies, but it organised scholarly and artistic prestige. This symbolic politics should not be underestimated. In a multinational empire, institutions of culture and knowledge were among the most important ways in which national communities demonstrated their maturity. The Academy therefore belonged to the long Czech strategy of building the nation through institutions before statehood became possible (*Agnew, 2004*; *Sayer, 1998*).

At the same time, the Academy's imperial setting reminds us that Czech intellectual maturity developed through negotiation rather than simple separation. The Academy's original foundation required recognition within the political framework of the monarchy. Its name and legal position reflected the realities of Habsburg public life. This does not diminish its Czech significance. Rather, it shows the historical complexity of Czech institutional development. Czech elites built national institutions through the structures available to them. They used imperial legality to support Czech cultural autonomy. The Academy therefore symbolised a sophisticated political-cultural strategy: it was Czech in mission, European in aspiration, and imperial in the formal conditions of its foundation. Such complexity is typical of Central European history. It should be preserved in the interpretation rather than simplified into a single national narrative.

The Academy also expressed the maturity of Czech civic society. It was not imposed from above as a purely bureaucratic institution. It emerged from the initiative, patronage, and organisational energy of Czech cultural elites. This matters because modern academic life depends on more than state policy. It requires a society that values knowledge enough to support it. Hlávka's patronage, the participation of scholars and artists, and the public prestige attached to the Academy all show that Czech civic culture had developed a strong institutional imagination. It understood that science and art needed durable structures. This civic dimension distinguishes the Academy from later state-socialist research organisation. ČSAV would be a state-centred academy; ČAVU was more closely connected with national civic patronage and cultural self-organisation. That difference is important for understanding the

diversity of the Academy's historical inheritance (*Dvořáčková, Franc, & kol., 2019*; *Mádlová, 2024*).

The Academy's symbolic power also depended on its ability to connect the past with the future. It looked back to the learned traditions of the Czech lands, especially the Royal Czech Society of Sciences and the broader history of Czech scholarship. At the same time, it looked forward by creating mechanisms to support future research, publication, and artistic work. A mature institution is not merely commemorative. It does not only preserve what has already been achieved. It creates conditions for what has not yet been produced. The Academy therefore functioned as both memory and promise. It gave Czech culture a past that could be honoured and a future that could be institutionally supported. This temporal duality remains one of the strongest features of academy institutions. The modern Czech Academy of Sciences also lives between inherited memory and future-oriented research (*Franc & Mádlová, 2013*; *Strategie AV21, 2017*).

The Academy's creation also helped establish a national hierarchy of excellence. This was necessary but ambivalent. On the one hand, cultural maturity requires standards: not every publication, artwork, or scholarly project can be treated as equally significant. An academy can help distinguish major achievements, support serious work, and create a canon of recognised contributors. On the other hand, academies are always shaped by the social boundaries of their time. They may exclude women, minorities, unconventional thinkers, politically inconvenient figures, or those outside dominant networks. The Czech Academy of Sciences and Arts was no exception to these limitations. It reflected the elite and gendered structure of late 19th-century academic life. Its symbolic value should therefore be interpreted critically. It was a major step in Czech intellectual maturity, but that maturity was still socially restricted. A modern history must acknowledge both the achievement and the exclusions embedded within it.

The Academy's symbolic function was also reinforced by the broader culture of commemoration. 19th-century Czech public life placed high value on anniversaries, monuments, portraits, historical narratives, and institutional memory. The Academy entered this commemorative culture as both subject and producer. It honoured scholars and artists, preserved names, supported publications, and participated in the construction of Czech intellectual memory. This helped transform individual achievements into collective heritage. The institution became a place where Czech culture could remember itself at a higher level of formality. Commemoration can become overly ceremonial, but it is also necessary for institutional continuity. The Academy's role was to make memory durable and public. It helped create the symbolic archive of Czech science and art (*Franc & Mádlová, 2013*).

The idea of Czech intellectual maturity also involved the ability to sustain disciplinary plurality. A less developed scholarly culture may depend heavily on a few charismatic individuals or a small number of fields. A mature academic culture supports several disciplines at once and creates mechanisms for their coexistence. The Academy's broad coverage of sciences, literature, and arts showed that Czech culture had reached such a stage. It could support natural scientists, historians, philologists, writers, artists, and other intellectuals within one prestigious framework. This did not mean that all fields were equally developed or equally supported. Yet the very ambition was significant. It suggested that Czech national culture should not be fragmentary. It should be capable of encompassing the full range of modern

intellectual production. This breadth later became one of the deep structural inheritances of Czech academic organisation.

The Academy also marked the maturity of Czech scholarly public communication. Knowledge requires audiences, readers, publishers, critics, and institutions capable of circulating ideas. By the late 19th century, Czech public culture had developed newspapers, journals, publishing houses, schools, associations, and lecture spaces. The Academy added a higher register of communication. Its publications and recognitions could carry special prestige. It could help shape what counted as serious scholarship or high art. This public communicative role was important because intellectual maturity is not only about producing knowledge; it is also about making knowledge socially legible. The Academy helped establish a public language of Czech excellence. It gave cultural and scholarly achievement an institutional voice.

The Academy's foundation should also be read as part of a European pattern in which smaller nations used scholarly institutions to assert cultural parity. In the 19th century, many national movements understood academies, universities, museums, and theatres as instruments of recognition. They were not merely practical institutions; they were claims to equal standing among modern nations. The Czech case fits this broader pattern, but it has its own specificity because it developed within the multilingual and politically complex Habsburg environment. The Academy's symbolic value lay in showing that Czech culture could produce institutions comparable to those of older state nations. It made Czech scholarship visible as a European academic culture. This comparative dimension is important because it prevents the Academy from being seen only as a domestic patriotic institution. It was also a European statement.

The Academy's later history confirms the depth of its symbolic significance. Although ČAVU was dissolved in 1952 and its functions were absorbed into the new Czechoslovak Academy of Sciences, its memory did not disappear. It remained part of the genealogy of Czech academic science. Modern institutional histories of AV ČR continue to refer to it as a predecessor, and recent scholarship has returned to ČAVU as an important subject in its own right (*Akademie věd České republiky, n.d.*; *Mádlová, 2024*). This persistence shows that the Academy's symbolic meaning exceeded its legal existence. Institutions may be dissolved, but their memory can continue to shape later identities. ČAVU remains important because it represents a national-cultural model of academic maturity different from both the older learned society and the later socialist research academy. It occupies a distinctive place in the long history of Czech science.

For the modern Czech Academy of Sciences, the symbolic legacy of ČAVU is especially valuable because it broadens the meaning of continuity. AV ČR is the successor of ČSAV in a formal and institutional sense, but its deeper historical identity also reaches back to ČAVU and the Royal Czech Society of Sciences. This layered genealogy allows the modern Academy to present itself not merely as a post-socialist research organisation, but as the current form of a long Czech tradition of organised knowledge. ČAVU contributes the national-cultural and civic-patronage layer of that tradition. It reminds the modern Academy that science is not only administration, funding, laboratories, and evaluation. It is also language, memory, public recognition, cultural dignity, and the symbolic representation of intellectual maturity. This is one of the reasons why the history of ČAVU deserves a central place in the book.

The Academy as a symbol of Czech intellectual maturity also helps distinguish this project from ordinary institutional chronicle. A purely administrative history might list statutes, presidents, sections, reforms, and dates. A richer history must ask what the Academy meant to Czech

society. It meant that Czech scholarship had become institutionally self-confident. It meant that science and art could be recognised as central to national development. It meant that Czech language and culture had acquired high forms of public authority. It meant that Czech intellectual life could look to Europe not as a subordinate imitator, but as a participant. It also meant that the nation's cultural project had moved from revival to institution-building. This symbolic interpretation gives the Academy its true historical weight.

Thus, the Czech Academy of Sciences and Arts became a symbol of Czech intellectual maturity because it gave institutional form to a culture that had moved beyond linguistic revival and patriotic mobilisation into organised science, scholarship, literature, and art. It demonstrated that Czech society possessed the language, patrons, scholars, artists, public institutions, and civic ambition necessary for high intellectual life. The Academy joined national identity with European standards, cultural memory with future-oriented support, and scientific seriousness with artistic creativity. Its foundation showed that Czech scholarship could be recognised not only through individual achievement, but through a prestigious national institution capable of preserving, evaluating, and supporting knowledge across generations. At the same time, its symbolic role must be interpreted critically, with awareness of the social exclusions, linguistic tensions, and imperial conditions of its age. Its greatness lies not in institutional perfection, but in the historical fact that it transformed Czech cultural aspiration into durable academic authority. For the modern Czech Academy of Sciences, ČAVU remains an indispensable predecessor because it represents the moment when Czech science and culture publicly claimed the status of a mature European intellectual tradition.

Organisational Structure and Research Culture

1. Sections, Classes, Membership, and Scholarly Authority

The organisational structure of the Czech Academy of Sciences and Arts was one of the main instruments through which Czech scholarship acquired a higher public authority at the end of the 19th century. The Academy was not only a symbolic institution founded through the patronage of Josef Hlávka; it was also a carefully structured scholarly corporation. Its authority depended on the way it classified knowledge, recognised members, organised decision-making, distributed prestige, and represented Czech intellectual life before domestic and foreign audiences. In this respect, the Academy differed from a loose cultural association or patriotic society. It possessed internal divisions, categories of membership, governing organs, administrative procedures, and recognised mechanisms of scholarly validation. These structures gave Czech science and art a formal institutional language. They allowed scholarship to be organised not merely through enthusiasm or personal reputation, but through classes, elections, publications, awards, and collective decisions. The Academy's organisation therefore expressed a broader historical transition: Czech intellectual life was moving from cultural mobilisation to academic institutionalisation. The structure of ČAVU made visible the fact that Czech science and art had entered a stage in which they could be

governed, represented, and evaluated through an institution of national scholarly authority (*Mádlová, 2024*; *Franc & Mádlová, 2013*).

The division of the Academy into classes was central to this authority. According to the archival description of the older scientific institutions preserved by the Masaryk Institute and Archives of the Czech Academy of Sciences, ČAVU was divided into four classes: the first covered philosophical, political, legal, historical, and archaeological sciences; the second covered natural sciences, mathematics, medicine, and geography; the third covered philological sciences; and the 4th covered artistic activity, literature, visual art, and music. The same source identifies several categories of members — honorary, ordinary, extraordinary, corresponding, and non-resident or later foreign members — and notes that the General Assembly was the highest governing body, with administrative and financial matters handled through a dedicated commission and executive officers. These details are not merely administrative. They show how the Academy translated the broad Czech intellectual project into an ordered institutional form. The classes mapped the fields that Czech culture considered essential to its maturity. Membership categories mapped degrees of scholarly recognition and relation to the Academy. Governance structures made the institution capable of acting as a collective body rather than as a symbolic name alone. In this sense, ČAVU's structure was part of its intellectual meaning.

The first class, devoted to philosophical, political, legal, historical, and archaeological sciences, reflected the centrality of historical and normative knowledge in Czech national development. A modern Czech academic institution could not define itself only through natural science or technical expertise. It needed to support the disciplines that interpreted society, law, statehood, history, and cultural memory. The inclusion of history and archaeology was especially significant because Czech national identity had long been tied to the interpretation of the medieval kingdom, religious reform movements, historical rights, monuments, manuscripts, and the continuity of cultural memory. Legal and political sciences also mattered because Czech society within the Habsburg Monarchy was deeply concerned with questions of constitutional position, public law, civic status, and national representation. Philosophy provided a broader intellectual framework for reflection on knowledge, ethics, culture, and society. This class therefore represented more than a group of academic fields. It gave institutional form to the disciplines through which Czech society could understand itself historically, politically, and culturally. Its presence at the head of the Academy's structure showed that national scholarly maturity required critical reflection on collective existence, not only empirical research into nature (*Franc, Kostlán, & Míšková, 2010*; *Sayer, 1998*).

The 2nd class, devoted to natural sciences, mathematics, medicine, and geography, represented the Academy's participation in universal scientific knowledge. Its inclusion showed that Czech intellectual maturity could not be defined only by language, literature, or national history. A modern nation also had to produce rigorous work in the sciences of nature, life, space, number, health, and the earth. Mathematics and natural sciences placed Czech scholarship in relation to standards that were internationally comparable. Medicine connected academic knowledge with public health and practical welfare. Geography linked scientific observation with knowledge of territory, environment, and spatial organisation. The second class therefore expressed a different but equally important dimension of national maturity: the ability to contribute to general science while also studying the natural conditions of the Czech lands. It connected local scholarly identity with the European and global sciences. This was crucial because a national academy that lacked serious natural-scientific ambition would have

remained culturally incomplete. The second class made clear that Czech science was not merely a component of cultural revival, but a participant in the international expansion of modern research (*McClellan, 1985*; *Mádlová, 2024*).

The 3rd class, devoted to philological sciences, occupied a particularly important place in Czech academic culture. Philology was not a narrow technical field in the Czech context. It was one of the disciplines through which the Czech language became historically understood, standardised, defended, and elevated to scholarly use. The study of Czech, Slavic languages, comparative linguistics, textual traditions, and literary sources was central to the intellectual foundations of the national revival. By giving philology its own class, the Academy recognised that language was not merely a medium of scholarship, but a subject of scholarship and a foundation of cultural identity. This was especially important in a multilingual environment where German had long dominated many areas of administration, higher education, and learned publication. A Czech academy had to demonstrate that Czech language and Slavic scholarship possessed academic depth. The philological class did precisely that. It institutionalised the study of language as one of the pillars of Czech scholarly authority. It also helped connect Czech scholarship with broader European traditions of comparative philology, historical linguistics, textual criticism, and Slavic studies (*Dvořáčková, 2024*; *Macura, 1995*).

The 4th class, devoted to artistic activity, literature, visual art, and music, expressed the distinctive breadth of ČAVU's mission. The Academy was not conceived as a purely scientific corporation in the narrow modern sense. It was an institution of sciences and arts, and the 4th class made that unity visible. Literature, music, and visual art were essential components of Czech national culture, especially in the 19th century, when cultural creation often carried public and symbolic functions normally associated with statehood. The 4th class recognised that artistic achievement required institutional support and public honour alongside scientific and scholarly work. This did not weaken the Academy's scientific authority. On the contrary, it expressed the historical reality that Czech intellectual maturity depended on the coordinated development of research, language, literature, and art. The Academy's 4th class therefore preserved a broad humanistic and cultural vision. It gave national creativity the same institutional dignity as scholarship and science. This broad structure distinguished ČAVU from later research academies and helps explain why its legacy remains important for understanding the cultural depth of the modern Czech Academy's genealogy (*Franc & Mádlová, 2013*; *Mádlová, 2024*).

The four-class structure also reveals how the Academy arranged the unity and differentiation of knowledge. On one level, the classes separated fields so that specialised forms of judgement could develop. Historians, natural scientists, philologists, and artists could not all be evaluated by identical criteria. Each field had its own methods, standards, sources, and forms of excellence. On another level, the classes remained united within a single Academy. This meant that Czech intellectual life was represented as a whole. The Academy could recognise disciplinary difference without abandoning the idea of a common cultural and scholarly mission. This balance was one of its major achievements. A less developed institution might have remained too general and ceremonial; an excessively specialised system might have fragmented knowledge into disconnected professional communities. ČAVU's class structure attempted to combine breadth and order. It made the diversity of Czech science and culture administratively visible while preserving a single institutional identity. This structure therefore embodied a mature academic principle: knowledge must be differentiated in order to be serious, but integrated in order to be culturally meaningful.

Membership categories were equally important for the production of scholarly authority. Honorary, ordinary, extraordinary, corresponding, and non-resident or foreign members represented different degrees and forms of relation to the Academy. Ordinary members formed the recognised core of the institution. Extraordinary members allowed a wider circle of distinguished contributors to be included. Corresponding members connected the Academy with scholars who could participate intellectually without necessarily belonging to the daily institutional centre. Foreign or non-resident members linked Czech scholarship to the international academic world. Honorary members carried symbolic prestige. These categories allowed the Academy to manage hierarchy, recognition, distance, and international relation. Membership was therefore not merely a list of names. It was an institutional technology of prestige. It told society who was recognised as a bearer of science, scholarship, literature, or art. It also told foreign audiences that Czech intellectual life was capable of organising its own system of distinction. The Academy's categories of membership transformed personal reputation into public academic status (*Šlechtová & Levora, 2004*; *Mádlová, 2024*).

The distinction between ordinary and extraordinary membership is particularly revealing because it shows that academic recognition was graded. Not all members stood in the same relation to institutional authority. Such hierarchy could preserve standards, but it could also reproduce social and disciplinary inequalities. The Academy's membership was shaped by the elite structure of its time, including gender limitations, class expectations, and dominant cultural assumptions. Nevertheless, graded membership allowed the institution to distinguish between different levels of achievement, involvement, and authority. It also created pathways through which scholars or artists might move into higher recognition. Modern academies and research institutions continue to operate through graded forms of recognition, even if the terminology has changed. Full members, corresponding members, fellows, senior researchers, honorary doctors, grant holders, and prize recipients are all contemporary examples of differentiated academic status. ČAVU's membership system therefore belongs to a broader history of scholarly stratification. It shows how academic institutions convert judgement into rank.

Corresponding and foreign membership gave the Academy a crucial international dimension. A national academy cannot remain intellectually healthy if it recognises only domestic figures. It must connect itself with broader scholarly worlds. Corresponding members allowed the Academy to participate in wider networks of communication. Foreign members signalled that Czech scholarship belonged to international science and culture. They also helped the Academy receive recognition from outside its national environment. This was especially important for a smaller culture within a large multilingual empire. International membership categories allowed ČAVU to be both national and European. They demonstrated that Czech academic life did not seek isolation, but parity. The Academy wished to speak in its own language and support its own culture, but it also wanted to be judged within wider standards of excellence. This dual ambition has remained central to Czech science. The modern Czech Academy of Sciences continues it through international cooperation, research mobility, European projects, and global publication networks (*Akademie věd České republiky, n.d.*; *Strategie AV21, 2017*).

Honorary membership had a different function. It often carried symbolic value rather than direct participation in scholarly labour. Honorary members could embody prestige, patronage, cultural representation, or diplomatic connection. This may appear less important than research output, but symbolic recognition was central to academy culture. Institutions build

authority partly by associating themselves with recognised figures. Honorary membership could strengthen the Academy's social standing and connect it with influential circles. At the same time, it could blur the line between scholarly merit and public prestige. This ambiguity is typical of academies. They are intellectual bodies, but they also operate in social and symbolic worlds. ČAVU's honorary membership should therefore be interpreted as part of the Academy's broader economy of prestige. It helped the institution position itself within Czech society and European intellectual culture. The historian must analyse such categories critically, neither dismissing them as empty ceremony nor mistaking them for purely scholarly judgement.

The Academy's general assembly functioned as the highest governing body, and this was essential for its corporate character. A general assembly gave the Academy an internal public sphere in which members could deliberate, elect, approve, and represent the institution's collective will. This distinguished the Academy from a foundation controlled only by a patron or a state office. Although Hlávka's patronage was decisive, the Academy's authority had to be embodied in a scholarly corporation. The general assembly supplied that body. It allowed members to participate in institutional decision-making and helped transform the Academy from a funded project into a self-governing learned community. Of course, self-governance was limited by the legal, social, and political conditions of the time. The Academy existed within the Habsburg framework and later within changing Czechoslovak regimes. Yet the general assembly preserved an important principle: scholarship should have institutions capable of internal deliberation. This principle would remain important in later academy history, especially in debates over autonomy and political control.

Administrative and financial organs were also central to the Academy's functioning. Scholarly authority cannot survive without administration. Meetings must be recorded, funds managed, publications prepared, awards organised, correspondence handled, and decisions implemented. The archival description of ČAVU notes the role of a commission responsible for economic or administrative matters, the president or chairman at the head of the Academy, and a general secretary or secretary who supervised income and expenditure and kept records of meetings and administrative proceedings. This machinery may seem mundane, but it was essential to institutional maturity. A culture that wishes to support science and art must learn not only to admire them, but to administer them. Administration transforms aspiration into continuity. It ensures that funds are not merely promised, but distributed; that decisions are not merely spoken, but recorded; that meetings do not vanish, but enter institutional memory. ČAVU's administrative structure therefore belonged directly to its scholarly mission. It made academic authority operational.

The president or chairman of the Academy played a particularly important role because he embodied institutional representation. In the early period, Josef Hlávka's presidency linked the Academy to its founding patron and to the moral authority of civic philanthropy. Later presidents would represent different dimensions of Czech scholarly and public life. The office itself mattered because academies require visible leadership. A president speaks for the institution, represents it before public authorities, presides over ceremonial occasions, and helps shape institutional identity. Yet the president's authority is not identical with personal rule. It depends on the corporation of members, statutes, classes, and administrative organs. This balance between leadership and corporate authority is characteristic of academy organisation. The president gives the institution a face; the classes and membership give it scholarly substance; the assembly gives it collective form; the secretary and commissions give

it administrative continuity. ČAVU's structure therefore combined symbolic, scholarly, and practical forms of authority.

The general secretary or secretary also deserves attention because such offices often carry the hidden labour of institutions. Presidents and founders are remembered more easily, but secretaries, editors, archivists, and administrators make institutions work. The secretary's responsibility for records, correspondence, income, expenditure, and protocols meant that he stood at the intersection of scholarship and administration. He helped produce the documentary memory of the Academy. Without such work, later historians would have far fewer materials through which to reconstruct the institution's life. The secretary's office shows that academic authority is built through writing, record-keeping, and procedural continuity. This is an important reminder for the history of science. Intellectual life depends on administrative labour that is often invisible in heroic narratives. ČAVU's organisation demonstrates that the making of Czech academic authority required not only great scholars and patrons, but also people who maintained the everyday documentary order of the institution.

The Academy's class structure also organised its publication activity. Each field required appropriate forms of scholarly communication, and the Academy's classes helped provide disciplinary channels. Publications such as *Rozpravy České akademie císaře Františka Josefa pro vědy, slovesnost a umění* were issued in class-related series, including a mathematical-natural-scientific class series documented in the Digital Library of the Czech Academy of Sciences. This publication structure was important because it connected institutional classification with intellectual output. The classes were not only administrative compartments; they shaped how research appeared in print. A paper's placement within a class series signalled its field, audience, and scholarly context. Publication thereby reinforced the Academy's taxonomy of knowledge. It also helped build institutional memory field by field. Later historians can read the Academy's publications not merely for content, but for evidence of how disciplines were ordered and represented. ČAVU's publication practices therefore translated its class structure into the documentary history of Czech science and culture.

The Academy's authority was also strengthened by its ability to support work beyond its own membership. Archival descriptions note that ČAVU supported scientific and artistic works not only by its members, but also by scholars and artists outside the Academy, including through publication, awards, subsidies, and study scholarships; it also contributed to the protection and study of historical monuments. This function is crucial. It shows that the Academy was not merely a closed honour society. It acted as a distributor of resources and recognition across a wider intellectual field. Such support allowed it to influence Czech science and art beyond the circle of elected members. It could encourage research, enable publication, reward artistic achievement, and support younger or external figures. In this sense, the Academy functioned as an intermediary between elite recognition and broader cultural production. It helped build the infrastructure of Czech intellectual life by redistributing symbolic and material capital. This made it a national institution in practice, not only in name.

The protection and study of historical monuments also reveal the Academy's connection with cultural heritage. ČAVU's work was not limited to abstract scholarship or artistic recognition. It participated in the preservation, investigation, and publication of knowledge about older monuments. This function linked the Academy with the cultural memory of the Czech lands. It also shows how closely scholarship, national identity, and heritage protection were connected

in the Academy's mission. Monuments were not merely aesthetic objects. They were evidence of historical continuity, cultural achievement, and national memory. By supporting their study and protection, the Academy helped create scholarly foundations for heritage consciousness. This aspect of ČAVU's activity is especially relevant to the broader interpretation of academies as institutions of scientific and cultural inheritance. The modern Czech Academy of Sciences continues to include institutes and archives concerned with history, archaeology, art history, cultural memory, and heritage-related research. The roots of this concern can be traced back to the older academy tradition.

The Academy's internal structure also reflected the tension between inclusiveness of fields and exclusiveness of membership. The four classes covered a broad range of knowledge and creativity, but the number of recognised members was limited and selective. This selectivity gave membership prestige, but it also meant that many contributors to Czech intellectual life remained outside formal academic authority. The Academy could support non-members, but recognition still depended on elite structures. This tension is typical of academies. They must be selective to preserve standards, yet excessive selectivity can narrow representation. ČAVU's history therefore raises questions about who was authorised to speak for Czech science, literature, and art. Such questions are especially important when considering gender, class, regional, linguistic, and disciplinary inequalities. The first admission of women to ordinary membership only after later reforms, including the election of Eliška Krásnohorská in the interwar period, illustrates how slowly academic authority expanded beyond male elite norms. The Academy's structure was advanced for Czech national institution-building, but it also reflected the exclusions of its age.

The later development of the Academy's internal organisation shows that its structure was not static. After the creation of Czechoslovakia, ČAVU underwent changes, including modifications in membership and further differentiation within fields. The natural-scientific class, for example, was later divided into sections, reflecting the increasing specialisation of modern science. This development is important because it shows how academy organisation had to adapt to the growth of disciplines. A four-class structure could express broad intellectual order, but the expansion of research required more refined subdivisions. Modern science does not remain stable; it produces new fields, methods, and institutional needs. ČAVU's internal evolution therefore anticipates later transformations in the Czechoslovak Academy of Sciences and the Czech Academy of Sciences. The problem of how to organise knowledge — by classes, sections, institutes, programmes, or research areas — is one of the enduring problems of academic governance. ČAVU was an early Czech solution, but not the final one.

The Academy's organisation also helped define Czech scholarly authority in relation to the state. It was not a state research bureaucracy, yet it required legal recognition and operated within political frameworks. Its structure gave it a degree of corporate autonomy while also situating it within public order. This balance was delicate. The Academy had to be sufficiently independent to possess scholarly credibility and sufficiently recognised to possess public authority. Its classes and membership allowed it to claim internal competence. Its governing organs allowed it to act institutionally. Its relationship with public funds, foundations, and state recognition gave it social weight. Later academy history would intensify this problem dramatically, especially under the socialist academy model after 1952. ČAVU's organisation represents an earlier form of the same tension: how can an institution of scholarship be connected to public authority without losing its own intellectual standards? The answer lay

partly in corporate structure. The Academy's internal organisation made its public role more credible.

The categories of knowledge represented in the Academy also reveal the values of Czech national culture at the turn of the 20th century. Philosophy, law, history, archaeology, natural sciences, mathematics, medicine, geography, philology, literature, visual art, and music together formed a map of what Czech society considered essential to its intellectual and cultural maturity. The map is historically revealing. It includes both universal sciences and national-cultural disciplines. It includes fields of public order and state reflection, such as law and political sciences. It includes fields of language and memory, such as philology and history. It includes arts that give visible and emotional form to culture. This classification shows that Czech intellectual maturity was understood broadly. The Academy was not designed to produce one type of knowledge only. It represented the ideal of a fully developed national culture capable of research, interpretation, expression, and public judgement. Its structure was therefore a cultural statement.

The Academy's membership also contributed to the formation of a Czech scholarly elite. An elite is not merely a privileged group; in academic history it is also a mechanism through which standards are formed, transmitted, and contested. ČAVU created a recognised circle of scholars, scientists, writers, and artists whose work could be associated with the highest level of Czech intellectual achievement. This had important consequences for careers and memory. To become a member of the Academy was to enter a canon of national scholarly authority. At the same time, elite formation always carries risks. It can preserve quality, but it can also reproduce closed networks. It can create standards, but it can also resist innovation. It can define national excellence, but it can marginalise voices outside dominant institutions. ČAVU's membership must therefore be studied as both a source of authority and a social structure. Prosopographical work on members, such as Šlechtová and Levora's reference volume, is particularly valuable because it allows historians to analyse the composition and development of this elite systematically (*Šlechtová & Levora, 2004*).

The Academy's organisation also reveals the difference between scholarly authority and research infrastructure. ČAVU was a learned and supportive institution rather than a modern academy of research institutes. Its classes and membership produced authority, recognition, publication, and funding, but they did not yet constitute a full institute-based research system. This distinction is crucial for understanding the later transition to ČSAV. The Czechoslovak Academy of Sciences would create a much more powerful research infrastructure, with institutes, staff, laboratories, planning mechanisms, and state budgets. ČAVU's strength lay elsewhere: in recognition, patronage, publication, cultural prestige, and support. It represented the academy as a learned corporation, not yet the academy as a national research system. The modern Czech Academy of Sciences inherits both dimensions: the symbolic and scholarly authority of older academies and the research infrastructure model developed in the 20th century. ČAVU's organisational structure therefore occupies an intermediate position in the long history of Czech academic institutions.

The relation between classes and membership also shaped the Academy's public identity. To the public, the Academy appeared as a body representing the highest forms of Czech knowledge and creativity. Internally, however, this public identity had to be produced through classifications, elections, deliberations, committees, and publications. Public authority is never automatic. It is constructed through institutional procedures that turn individual

achievement into collective recognition. The Academy's classes said which fields mattered. Its membership said who represented them. Its publications said what work deserved dissemination. Its awards and subsidies said what should be encouraged. Its assemblies and administrative organs said how decisions became institutional. The Academy's authority therefore rested on an entire internal ecology. This is why organisational history matters. It shows how symbolic authority was made practical. Without structure, the Academy would have remained a patriotic emblem; with structure, it became a functioning scholarly institution.

The Academy's internal organisation also preserved continuity across political changes. It existed under the Habsburg Monarchy, the First Czechoslovak Republic, the Nazi occupation period, and the early communist years before its dissolution in 1952. Its classes, membership records, publications, and administrative documents allowed it to maintain a recognisable institutional identity across these transformations, even when external conditions changed dramatically. This continuity was not complete or untroubled, but it mattered. Institutions survive through routines as well as ideals. Assemblies, records, publications, elections, and class activities create habits that can continue even under pressure. ČAVU's organisational structure therefore contributed to the durability of Czech academic memory. Its later absorption into ČSAV marked a major rupture, but the records and functions of ČAVU remained part of the longer institutional genealogy of Czech science. The modern Academy's archives and historical studies preserve this continuity (*Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

For the broader history of the Czech Academy of Sciences, ČAVU's structure demonstrates that academic authority in the Czech lands developed through several institutional layers. The Royal Czech Society of Sciences had established learned society traditions. ČAVU created a national academy of sciences and arts with classes, membership categories, publication activity, cultural support, and symbolic prestige. ČSAV later created an institute-based state research system. AV ČR after 1993 transformed that system into a democratic public research institution. Each layer reorganised the relation between knowledge, authority, membership, and public mission. ČAVU's class and membership structure is therefore not a minor historical detail. It is the institutional form through which Czech national scholarship became organised before the socialist academy model. It explains why later academy history cannot be reduced to state research policy alone. Czech academic authority had already been built through older forms of scholarly classification and recognition.

Thus, the sections, classes, membership categories, and governing organs of the Czech Academy of Sciences and Arts were central to its role as a national institution of scholarly authority. The Academy's four classes mapped the broad intellectual universe of Czech culture: philosophical, legal, historical, and archaeological sciences; natural sciences, mathematics, medicine, and geography; philological sciences; and literature, visual art, music, and other artistic activity. Its membership categories transformed personal achievement into recognised academic status, while its general assembly, administrative commission, presidency, and secretarial offices made scholarly authority operational and durable. These structures allowed ČAVU to support publications, awards, scholarships, artistic work, and heritage-related activity beyond its own membership, making it more than a closed honour society. At the same time, its organisation reflected the hierarchies and exclusions of its age, including elite membership norms and delayed inclusion of women. For the modern Czech Academy of Sciences, ČAVU's structure is historically important because it

shows how Czech scholarship and culture learned to organise authority before the rise of the institute-based research academy. It stands as a key intermediate form between Enlightenment learned society, national cultural academy, socialist research system, and contemporary public research institution.

2. Publications, Grants, Awards, and Support for Research

The Czech Academy of Sciences and Arts was not only a body of elected scholars and artists; it was also a mechanism for supporting intellectual production. Its authority rested on membership and symbolic prestige, but its practical importance came from what it enabled: publication, research support, artistic recognition, scholarships, subsidies, and the circulation of scholarly work. The Academy's official historical description emphasises that it represented Czechoslovak science at home and abroad, published works, and redistributed research scholarships and grants from state funds as well as private foundations and funds (*Akademie věd České republiky, n.d.*). This combination of representation, publication, and material support made ČAVU more than an honorary learned society. It acted as an intermediary between individual achievement and national intellectual development. Through its publications, it gave research a durable form. Through grants and scholarships, it helped sustain scholarly labour. Through awards, it converted excellence into public recognition. Through support for both members and non-members, it extended its influence beyond the Academy's formal corporate body. These functions show that ČAVU was an institution of intellectual infrastructure. It did not merely represent Czech science and art; it helped make them possible.

Publication was one of the Academy's most important functions because it transformed scholarship into a public and archival object. A scientific or humanistic study gains institutional force when it is printed, distributed, preserved, catalogued, and made available to future readers. ČAVU understood this from the beginning. Its publication activity continued the learned-society tradition of proceedings and memoirs, but placed it within a more explicitly Czech national academic framework. The Academy published scholarly works across its fields, including natural sciences, mathematics, philology, history, and the arts. The series *Rozpravy České akademie císaře Františka Josefa pro vědy, slovesnost a umění* and its later forms became among the principal documentary expressions of the Academy's scholarly work (*Česká akademie císaře Františka Josefa pro vědy, slovesnost a umění, 1891–1918*). These publications were not merely containers of finished research. They helped define the Academy's intellectual profile, disciplinary priorities, linguistic choices, and standards of presentation. They turned Czech scholarship into something visible, citable, and preservable. In this sense, publication was a form of institution-building.

The importance of publication becomes clearer when one remembers the historical conditions of Czech scholarly culture in the late 19th century. Czech intellectual life had already developed newspapers, journals, associations, schoolbooks, literary editions, and scholarly prose, but a national academy could give academic publication a higher level of authority. The Academy's imprint signalled that a work had entered a recognised sphere of scholarly value. This mattered for both domestic and foreign readers. Domestically, academy publications helped build Czech-language scholarly culture and supported the intellectual public that had emerged from the national revival. Internationally, they demonstrated that Czech science and scholarship possessed institutional seriousness. Publication therefore performed two

functions at once: it advanced research and represented national intellectual maturity. The Academy's published series made visible the fact that Czech scholarship did not exist only as private effort or university teaching. It possessed a national institutional voice. That voice was especially important in a multilingual environment where German-language scholarly publishing had long enjoyed strong prestige (*Agnew, 2004*; *Sayer, 1998*).

The Academy's publication activity also helped stabilise Czech academic language. A scholarly language develops not only through dictionaries and grammar, but also through repeated use in serious publication. Terms become normal when they appear in articles, monographs, reviews, editions, reports, and academic series. The Academy's support for publication therefore contributed indirectly to the development of Czech as a language of scholarship. This was especially important in disciplines where Czech terminology was still being consolidated. Philology, history, natural science, mathematics, medicine, law, archaeology, and literary studies all required precise vocabulary. The Academy's publications helped create a space in which such vocabulary could be tested and standardised. They also helped demonstrate that Czech prose could sustain specialised argument. The relation between publication and language-building was therefore very close. A national academy could not simply declare Czech to be a scholarly language; it had to publish scholarship in Czech and support the authors capable of writing it (*Dvořáčková, 2024*; *Macura, 1995*).

At the same time, ČAVU's publication culture should not be reduced to the Czech language alone. The Academy belonged to a multilingual scholarly world, and Czech scholarship continued to interact with German, Latin, French, and other languages. Scientific communication was often international, and some disciplines required foreign-language exchange. The Academy's task was therefore not to isolate Czech scholarship linguistically, but to strengthen its institutional base. Czech publications could serve national culture, while foreign-language communication could serve international visibility. This duality would remain a recurrent problem in Czech academic history. The modern Czech Academy of Sciences faces it today in the relation between Czech public communication and English-language global research. ČAVU faced an earlier version of the same problem in a Central European environment shaped by Czech-German linguistic differentiation. Its publication strategy helped assert Czech academic authority while remaining part of wider scholarly exchange. This is one reason why academy publishing is so important for understanding the history of Czech science. It is never only about texts; it is also about language, audience, prestige, and institutional identity.

The Academy's publication activity also supported disciplinary formation. The structure of its classes influenced the organisation of published works, and academy series often reflected disciplinary divisions. A mathematical-natural-scientific series, a philological series, or a historical publication did more than disseminate research. It helped create a public documentary space for a discipline. Disciplines become durable when they acquire journals, series, bibliographies, recognised authors, methods, and institutional outlets. ČAVU contributed to this process by offering publication channels backed by academy authority. This was especially important in a scholarly culture still building its national institutional infrastructure. A field such as Czech philology, historical scholarship, or natural science could gain greater legitimacy when represented through academy publications. Publication thus worked as a disciplinary technology. It made fields visible, organised, and comparable. It also allowed later historians to reconstruct how Czech disciplines developed before the rise of the institute-based academy system.

Grants, subsidies, and scholarships formed another crucial dimension of the Academy's work. AV ČR's historical overview states that ČAVU redistributed research scholarships and grants from state funds as well as private foundations and funds (*Akademie věd České republiky, n.d.*). This function placed the Academy at the centre of a network of financial support for intellectual labour. In the 19th and early 20th centuries, research was becoming increasingly expensive. Scholars needed time, books, travel, fieldwork, instruments, archival access, printing funds, and sometimes direct financial assistance. Artists and writers also needed support for creative production, publication, study, and recognition. The Academy helped connect available resources with intellectual needs. This made it a practical instrument of national culture. It did not simply honour those who had already succeeded; it helped make future work possible. In this sense, ČAVU operated as an early Czech mechanism of research funding and cultural patronage.

The redistribution of funds also gave the Academy a strategic role. Whoever distributes support helps shape the direction of scholarly life. This does not mean that the Academy controlled Czech science in a modern bureaucratic sense. It did not possess the planning apparatus of a 20th-century state research system. Yet its grants, subsidies, and scholarships could influence which projects were completed, which publications appeared, which young scholars received opportunities, and which cultural works gained recognition. Support is always selective. It reflects judgements about value, priority, promise, and prestige. The Academy therefore participated in the governance of Czech intellectual development long before modern research councils and grant agencies existed in their current form. This role should not be underestimated. Funding decisions convert cultural values into practical outcomes. ČAVU's support mechanisms show how a national academy could act as a mediator between ideals and material conditions.

Scholarships were particularly important because they addressed the problem of scholarly formation. Research cultures cannot reproduce themselves without younger generations. A mature academy must therefore think not only about established members, but about future scholars and artists. Study scholarships enabled individuals to develop skills, conduct research, travel, or complete work that might otherwise have remained impossible. They helped create continuity between generations. In a smaller national culture, such support could be especially significant because the number of available institutional positions was limited and many fields required specialised training. A scholarship could allow a young scholar to work in archives, study abroad, prepare an edition, or pursue advanced scientific training. It could also connect Czech scholarship with foreign centres. The Academy's scholarship function therefore linked national development with individual career formation. It helped create the human capital required for Czech science and culture to grow.

The Academy's support extended beyond its own members, and this fact is historically significant. The archival description of older scientific institutions preserved by the Masaryk Institute and Archives notes that ČAVU supported scientific and artistic works not only by its members, but also by scientists and artists outside the Academy, through publication of scholarly works, awards for artistic works, subsidies, and study scholarships (*Masarykův ústav a Archiv AV ČR, n.d.*). This means that the Academy was not merely a closed honour body. It functioned as a national support institution for a wider intellectual field. Its authority radiated beyond the circle of elected members. Such openness was essential if the Academy was to serve Czech science and culture as a whole. It could recognise established excellence through membership while also encouraging work outside its formal structure. This dual role helped

balance elite status with public cultural responsibility. The Academy's support for non-members made it an active participant in the development of Czech intellectual life rather than a mere club of recognised figures.

Awards were another important instrument of academic and cultural authority. An award does not simply give money or honour. It defines what a community considers excellent. It creates models, shapes reputations, and contributes to the canon of recognised achievement. ČAVU awarded works in science, literature, music, visual art, and other areas of cultural production. The Institute of Art History's exhibition "A Sense of Art. Prizes Given by the Czech Academy of Sciences and Arts, 1891–1952" specifically presented visual, musical, and literary works awarded by the Academy, describing them as works recognised by a predecessor of today's Czech Academy of Sciences (*Ústav dějin umění AV ČR, 2015*). This award practice shows the Academy's broad mission. It did not limit recognition to scientific research. It also participated in the public valuation of the arts. Through awards, the Academy helped create a cultural hierarchy of achievement. It converted individual works into nationally recognised contributions.

The artistic awards are particularly revealing because they show how ČAVU's support system differed from that of a purely scientific academy. The Academy recognised visual art, music, and literature as parts of national intellectual life. This reflected the broad 19th-century idea that science and art together formed the upper level of national culture. Awards for artistic works therefore did not distract from the Academy's scholarly mission; they completed it according to the values of the period. Such awards helped connect academy authority with public culture. They also strengthened the symbolic relationship between knowledge and creativity. A national culture needed not only researchers and scholars, but composers, painters, writers, and artists capable of giving form to collective imagination. The Academy's prizes made this belief institutional. They show that ČAVU operated at the intersection of scholarship, aesthetic judgement, and cultural memory. Its award practice is therefore essential for understanding its distinctive identity.

Awards also carried a canon-forming function. Works that receive academy prizes are more likely to be remembered, archived, exhibited, cited, or incorporated into narratives of national culture. This does not mean that every award decision was unquestionably correct or free of social bias. Academic and artistic prizes are shaped by the values, networks, and limitations of their time. They may recognise excellence, but they may also exclude experimental, marginal, unpopular, or socially disadvantaged creators. Nevertheless, prize systems are historically powerful. They reveal what an institution valued and how it imagined its own responsibility to culture. ČAVU's prizes therefore provide a valuable source for studying Czech cultural hierarchy between 1891 and 1952. They show which works and fields the Academy considered worthy of national recognition. They also allow us to examine how scholarly and artistic authority was distributed across generations.

The Academy's grant and award systems also linked public and private resources. AV ČR's historical overview notes that ČAVU redistributed scholarships and grants from both state funds and private foundations (*Akademie věd České republiky, n.d.*). This combination reflects the mixed economy of Czech academic support. The Academy was not simply a state office, nor merely a private foundation. It stood between several sources of support. State funds could provide public legitimacy and broader responsibility. Private foundations could preserve civic philanthropy and targeted patronage. The Academy could mediate between these sources and

the needs of scholars and artists. This mediation was historically important because Czech intellectual life depended on a combination of civic initiative, national patronage, public recognition, and institutional distribution. The Academy's ability to coordinate such resources made it a practical centre of intellectual support. It transformed scattered funds into an organised system of cultural and scientific encouragement.

The connection with private foundations is especially important because it continued Josef Hlávka's model of institutional philanthropy. Hlávka's own role showed that private wealth could be transformed into durable public intellectual capacity. The Academy's later redistribution of funds from private foundations extended this principle. It allowed civic and philanthropic resources to support scholarship through an authoritative institutional mechanism. This reduced the risk that patronage would remain purely personal or arbitrary. When support passed through the Academy, it could be connected with scholarly judgement and national priorities. Of course, this did not eliminate bias or hierarchy. But it gave patronage a more public and institutional form. The Academy thus converted philanthropy into academic infrastructure. This was one of its most important practical contributions to Czech science and culture.

The Academy's support for publication also had economic significance. Printing scholarly works was expensive, especially for specialised research with limited commercial readership. Many important works in history, philology, natural science, or art history could not easily survive in the ordinary book market. Academy support made such publications possible. This function was especially important for a smaller language community. Czech scholarly books often addressed a domestic readership too small to guarantee commercial viability, yet they were essential for national intellectual development. The Academy could support works whose public and scholarly value exceeded their market value. In doing so, it protected scholarship from the limitations of commercial publishing. This remains a significant issue in academic life today. Many forms of research require institutional support because they serve long-term knowledge rather than immediate sales. ČAVU understood this in practice. Its publication subsidies helped build the documentary and scholarly foundations of Czech culture.

The Academy also supported research by creating symbolic confidence. Material support is important, but recognition is also a resource. A scholar or artist whose work was published, subsidised, or awarded by the Academy gained status. That status could open further opportunities, attract readers, and strengthen professional identity. Recognition can sustain intellectual labour, especially in fields where financial reward is modest or delayed. ČAVU's support therefore operated on both material and symbolic levels. It gave money, but it also gave legitimacy. It helped tell Czech society that certain fields, works, and persons deserved attention. This symbolic economy was central to the Academy's role as a national institution. It did not merely fund knowledge; it helped create the cultural value of knowledge.

The Academy's support for historical monuments and their study expanded its function beyond publication and awards. The archival description notes that ČAVU served the protection of old monuments, care for their investigation, and publication of knowledge about them (*Masarykův ústav a Archiv AV ČR, n.d.*). This activity connected the Academy with heritage preservation. Monuments were not simply old objects; they were sources of historical knowledge and symbols of cultural continuity. Their study required archaeology, history, art history, architecture, epigraphy, restoration knowledge, and archival research. By supporting monument protection and investigation, the Academy contributed to the scholarly

management of cultural memory. This function is especially important for the broader theme of the book because it shows that Czech academic institutions were involved not only in producing new knowledge, but also in preserving inherited cultural evidence. ČAVU thus acted as an early institutional guardian of Czech cultural heritage.

The heritage dimension also connected the Academy with the public meaning of national history. A monument studied and protected through scholarly methods becomes more than a patriotic symbol. It becomes an object of evidence, interpretation, conservation, and education. The Academy's involvement in monument work helped discipline the relationship between culture and memory. It encouraged the study of material heritage through research rather than sentiment alone. This was crucial in a national culture where the past carried strong symbolic force. Without scholarly institutions, historical monuments might be used primarily as emotional markers. With academic support, they could become sources for critical knowledge. The Academy therefore helped transform heritage into research. This line of activity also anticipates later forms of academic engagement with archaeology, art history, conservation, and cultural memory within the Czech research system. The modern Czech Academy of Sciences still carries this heritage-oriented function through its historical and humanistic institutes.

The Academy's support mechanisms also reveal the relation between autonomy and accountability. When an institution distributes grants, scholarships, prizes, and publication subsidies, it must develop criteria. These criteria may be formal or informal, explicit or customary, but they determine how authority is exercised. ČAVU's support activity therefore required judgement. It had to decide which works deserved publication, which artists merited awards, which scholars should receive subsidies, and which projects served the Academy's mission. Such decisions created responsibility. They also created possible conflicts, disappointments, and debates. Funding and awards are never neutral. They shape the field they support. This is why the Academy's practical support functions are as historically important as its membership structure. They reveal how scholarly authority operated in concrete decisions. They also show how national academic culture learned to govern itself through selection, evaluation, and resource allocation.

The support system of ČAVU also contributed to the professionalisation of Czech scholarship and art. Professionalisation does not occur only through university appointments or formal careers. It also occurs when institutions create standards, funding channels, publication outlets, awards, and expectations of sustained work. The Academy helped create such an environment. Scholars and artists could orient their work towards academy recognition, academy publication, or academy support. This shaped ambitions and standards. It encouraged the idea that intellectual work belonged to a structured field with recognised institutions and evaluative mechanisms. This was a major step beyond the earlier revivalist culture of patriotic effort. Czech scholarship became increasingly professional, specialised, and institutionally embedded. ČAVU was one of the key institutions through which this professionalisation occurred.

The Academy's publication and support activities also had an international dimension. By publishing scholarly works and supporting research, ČAVU helped Czech science become visible beyond domestic audiences. Some works could enter foreign libraries, be exchanged with other institutions, or be used by scholars abroad. Awards and membership also helped communicate the Academy's standards to international observers. The Academy's support for

research therefore contributed indirectly to the representation of Czech science abroad. This function became especially important after the establishment of Czechoslovakia, when the Academy's role included representing national science at home and abroad (*Akademie věd České republiky, n.d.*). International visibility depended not only on diplomatic declarations, but on the quality and circulation of published work. Academy support helped create the material basis for such visibility. It made Czech scholarship more exportable, readable, and institutionally recognisable.

After 1918, the Academy's support functions acquired a new context. The creation of Czechoslovakia transformed Czech scholarship from a national culture within an empire into a major component of a new state's intellectual life. The Academy now participated in the representation of Czechoslovak science, even though its roots were specifically Czech. The need for publications, grants, scholarships, and awards did not disappear; it became part of state-building and international representation. Scientific and cultural support helped the new republic present itself as modern, educated, democratic, and European. The Academy's older mechanisms were therefore reinterpreted under new political conditions. Grants and publications could now support not only national cultural development, but also the prestige of Czechoslovakia as a state. This transition is important because it shows the adaptability of ČAVU's functions. The same institutional tools — publication, awards, support — could serve different historical missions under monarchy and republic.

The Academy's support activity also continued through difficult political periods, although its autonomy and function were affected by external pressures. The interwar period, Nazi occupation, post-war reconstruction, and early communist transformation all changed the conditions under which scholarship and art could be supported. Institutions do not operate outside history. Funding, publication, awards, and research priorities are always vulnerable to political context. The eventual dissolution of ČAVU into the Czechoslovak Academy of Sciences in 1952 marked the end of its institutional support model and the beginning of a more centralised state research system (*Dvořáčková, Franc, & kol., 2019*). Yet the memory of ČAVU's support functions did not disappear. The modern Academy's historical genealogy includes this earlier form of academic patronage and recognition. It is important because it shows that Czech science and culture had developed mechanisms of support before the socialist academy created large institute-based research structures.

The comparison with the modern Czech Academy of Sciences is instructive. Today, AV ČR grants awards for scientific results that contribute to the prestige of Czech science in international comparison and supports research and popularisation in various ways (*Akademie věd České republiky, n.d.*). The modern system is very different from ČAVU's. It operates within public research law, international evaluation, European projects, contemporary research priorities, and modern financial administration. Yet the continuity of function is clear. The Academy still recognises excellence, supports research, publishes results, communicates with society, and distributes forms of prestige. ČAVU's grants, scholarships, awards, and publications were earlier forms of the same broad academic function. They show that an academy is not only a place where knowledge is honoured. It is a structure through which knowledge is enabled, recognised, and transmitted.

The historical significance of ČAVU's support mechanisms lies precisely in this combination of material and symbolic functions. Publication made research durable. Grants and scholarships made research possible. Awards made excellence visible. Subsidies supported work that

could not survive on market terms alone. Heritage support preserved historical evidence. International representation connected Czech scholarship with wider scholarly worlds. Together, these activities turned the Academy into a practical engine of Czech intellectual life. They also show why ČAVU cannot be described merely as an honorary institution. It was selective and prestigious, but it was also active. Its work shaped the development of science, scholarship, literature, art, and heritage preservation in the Czech lands and later Czechoslovakia. It helped build the institutional conditions from which later academic structures could emerge.

Thus, publications, grants, awards, and research support were central to the historical role of the Czech Academy of Sciences and Arts. Through publication, the Academy gave Czech scholarship a durable and authoritative form; through grants and scholarships, it supported the formation of researchers and the completion of scholarly work; through awards, it created public hierarchies of excellence in science, literature, music, and visual art; through subsidies and heritage-related activity, it protected research and cultural memory from the limitations of market forces and temporary enthusiasm. Its support extended beyond its own members, making it a national institution of intellectual encouragement rather than a closed honour society. These functions also connected private foundations, state funds, civic patronage, and scholarly judgement into one academic mechanism. For the modern Czech Academy of Sciences, ČAVU's support system is historically important because it represents an earlier model of academy-based research and cultural patronage before the rise of the institute-based state academy. It shows that Czech academic organisation developed not only through symbolic prestige and membership, but through practical mechanisms that made knowledge, art, and cultural memory materially possible.

3. The Academy between National Mission and Universal Science

The Czech Academy of Sciences and Arts stood at a historically delicate point between national mission and universal science. It was founded as a Czech institution, created to support Czech scholarship, Czech literature, Czech art, and the Czech language at a time when national culture still required strong institutional confirmation. Yet it could not be merely national in a closed or provincial sense, because science derives its authority from methods, standards, evidence, and forms of recognition that exceed national boundaries. This dual position defined the Academy from its beginning. It had to serve Czech cultural development while proving that Czech scholarship belonged to European science. It had to protect and cultivate a national language while remaining open to German, French, Latin, and wider international scholarly communication. It had to support Czech historical memory while preventing national memory from becoming uncritical mythology. It had to give Czech scholars and artists a public institution of their own while demonstrating that their work could meet standards recognised outside the Czech lands. This tension was not a weakness of the Academy. It was the very condition of its historical significance (*Mádlová, 2024*; *Franc & Mádlová, 2013*).

The national mission of ČAVU was rooted in the long 19th-century development of Czech cultural self-organisation. Czech society had spent decades building schools, journals, theatres, museums, publishing houses, scholarly associations, and university structures capable of supporting a modern national culture. The Academy represented a higher stage of this process because it gave Czech science, literature, and art a prestigious institutional

centre. It was not enough for Czech society to possess talented individuals. It needed an academy that could recognise, support, publish, and preserve their work. This was especially important in the Habsburg context, where institutional status mattered and where Czech intellectual life existed alongside powerful German-language structures. The Academy therefore served as a symbol of Czech cultural maturity. It announced that Czech scholarship was not merely a derivative or regional activity, but an organised intellectual force. At the same time, this national mission required quality rather than mere symbolism. A weak academy could not defend national culture effectively. Only scholarship capable of standing in wider comparison could give the national mission real credibility (*Macura, 1995*; *Sayer, 1998*).

The universal dimension of science imposed an important discipline on the Academy's national mission. Scientific claims cannot become valid simply because they are useful to a nation or emotionally important to a culture. A mathematical proof, chemical experiment, astronomical observation, biological classification, historical edition, or linguistic analysis must meet standards that other competent scholars can examine. This principle was essential for ČAVU because its role was to elevate Czech science, not merely to celebrate it. The Academy had to create conditions in which Czech scholars could participate in European and international knowledge on equal terms. That meant supporting rigorous research, reliable publication, critical scholarship, and recognised disciplinary standards. The Academy's national mission could become strong only if it accepted the discipline of universal science. This made its position more demanding than that of a purely patriotic association. It had to combine cultural commitment with methodological seriousness. Its authority depended precisely on this combination (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*).

The phrase "universal science" should not be misunderstood as implying that science exists outside history, language, or institutions. Scientific knowledge aspires to validity beyond local interests, but it is always produced in particular languages, laboratories, archives, libraries, universities, academies, and political settings. ČAVU illustrates this perfectly. It sought to contribute to universal knowledge from within a specifically Czech cultural and institutional framework. Its scholars worked through Czech, German, Latin, French, and other scholarly languages, and they operated within the changing political structures of the Habsburg Monarchy and later Czechoslovakia. Its universal scientific ambition therefore had to be mediated through national language, local institutions, and cultural identity. This does not make its science less universal. Rather, it shows that universal science always requires local institutional foundations. The Academy's role was to build those foundations for Czech scholarship. It gave Czech researchers and humanists the institutional ground from which they could address a wider scholarly world (*Burke, 2000*; *Gordin, 2015*).

The Academy's four-class structure embodied the same tension between national mission and universal science. Its first class, devoted to philosophical, political, legal, historical, and archaeological sciences, gave institutional form to disciplines closely connected with Czech historical memory, law, political thought, and cultural self-understanding. Its second class, devoted to natural sciences, mathematics, medicine, and geography, connected Czech scholarship with fields whose standards were strongly international and comparative. Its third class, devoted to philological sciences, stood at the centre of the language question, linking Czech national identity with rigorous linguistic and textual scholarship. Its 4th class, devoted to literature, visual art, music, and artistic activity, made the Academy a representative institution of national cultural creativity. This structure showed that the Academy did not understand national development and universal science as opposites. It placed them inside

one institutional body. Czech national culture required natural science, and universal science required local cultural institutions to take root. The Academy's internal organisation therefore made the tension productive rather than destructive (*Masarykův ústav a Archiv AV ČR, n.d.*; *Mádlová, 2024*).

The language question was one of the most visible forms of this tension. Czech had to become a language capable of science and scholarship, but science could not be limited to Czech alone. The Academy's national mission required it to strengthen Czech as a medium of scholarly publication, intellectual debate, and public authority. At the same time, universal science required communication beyond Czech-speaking audiences. Scholars had to engage with German, French, Latin, and later English-language literature and networks. This double requirement produced a demanding linguistic culture. Czech scholarship had to be nationally rooted and internationally intelligible. The Academy contributed to this by supporting publication, terminology, philology, and scholarly prose. It helped prove that Czech could sustain serious intellectual work, while its wider representative role kept Czech science connected with European standards (*Dvořáčková, 2024*; *Macura, 1995*).

The tension between national mission and universal science was especially visible in the humanities. Historical scholarship, archaeology, philology, literary history, and philosophy were central to the Czech national project because they interpreted language, memory, cultural origins, and historical continuity. Yet these fields could become academically credible only through critical methods. A history written merely to glorify the nation would not meet scholarly standards. A philology built only on patriotic feeling would not sustain serious linguistic research. An archaeology used only to confirm national myths would lose scientific authority. The Academy therefore had to support humanistic disciplines in a way that combined national meaning with methodological control. This was one of its most important achievements. It helped transform Czech memory into research, Czech language into scholarship, and Czech culture into a field of disciplined inquiry. In doing so, it made the national mission academically serious (*Franc, Kostlán, & Míšková, 2010*; *Sayer, 1998*).

Natural sciences created another form of the same balance. Physics, chemistry, mathematics, biology, medicine, geography, and related fields could not be national in their methods in the same way as historical or philological disciplines. Their validity depended on international comparison, experiment, proof, classification, observation, and theoretical coherence. Yet they still served a national mission by demonstrating that Czech society could contribute to universal knowledge. A Czech mathematician, chemist, physician, or naturalist strengthened Czech culture most effectively by producing work that could be recognised beyond Czech cultural circles. Natural science therefore gave the national mission an outward-facing dimension. It showed that Czech intellectual maturity was not limited to language and memory. It included participation in the general advancement of knowledge. The Academy's second class was therefore essential to its national meaning precisely because it represented fields that could not be reduced to national identity (*McClellan, 1985*; *Mádlová, 2024*).

The Academy's support for publication also mediated between national and universal aims. Academy publications strengthened Czech scholarly culture by giving research a national institutional imprint. They helped develop Czech academic language, preserve Czech intellectual work, and create a documentary record of national scholarship. At the same time, publication made Czech research available for wider scholarly circulation. A printed academy series could enter libraries, be exchanged with institutions, and become visible beyond the

immediate domestic public. Publication therefore served both inward and outward functions. It consolidated Czech scholarship at home and represented it abroad. This double function was crucial for a smaller language community. Without national publication channels, Czech scholarship would remain dependent on foreign-language structures. Without international circulation, it would risk isolation. The Academy's publishing work helped hold these two needs together (*Česká akademie císaře Františka Josefa pro vědy, slovesnost a umění, 1891–1918*; *Franc & Mádlová, 2013*).

The Academy's award and grant systems also expressed the balance between national purpose and universal standards. Grants, subsidies, scholarships, and prizes allowed ČAVU to support works that it considered valuable for Czech science and culture. Yet such support carried responsibility. If awards were given merely for patriotic usefulness, they would weaken the Academy's authority. If support ignored national needs entirely, the Academy would fail its historical mission. The institution therefore had to exercise judgement between cultural significance and scholarly or artistic quality. Its support for research, publication, artistic work, and heritage activity shows that it tried to encourage work that served Czech intellectual development while also meeting standards of excellence. This made its patronage different from ordinary philanthropy. It was national in intention, but academic in procedure. Through such mechanisms, the Academy converted national priorities into forms of scholarly and artistic recognition (*Akademie věd České republiky, n.d.*; *Ústav dějin umění AV ČR, 2015*).

The Academy's relationship with the state further complicated this balance. Before 1918, ČAVU operated inside the Habsburg Monarchy and had to navigate between Czech cultural aspirations and imperial legal recognition. After 1918, it became part of the intellectual landscape of Czechoslovakia and participated in the representation of Czechoslovak science at home and abroad. In both contexts, the Academy's national mission was shaped by political frameworks larger than itself. Yet universal science required a degree of autonomy from immediate political interests. This created a recurring tension between public representation and scholarly independence. An academy can serve a nation or a state only if it maintains intellectual credibility. If it becomes merely an instrument of political prestige, it loses scientific authority. ČAVU's history therefore reveals an early version of a problem that would become far more dramatic under the Czechoslovak Academy of Sciences after 1952 (*Dvořáčková, Franc, & kol., 2019*; *Mádlová, 2024*).

The creation of Czechoslovakia changed the meaning of the Academy's national mission. Before 1918, ČAVU represented Czech scholarship within an imperial context. After 1918, it also contributed to the intellectual representation of a new state. This did not erase its Czech character, but it placed Czech scholarly identity within a Czechoslovak framework. The Academy's task became more complex: it now had to support a tradition rooted in Czech national development while helping present Czechoslovakia as a modern European state. Universal science became part of state prestige, but it also required international cooperation and scholarly standards. The Academy's publications, memberships, awards, and support mechanisms therefore acquired a new diplomatic and cultural meaning. They helped the republic show that it possessed advanced intellectual institutions. Yet the Academy's credibility still depended on the quality of scholarship itself. Statehood could amplify science, but it could not substitute for it (*Agnew, 2004*; *Franc & Mádlová, 2013*).

The relationship between Czech and Slovak science also entered the picture after 1918, although ČAVU remained historically Czech in origin and structure. Czechoslovakia required

forms of scientific representation that could speak for the state as a whole, but the institutional inheritance was uneven. Czech scholarly institutions had deeper 19th-century academy traditions, while Slovak academic institutional development followed a different trajectory. This made the Academy's representative role both useful and limited. It could represent Czechoslovak science internationally, but its historical roots lay primarily in Czech cultural development. The tension between Czech institutional strength and Czechoslovak state representation would continue in various forms throughout the 20th century. It is important not to flatten this complexity. ČAVU was both a Czech national academy and part of the scientific representation of Czechoslovakia. Its place between national mission and universal science therefore also involved a place between Czech cultural identity and Czechoslovak statehood (*Dvořáčková, Franc, & kol., 2019*).

The Academy's universal scientific role also depended on international networks. No national academy can become scientifically serious without communication with foreign scholars and institutions. Corresponding and foreign members, publication exchange, scholarly travel, congress participation, and institutional contacts all helped place ČAVU within a wider learned world. These connections were not ornamental. They allowed Czech science to be compared, criticised, recognised, and integrated into broader research developments. International connection also protected the Academy from excessive provincialism. A national mission without international comparison can become self-satisfied. Universal science requires exposure to external judgement. ČAVU's foreign relations therefore supported its national mission by making that mission more credible. The Academy could represent Czech scholarship better when it was visibly connected to European scientific life (*Šlechtová & Levora, 2004*; *Gordin, 2015*).

The Academy's artistic and literary mission also operated between national and universal standards. Literature, music, visual art, and artistic creation often served Czech national identity directly, especially in a period when cultural production carried strong symbolic value. Yet art also belongs to wider aesthetic and European conversations. A national literature or national music becomes powerful not merely because it expresses identity, but because it achieves form, originality, and artistic quality. ČAVU's support for art therefore had to balance national representation with artistic standards. Its prizes and recognition helped define what Czech culture considered excellent, but these decisions also placed Czech art in relation to broader European expectations. The Academy's artistic mission therefore paralleled its scientific mission. In both cases, national cultural value had to be joined with criteria that were not purely national (*Ústav dějin umění AV ČR, 2015*; *Franc & Mádlová, 2013*).

The Academy's heritage-related work also reveals this duality. The study and protection of historical monuments served Czech national memory, but it also required scholarly methods associated with archaeology, history, art history, architecture, and conservation. A monument could be a national symbol, but the Academy's task was to turn it into an object of disciplined study. This distinction was vital. National memory can easily mythologise monuments, while scholarship asks about date, authorship, material, context, restoration, interpretation, and comparative significance. By supporting the investigation and publication of knowledge about historical monuments, ČAVU helped make heritage academically responsible. It therefore served the national mission through universal scholarly methods. This is one of the best examples of how the Academy's dual role functioned in practice. It strengthened Czech cultural identity by subjecting cultural evidence to research rather than sentiment alone (*Masarykův ústav a Archiv AV ČR, n.d.*; *Franc, Kostlán, & Míšková, 2010*).

The Academy's position between national mission and universal science also shaped its understanding of excellence. Excellence could not mean only international recognition detached from Czech needs, but it also could not mean only national usefulness detached from scholarly quality. ČAVU had to define excellence as work that strengthened Czech intellectual life while being serious enough to stand in broader comparison. This was a demanding standard. It required Czech scholars to master international methods while addressing national materials, language, and public culture. It required scientists to produce research that could be judged beyond Czech circles. It required humanists to combine national cultural significance with critical scholarship. It required artists to create works that could carry national meaning without collapsing into mere symbolism. The Academy's authority depended on maintaining this complex idea of excellence (*Mádlová, 2024*; *Macura, 1995*).

The tension also affected the Academy's canon-forming function. By electing members, awarding works, publishing research, and supporting projects, ČAVU helped define which scholars, artists, fields, and works represented Czech intellectual achievement. This canon served a national mission because it gave Czech culture a set of recognised figures and achievements. Yet a canon becomes academically valuable only if it remains open to criticism and revision. The danger of a national canon is that it may select works for symbolic convenience rather than quality or complexity. The Academy's best role was to stabilise a canon without reducing it to patriotic mythology. Its historical limitations must also be recognised. Like other academies of its time, ČAVU's recognition systems reflected elite, gendered, linguistic, and social hierarchies. The balance between national representation and universal standards was therefore imperfect, but historically significant (*Šlechtová & Levora, 2004*; *Sayer, 1998*).

The Academy's selective character was both a strength and a problem. Selectivity allowed it to create authority, preserve standards, and distinguish major work from ordinary cultural production. Yet selectivity also meant exclusion. Women, socially marginal scholars, regional figures, German-speaking and Jewish intellectuals, and unconventional contributors could be unevenly represented in the Academy's official structures. This raises an important question: whose national mission did the Academy embody? The answer cannot be simple. ČAVU represented Czech intellectual maturity in an historically powerful way, but it did so through the elite structures of its period. Universal science and national culture were both filtered through institutional hierarchies. A modern account must therefore honour the Academy's achievements while examining the boundaries of its representation. This critical approach makes the history more accurate and prevents institutional prestige from turning into uncritical celebration (*Agnew, 2004*; *Mádlová, 2024*).

The Academy's position between national and universal also helps explain its importance for later Czech academic history. The Czechoslovak Academy of Sciences, founded in 1952, would redefine the relation between science, state, and ideology in a radically different way. It would create a powerful institute-based research system but under conditions of socialist political control. In that later context, universal science was often rhetorically combined with socialist state aims, and academic autonomy became deeply vulnerable. ČAVU's earlier model was not free from political context, but it represented a different balance: civic patronage, national cultural mission, scholarly prestige, and learned corporate authority. The contrast between ČAVU and ČSAV is therefore crucial. It shows that the relationship between national mission and universal science can be organised in several ways. ČAVU belongs to the national-cultural academy model; ČSAV belongs to the state-socialist research academy

model; AV ČR after 1993 belongs to the democratic public research institution model (*Dvořáčková, Franc, & kol., 2019*; *Strategie AV21, 2017*).

The modern Czech Academy of Sciences inherits this problem in transformed form. Today, the national mission is not the same as in the 19th century. Czech language no longer needs revival in the old sense, and Czech science operates within an independent state and European research structures. Yet the Academy still has national responsibilities: it must serve Czech society, preserve scholarly memory, advise public institutions, communicate science in Czech, support research infrastructures, and maintain fields essential to national culture. At the same time, it must meet international standards, publish globally, compete for European funding, and participate in universal science. The old tension has therefore not disappeared. It has been modernised. ČAVU's history helps explain why this tension is structural for Czech academic life. A smaller European research culture must always be both nationally rooted and internationally open (*Akademie věd České republiky, n.d.*; *Strategie AV21, 2017*).

The language dimension is especially visible in the modern continuation of this problem. ČAVU had to help establish Czech as a scholarly language while staying connected with European languages of science. AV ČR now works in a world where English dominates international scientific publication, while Czech remains essential for public communication, cultural memory, education, and domestic expertise. This is a new form of the old duality. Czech science must publish internationally without abandoning Czech society. It must cultivate English-language visibility without weakening Czech intellectual discourse. The history of ČAVU shows that linguistic mediation has always been central to Czech academic institutions. The languages have changed, but the underlying question remains: how can a national scholarly community speak to itself and to the world at the same time? (*Gordin, 2015*; *Dvořáčková, 2024*).

The Academy's position between national mission and universal science also gives its history a broader European relevance. Many smaller European nations faced similar problems: how to build national institutions without becoming provincial; how to use language as a medium of culture without isolating science; how to support national history without abandoning critical method; how to participate in universal knowledge from a specific cultural location. The Czech case is distinctive because of its Habsburg, Czech-German, Czechoslovak, socialist, and post-1993 layers, but it belongs to a larger European pattern. ČAVU can therefore be studied not only as a Czech institution, but as an example of how academies in smaller nations mediate between cultural identity and universal science. This comparative perspective strengthens its significance. It shows that the Academy was not an isolated national curiosity, but part of the European history of learned institutions, national cultures, and scientific modernity (*McClellan, 1985*; *Burke, 2000*).

The Academy's dual mission also helps explain why its history should not be written as either national celebration or institutional neutrality. A purely national celebration would miss the universal standards that gave ČAVU's work scientific credibility. A purely neutral institutional history would miss the national-cultural purpose that made the Academy historically necessary. The right approach is to treat the Academy as a mediating institution. It mediated between Czech language and European scholarship, between national memory and critical method, between artistic identity and aesthetic standards, between state recognition and scholarly autonomy, between local research materials and universal knowledge. This mediation was complex, imperfect, and historically changing. But it was the central function of

ČAVU. Its importance lies precisely in the fact that it held together demands that could easily pull apart.

This mediating function also shaped the Academy's legacy. ČAVU showed that Czech academic culture could be national without being intellectually closed, and scientific without being culturally rootless. It created a model in which scholarship served national development by reaching beyond narrow national criteria. This is a crucial lesson for the modern Academy. AV ČR does not reproduce ČAVU's structure, and it no longer unites science and art in the same way. Yet it inherits the deeper principle that research institutions must serve both the universal advancement of knowledge and the particular society that sustains them. The modern Academy's public-interest programmes, international collaborations, research evaluation reforms, and cultural-memory institutes all continue this dual logic in contemporary form. ČAVU's historical meaning therefore remains alive not as a direct organisational model, but as an intellectual precedent.

Thus, the Czech Academy of Sciences and Arts stood between national mission and universal science as one of the central mediating institutions of modern Czech intellectual history. Its national mission lay in supporting Czech language, scholarship, literature, art, historical memory, and cultural self-representation within a multilingual Central European environment and later within Czechoslovak statehood. Its universal scientific mission lay in subjecting Czech research and creativity to standards of evidence, method, quality, publication, and international recognition that exceeded national sentiment. These two missions were not mutually exclusive. The Academy's greatest historical importance lies in the way it tried to make them mutually reinforcing. It strengthened Czech national culture by insisting that it must be scholarly, critical, and European; it strengthened Czech science by giving it a national institutional base, public prestige, and cultural meaning. The balance was imperfect and shaped by the exclusions and hierarchies of its time, but it created a durable model of Czech academic authority. For the modern Czech Academy of Sciences, this legacy remains essential because it shows that a national research institution must be both a participant in universal science and a guardian of the intellectual life of its society.

The Academy during the First Czechoslovak Republic

1. New Statehood and the Changing Role of Scientific Institutions

The creation of the independent Czechoslovak Republic in October 1918 changed the historical position of Czech science more profoundly than any purely administrative reform could have done. For the first time, Czech scholarly institutions no longer had to function primarily as cultural substitutes for incomplete political sovereignty. They entered a state that could recognise them as part of its own intellectual, cultural, educational, and diplomatic infrastructure. The Czech Academy of Sciences and Arts, which had emerged in the late Habsburg period as a national scholarly and artistic institution, now found itself inside a political order that transformed the meaning of its mission. Before 1918, its Czech character

had carried a strong emancipatory charge because it asserted the capacity of Czech language, science, literature, and art within an imperial and multilingual framework. After 1918, the Academy had to become not only a symbol of Czech cultural maturity, but also an institution contributing to the representation and organisation of science in a new republic. This did not erase its earlier identity, but it altered its practical and symbolic horizon. The Academy was no longer merely a national institution within an empire; it became one of the learned institutions of a sovereign Czechoslovak state. That shift made its work more public, more representative, and more exposed to the demands of state-building. The new republic needed scientific authority, historical legitimacy, cultural confidence, technical expertise, and international visibility. In all these areas, ČAVU stood at a point where inherited national scholarship met the new obligations of statehood (*Agnew, 2004*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The transformation was visible already in the Academy's name and institutional self-understanding. The old title, connected with Emperor Franz Joseph and the late Habsburg order, could no longer express the political reality of the new republic. On 10 November 1918, the institution was renamed the Czech Academy of Sciences and Arts, a change that was more than symbolic. It detached the Academy from the imperial monarchical framework and placed it inside the republican national order. Yet the change should not be interpreted as a simple rupture with the past. The Academy remained legally and culturally continuous with the institution founded in the 1890s, and it continued to depend on earlier patterns of membership, publications, foundations, committees, and scholarly prestige. Its transformation after 1918 was therefore a change of political grammar rather than a dissolution of institutional memory. The Academy's earlier national mission survived, but it was now inserted into the broader project of Czechoslovak statehood. This meant that Czech scholarship could present itself not only as a cultural claim, but as part of the recognised public life of a European state. The Academy's authority was no longer directed only against the limitations of imperial recognition; it could now be mobilised in the service of a republic that needed learned institutions to prove its modernity. The new name therefore expressed a double movement: liberation from imperial symbolism and continuation of an older Czech academic tradition (*Akademie věd České republiky, n.d.*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

The First Czechoslovak Republic was born in a historical atmosphere in which culture, education, science, and democracy were closely connected in public imagination. Tomáš Garrigue Masaryk and Edvard Beneš did not present the new state merely as a territorial arrangement created by the collapse of Austria-Hungary. They articulated it as a civilisational and democratic project, a republic whose legitimacy rested on historical rights, political modernity, education, public reason, and participation in Europe. This political culture gave scholarly institutions a special importance. Science, universities, museums, archives, academies, libraries, and cultural institutions became part of the republic's self-description. They helped demonstrate that the new state was not an improvised post-war construction, but a society with deep intellectual roots and modern administrative capacity. Such a claim was especially important because Czechoslovakia was a new state in diplomatic terms, but it contained older historical lands, older universities, and older learned traditions. The Academy could therefore help connect new statehood with long historical memory. It stood between the memory of the Czech national revival and the needs of republican modernisation. In this sense, the Academy's role after 1918 was both conservative and innovative: it preserved national scholarly capital while adapting it to a new political order (*Agnew, 2004*; *Kárník, 2000*; *Orzoff, 2009*).

The new republic also changed the scale of scientific responsibility. Under the Habsburg Monarchy, Czech learned institutions had fought for recognition within a broader imperial structure that included competing German-language, Austrian, Bohemian, Moravian, and imperial scholarly frameworks. After 1918, the question was no longer only whether Czech science deserved recognition. The question became how a Czechoslovak state should organise, finance, represent, and use knowledge. This shift was decisive. A national academy could not remain only a prestigious society of scholars, writers, and artists if the state itself required research capacities in law, agriculture, medicine, industry, statistics, education, archaeology, linguistics, international relations, public health, and technical development. The Academy's earlier form as a selective learned society still mattered, but the republic required a wider institutional ecology. New specialised institutes, universities, technical schools, research committees, and state-supported scholarly bodies began to occupy spaces that an academy alone could not fill. ČAVU therefore had to define its place among a growing field of scientific institutions. It retained the authority of a learned academy, but it increasingly operated alongside specialised bodies designed for practical research and state service. This changed the meaning of academic prestige. Prestige was no longer sufficient by itself; it had to be coordinated with institutional function (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The emergence of new scientific institutions after 1918 should be understood as one of the most important consequences of statehood for Czech and Czechoslovak science. The Masaryk Academy of Labour, founded in 1920, embodied a technical and applied orientation that differed from the older learned-society model. It was concerned with technical work, economic modernisation, engineering, and practical knowledge useful for the republic's development. Other autonomous state institutes, including the Slavonic, Oriental, and Archaeological Institutes, reflected the widening range of scholarly tasks associated with a sovereign state. The Archaeological Institute, founded in the early republican period, expressed the need to organise the study of territory, monuments, and material past at a national level. The Oriental Institute and the Slavonic Institute, both associated with the early 1920s, reflected cultural diplomacy, comparative scholarship, linguistic and civilisational research, and the republic's ambition to be intellectually present beyond its immediate borders. These institutions did not replace ČAVU, but they changed its environment. They showed that the new state was producing a more differentiated system of research. ČAVU remained a representative academy, yet the work of science was increasingly distributed across specialised organisations. The republic thus moved Czech scholarship from a primarily national-cultural institutional model towards a more complex modern research landscape (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*; *Franc & Mádlová, 2013*).

This differentiation of institutions was not a sign of weakness in the Academy. On the contrary, it revealed the maturation of the scientific system around it. In the 19th century, an academy could still aspire to gather much of national learned life under one symbolic roof because the institutional infrastructure of specialised research was comparatively limited. By the interwar period, however, disciplines had become more specialised, methods more technical, and public needs more complex. Linguistics required long-term lexicographical offices; archaeology required excavations, collections, conservation, and field organisation; technical sciences required laboratories and applied research networks; international scholarly representation required national committees and councils; historical research required archives, editions, and source-critical institutes. The Academy could not perform all these

tasks directly as a traditional learned society. Its role therefore became more selective, representative, supportive, and coordinative. It awarded recognition, published scholarly work, redistributed financial support, maintained standards, and represented Czech and Czechoslovak science domestically and abroad. At the same time, the roots of future research institutes began to develop within or near its committees and scholarly offices. The interwar period therefore did not diminish ČAVU's historical significance; it revealed how its older academic form was being surrounded by the institutional preconditions of modern research (*Akademie věd České republiky, n.d.*; *Podaný, 2001*; *Mádlová, 2024*).

The Academy's position in the First Republic was also shaped by the republic's need to establish legitimacy through historical scholarship. Czechoslovakia was a new state, but its Czech political imagination was deeply connected with the history of the Bohemian Crown, the Hussite tradition, the national revival, and the 19th-century struggle for cultural emancipation. Historical research, philology, literary studies, archaeology, ethnography, and art history therefore acquired public importance beyond the walls of universities and archives. They helped explain who the Czechs were, what historical lands meant, how language had developed, and why the new republic could claim continuity with older cultural and political traditions. ČAVU was especially suited to this task because its original mission had joined science, literature, and art. It could support research that strengthened national memory while maintaining scholarly seriousness. Yet this role was delicate. Historical scholarship could easily become a servant of patriotic myth if it abandoned criticism, source analysis, and methodological discipline. The best function of the Academy was therefore not to manufacture national mythology, but to give national memory scholarly form. In the First Republic, the Academy's humanistic work helped transform the past into a field of research rather than merely a reservoir of patriotic symbols (*Sayer, 1998*; *Franc, Kostlán, & Míšková, 2010*; *Hájková & Horák, 2018*).

This connection between scholarship and state legitimacy was not unique to Czechoslovakia, but it had a particular intensity in the Czech case. The republic had to present itself to its citizens, its minorities, and the international community as a viable democratic state in Central Europe. Its borders, ethnic composition, historical claims, and diplomatic alliances all required explanation and defence. Learned institutions contributed to this process indirectly and directly. They published works, supported research, educated elites, organised cultural authority, and helped define the symbolic vocabulary of the new state. The Academy did not become a government office, but its scholarly prestige participated in the public culture of state-building. Its publications and awards marked intellectual achievement as a component of republican life. Its members often belonged to the broader elite of professors, writers, scientists, artists, jurists, physicians, and public intellectuals who shaped interwar Czech society. The Academy was therefore part of the republic's moral and cultural architecture. It helped demonstrate that the state possessed not only parliament, army, diplomacy, and administration, but also learned authority. This authority was essential because the First Republic wanted to be recognised as a modern European democracy, not merely as one of the successor states of a collapsed empire (*Agnew, 2004*; *Orzoff, 2009*; *Kárník, 2000*).

At the same time, the Academy had to operate in a state that was not simply Czech. Czechoslovakia contained Czechs, Slovaks, Germans, Hungarians, Ruthenians, Jews, Poles, and other communities, each with different historical memories, languages, institutions, and political expectations. This multiethnic reality complicated the meaning of a "Czech" academy inside a "Czechoslovak" state. The Academy's Czech identity remained central and was

historically justified by its foundation, language, and mission. Yet the republic's political framework required a broader representational horizon. Czech science could no longer speak only as the intellectual expression of a national revival movement. It also had to participate in the construction of a Czechoslovak public culture. This created a tension that would remain unresolved in many areas of First Republic life. Czech institutions often carried the strongest administrative and cultural weight, while Slovak and other communities sought recognition within the republic. The Academy's situation reflected this larger asymmetry. It became part of the representation of Czechoslovak science, but its historical structure and language remained predominantly Czech. This tension did not destroy its role, but it made the interwar period more complex than a simple story of national fulfilment (*Agnew, 2004*; *Kárník, 2000*; *Hájková & Horák, 2018*).

The changing role of scientific institutions after 1918 can also be seen in the altered relationship between private patronage, foundations, and state support. The Academy had been born from Josef Hlávka's extraordinary civic patronage and remained connected with the Hlávka Foundation, which symbolised the power of private wealth devoted to public intellectual purposes. In the First Republic, this philanthropic inheritance remained important, but it now operated within a broader state framework. The republic could provide funds, establish institutes, support research, and use scientific institutions as part of public policy. ČAVU itself redistributed research scholarships and grants from state funds as well as private foundations and funds. This placed the Academy at the intersection of civic patronage and state-supported science. Such a position was historically significant because it preserved older forms of scholarly independence while connecting research to public resources. It also made the Academy a mediator of trust. Scholars, donors, foundations, ministries, and institutions could all treat the Academy as a recognised body capable of evaluating and supporting intellectual work. In this respect, ČAVU's interwar role was neither purely ceremonial nor purely bureaucratic. It was a channel through which resources, prestige, and scholarly judgement passed into Czech research culture (*Akademie věd České republiky, n.d.*; *Hlávkova nadace, n.d.*; *Mádlová, 2024*).

The Academy's publication activity remained central under the new state. Publication had always been one of the main forms through which learned societies transformed scholarly activity into public memory. In the First Republic, this function became even more important because the new state needed visible evidence of intellectual production. Academy proceedings, monographs, memoirs, reports, and scholarly series helped present Czech research as organised, cumulative, and institutionally validated. Publications also linked the Academy's older national mission with the republic's international ambitions. A scholarly work published under academic auspices could circulate domestically as part of Czech learned culture and externally as part of European scholarly exchange. The publication record therefore served both internal consolidation and external representation. It also preserved continuity across political transformation. The Academy's name changed after 1918, but its documentary culture allowed the institution to connect pre-war, wartime, and post-war scholarly labour. This continuity mattered in a society that was otherwise experiencing rapid political, administrative, and symbolic change. Through its publications, ČAVU showed that Czech science had survived imperial collapse and could now serve a sovereign republic (*Česká akademie věd a umění, 1890–1952*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The interwar republic also encouraged a stronger relation between science and public expertise. Modern statehood required knowledge that could assist with education, economy,

health, infrastructure, law, agriculture, social policy, industry, and international relations. Scientific institutions were increasingly expected to produce not only scholarly prestige, but usable competence. This did not mean that all research became applied or instrumental. Fundamental scholarship retained high value, especially within the Academy's learned culture. Yet the public environment of the First Republic gave practical expertise a greater institutional significance. Technical and applied bodies such as the Masaryk Academy of Labour embodied this direction most clearly. However, ČAVU too participated in a culture where scholarly authority could be linked with public usefulness. Its committees, grants, publications, and recognition mechanisms helped sustain fields whose results were relevant to the state and society. The Academy's value therefore lay partly in its capacity to preserve a broad conception of science in a period when the needs of government and economy were becoming more specialised. It held together humanistic memory, natural-scientific inquiry, artistic culture, and public responsibility. This broadness remained one of its distinctive strengths (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*; *Franc, Kostlán, & Míšková, 2010*).

The republic's educational expansion further changed the Academy's institutional environment. The establishment and strengthening of universities and higher education outside the older Prague centre altered the geography of Czechoslovak scholarship. Masaryk University in Brno, founded in 1919, was especially important because it strengthened Moravia as a centre of higher learning and research. The development of Slovak higher education also belonged to the state-building project, even if the institutional balance between Czech and Slovak lands remained uneven. These changes meant that ČAVU had to relate to a more plural academic landscape. Prague remained dominant, and Charles University retained enormous prestige, but scholarship was no longer organised only around the old Prague axis of university, museum, academy, and learned society. New universities, institutes, and professional associations increased the number of actors in scientific life. This pluralisation was healthy, but it also required coordination and hierarchy. The Academy's representative function became more important precisely because the scientific field was becoming more diverse. It could offer symbolic unity in a system that was growing more institutionally complex (*Agnew, 2004*; *Jareš, Franc, & kol., 2018*; *Hájková & Horák, 2018*).

The First Republic also altered the relation between Czech and German scientific cultures in the Czech lands. Before 1918, Czech scholarly institutions had developed partly in response to German-language dominance in universities, administration, and learned life. After the foundation of Czechoslovakia, Czech became the language of the state majority and gained a stronger institutional position. However, German-language scholarship did not disappear. German universities, scholars, journals, associations, and research traditions remained part of the intellectual landscape of the republic, especially in Prague and the border regions. This created a difficult situation for Czech academic institutions. On one hand, ČAVU represented the achievement of Czech-language scholarly emancipation. On the other hand, the state as a whole contained a significant German-speaking population whose scientific culture could not be ignored without simplifying reality. The republic's democratic ideals suggested pluralism, but national tensions often made pluralism difficult. ČAVU therefore operated in an environment where Czech scholarly authority was stronger than before, yet still shaped by the memory and presence of German-language science. Its role in representing Czechoslovak science was therefore never purely linguistic. It was also political, cultural, and diplomatic (*Agnew, 2004*; *Sayer, 1998*; *Franc, Kostlán, & Míšková, 2010*).

The inclusion of women as full members after 1923 marks another important change in the Academy's institutional history. The official opening of full membership to women did not immediately transform the gender structure of Czech academic life, but it signalled that the Academy was being drawn into broader republican debates about citizenship, education, and public participation. The election of Eliška Krásnohorská in 1924 was especially symbolic because she represented literature, education, and women's cultural activism rather than laboratory science. Her election showed both progress and limitation. It acknowledged women's intellectual and cultural contribution, but it also revealed how slowly the learned establishment changed. Women remained marginal in many scientific disciplines, and academic careers were still shaped by strong gender barriers. Nevertheless, the change mattered because it placed the Academy in dialogue with the democratic aspirations of the republic. A learned society that had originated in a male elite culture now had to adapt, however cautiously, to a political world in which citizenship and public culture were being redefined. This was one example of how new statehood affected scholarly institutions not only through funding and administration, but also through social expectations (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The restructuring of the Academy's natural sciences department in 1928 also shows how disciplinary growth changed institutional form. The division of the natural sciences into five sections — mathematics and physics, chemistry, mineralogy and geology, biology, medicine, and technical fields — reflected the increasing specialisation of modern research. Such a change was not merely an internal organisational detail. It indicated that the older broad class structure was no longer sufficient to contain the differentiation of scientific knowledge. Fields had acquired more specialised methods, instruments, communities, journals, and criteria of excellence. The Academy had to recognise this differentiation while preserving its identity as a unified learned institution. This problem was typical of 20th-century academies across Europe. They were expected to represent the unity of science while also accommodating disciplinary fragmentation. The 1928 reform showed that ČAVU was not frozen in its late 19th-century form. It could adjust its internal structure to the scientific realities of the First Republic. In that adjustment, one can see the early signs of a shift from academy as learned society towards academy as a more complex organiser of research fields (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*; *Mádlová, 2024*).

The development of specialised committees and offices within or around the Academy was equally important. Expert research was increasingly centred not only in plenary meetings or broad classes, but in more focused bodies capable of sustained work. The Bureau for the Dictionary of the Czech Language, founded before the First Republic but continuing to develop in the interwar context, illustrates this tendency especially well. Lexicographical work demanded continuity, method, staff, archives, excerpting, editorial discipline, and long-term institutional protection. It could not be completed by occasional meetings of distinguished scholars. Such projects required proto-institutional forms that pointed towards later research institutes. The same logic applied to other fields where long-duration research was essential. The interwar Academy therefore contained seeds of future institutional transformation. It remained a learned society, but within its scholarly culture one can already see the need for permanent research units. This is why the First Republic is so important in the genealogy of the later academy system. It did not yet create the socialist ČSAV model, but it helped prepare the intellectual and organisational conditions from which institute-based science would later grow (*Akademie věd České republiky, n.d.*; *Podaný, 2001*; *Franc & Mádlová, 2013*).

The Academy's relation to libraries and collections further demonstrates its changing function after 1918. Scientific institutions depend not only on people and statutes, but on documentary infrastructure. Libraries, archives, catalogues, bibliographies, correspondence, and collections turn scholarship into a cumulative enterprise. In the First Republic, the libraries of ČAVU and the Royal Czech Society of Sciences formed part of a broader institutional memory of Czech learned life. They preserved older publications while serving current research. This was especially significant because the republic inherited a layered scholarly past: Enlightenment societies, national revival scholarship, Habsburg academic structures, Czech and German university traditions, and newly republican institutions. The organisation of libraries therefore became a form of historical mediation. It allowed scholars to work across political ruptures without losing intellectual continuity. At the same time, library administration reflected practical changes in research culture, because specialised scholarship required better access to periodicals, reference works, editions, and international literature. The Academy's documentary infrastructure thus connected symbolic heritage with everyday research practice (*Podaný, 2001*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

The new state also made international representation a more urgent task. Before 1918, Czech scholars could participate in European networks, but they did so from within an imperial framework where institutional representation was complicated by language, nationality, and political hierarchy. After 1918, Czechoslovakia needed to be represented in international scientific organisations as an independent state. This gave academies, councils, universities, and specialised institutes a diplomatic function. Scientific internationalism became one of the ways in which the republic could confirm its place among modern European nations. The robust international relationships of Czech research institutions culminated in affiliation with bodies such as the International Union of Academies and the International Research Council. ČAVU's role as a representative learned society was therefore tied to the republic's international visibility. Scientific cooperation was not merely a matter of private scholarly correspondence; it became part of national representation. This changed the meaning of academic networks. A foreign membership, an international congress, or participation in a research union could now carry both scholarly and state significance. The Academy's authority helped Czechoslovakia appear not only as a new political actor, but as a legitimate contributor to European knowledge (*Akademie věd České republiky, n.d.*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

This international role also reinforced the Academy's responsibility to maintain standards. A new state could not rely on political independence alone to secure scientific respect. It had to demonstrate that its scholarly institutions met recognised European criteria of quality, discipline, and credibility. ČAVU's selective membership, publication activity, awards, and grant redistribution helped establish such credibility. Its prestige was useful precisely because it had been built before statehood, during the period when Czech scholarship had to prove itself under more difficult conditions. The First Republic could therefore inherit an institution whose authority was not invented by government decree. This pre-existing authority mattered because international science depends on trust accumulated through publications, members, correspondence, and recognised achievements. The Academy's older reputation could now be used in a new diplomatic environment. Yet it also had to be renewed by contemporary work. A prestigious 19th-century foundation would not have been enough if the Academy had failed to respond to 20th-century scientific demands. The interwar period therefore tested whether

ČAVU could convert inherited symbolic capital into active republican usefulness (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Akademie věd České republiky, n.d.*).

The changing role of scientific institutions in the First Republic also reflected the broader European movement from learned societies towards research systems. By the early 20th century, modern science increasingly depended on laboratories, permanent staff, institutes, field stations, large collections, experimental equipment, funding mechanisms, and specialised publication channels. Traditional academies remained important, but they had to coexist with research universities, technical institutes, state laboratories, professional societies, and national research councils. Czechoslovakia followed this broader pattern in its own historical context. ČAVU continued to act as a learned academy, but the scientific life around it became more system-like. The state created or supported institutions designed for specific tasks, while universities expanded their research and educational functions. This did not produce a fully unified research policy in the modern sense, but it did produce a denser institutional environment. The Academy was no longer the only visible form of organised science. Its role became one part of a larger architecture of knowledge. That transition would later make possible both the post-war expansion of research institutes and, after 1952, the centralised academy model of ČSAV (*McClellan, 1985*; *Jareš, Franc, & kol., 2018*; *Dvořáčková, Franc, & kol., 2019*).

The Academy's situation was further complicated by the economic and social realities of the First Republic. The 1920s brought reconstruction, stabilisation, institutional optimism, and cultural energy, but the 1930s introduced economic crisis, political radicalisation, and growing international danger. Scientific institutions were not insulated from these conditions. Funding, employment, publication, research travel, and institutional planning were all affected by broader economic and political pressures. The Academy's grant and scholarship functions became especially important in a society where research support could not be taken for granted. Scholars needed material resources, travel funds, publication subsidies, and institutional endorsement. Younger researchers required support to enter fields that were becoming more professionalised and competitive. The Academy's role as a distributor of resources therefore had practical consequences for the reproduction of scholarly life. At the same time, economic pressures exposed the limits of an institution dependent on both state and foundation resources. The First Republic's scientific culture was rich, but it was not unlimited. Its institutions had to balance ambition with financial constraint (*Kárník, 2000*; *Hájková & Horák, 2018*; *Akademie věd České republiky, n.d.*).

The First Republic's democratic environment gave science a comparatively open public role, but it did not eliminate political tensions. Scholarly institutions could operate with greater national confidence than before, yet they remained embedded in disputes over language, class, nationality, religion, ideology, and the meaning of the republic. Czech academic elites often identified strongly with the democratic and Masarykian project, but the social reality of Czechoslovakia was more conflictual than the idealised image of the republic suggested. German minority politics, Slovak autonomism, economic inequalities, Catholic-secular tensions, and the rise of authoritarian movements in neighbouring states all affected the atmosphere in which science operated. Learned institutions could not solve these problems, but they helped cultivate a public sphere in which expertise, historical reflection, education, and cultural prestige still had democratic value. ČAVU's importance therefore lay partly in its contribution to a civic culture of seriousness. It represented knowledge as a public good rather than as the property of a party or ideology. This was not a guarantee against later catastrophe,

as the events after 1938 would show. But during the First Republic, it gave Czech and Czechoslovak science a space of relative autonomy and dignity (*Agnew, 2004*; *Orzoff, 2009*; *Hájková & Horák, 2018*).

The Academy's interwar role should also be viewed in relation to the arts. The First Republic was a period of remarkable cultural dynamism in literature, architecture, music, visual arts, theatre, design, and criticism. ČAVU's original title and structure had joined sciences and arts, and this broad conception remained meaningful after 1918. The republic's cultural identity was not built through scientific research alone, but through a wide field of intellectual and artistic production. The Academy could recognise and support this broader field because it had never been a narrowly natural-scientific body. Its inclusion of literature, music, fine arts, philology, and historical scholarship made it especially well suited to the cultural ambitions of the new state. This mattered because modern statehood required aesthetic and symbolic representation as well as technical expertise. Buildings, monuments, editions, exhibitions, concerts, historical works, and literary production all contributed to the image of Czechoslovakia as a cultured European republic. The Academy's role in this domain preserved the 19th-century Czech understanding that science, letters, and arts together formed national intellectual maturity. Under the First Republic, that understanding acquired a republican frame (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Hájková & Horák, 2018*).

The interwar Academy also stood at an important threshold between elite scholarship and broader public communication. Like most academies, it was selective and hierarchical. Its membership represented distinction rather than mass participation. Yet the public meaning of science was widening. Schools, newspapers, journals, museums, popular lectures, radio, exhibitions, and civic associations expanded the audience for knowledge. The Academy could not remain indifferent to this environment, even if its own forms remained more formal and elite. Its publications, prizes, members, and public reputation helped shape the authority of knowledge in wider society. In the First Republic, a scientist, historian, writer, or artist associated with the Academy could become part of the moral and intellectual elite of the republic. This elite status was not merely social vanity. It carried expectations of public service, cultural responsibility, and national representation. The Academy therefore helped define what counted as serious intellectual achievement in a modern democratic society. It contributed to the formation of a public hierarchy of knowledge, even while the channels of communication were becoming more diverse (*Franc, Kostlán, & Míšková, 2010*; *Orzoff, 2009*; *Mádlová, 2024*).

The First Republic's institutional changes also prepared later contradictions. The expansion of specialised institutes, state involvement, technical research, and international scientific representation made the older learned-society model increasingly insufficient. Yet the Academy retained much of its traditional structure and prestige-based authority. This produced a productive but unstable duality. On one side, ČAVU embodied continuity, scholarly distinction, national culture, and broad learned authority. On the other side, modern research increasingly demanded permanent institutes, professional staff, laboratories, and stronger coordination. The First Republic did not resolve this tension. It allowed both forms to coexist. That coexistence was historically important because it preserved pluralism and avoided premature centralisation. However, it also meant that the decisive transformation of non-university research would occur later, under far more difficult political conditions after the Second World War and especially after 1948. The interwar period can therefore be seen as a moment of institutional opening rather than institutional completion. It created possibilities

that later regimes would interpret, reorganise, and sometimes distort (*Jareš, Franc, & kol., 2018*; *Dvořáčková, Franc, & kol., 2019*; *Míšková, 2010*).

This threshold character is particularly visible when one looks ahead to the formation of the Czechoslovak Academy of Sciences. The socialist academy established in the early 1950s did not emerge from nothing, even though its ideological and administrative model was radically different from ČAVU. It inherited personnel, collections, research agendas, institutional memories, and specialised units that had developed earlier. Some of these roots reached back to the interwar republic and even to pre-1918 learned traditions. The First Republic therefore occupies a crucial place in the genealogy of modern Czech academy-based science. It was the period when Czech scholarly institutions entered full statehood, when new specialised institutes appeared, when international scientific representation became tied to national diplomacy, and when the need for permanent research infrastructures became increasingly evident. ČAVU was not yet a modern academy of institutes, but it was no longer simply a 19th-century national learned society. It stood between these models. That intermediate position makes it historically important. It explains why the Academy's interwar history must be studied not only as a chapter of cultural prestige, but as a stage in the transformation of Czech research organisation (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*; *Dvořáčková, Franc, & kol., 2019*).

The First Republic also gave the Academy a new relation to time. Before 1918, Czech learned institutions often looked backward to language, history, and national revival while simultaneously working toward cultural emancipation. After 1918, the Academy had to look backward and forward at once. It preserved the memory of Czech scholarship, but it also had to serve a state whose future depended on modern education, research, industry, and international integration. This double temporality was central to its interwar role. The Academy's past gave it legitimacy, but the republic's needs required adaptation. Its classes, committees, publications, grants, and memberships therefore became mechanisms through which older scholarly capital was translated into new republican purposes. The Academy's task was not simply to commemorate Czech intellectual maturity. It had to help reproduce that maturity under new conditions. In this sense, the interwar Academy was an institution of continuity under transformation. Its history shows that scientific institutions survive not by remaining unchanged, but by allowing inherited authority to meet new public demands (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Hájková & Horák, 2018*).

Thus, the emergence of the First Czechoslovak Republic transformed the Czech Academy of Sciences and Arts from a national institution of cultural emancipation into a learned body operating within sovereign statehood and a widening research system. The Academy retained its inherited authority, its commitment to Czech language and culture, its publication activity, and its role in recognising scholarly and artistic distinction. Yet the new republic required more than symbolic national maturity. It needed specialised institutes, technical expertise, international representation, research support, documentary infrastructure, and scientific legitimacy in the eyes of Europe. ČAVU responded to this environment by continuing its representative and supportive functions while adapting to new forms of disciplinary specialisation, social expectation, and state-linked research organisation. The interwar period therefore did not abolish the older academic model, but surrounded it with new institutions and new responsibilities. This made the Academy a mediating body between 19th-century national learned culture and 20th-century research modernity. Its role during the First Republic was neither purely ceremonial nor fully technocratic. It was historical, cultural, scientific, and

civic at the same time. The Academy helped the new state present itself as intellectually mature, but the state also forced the Academy to rethink what a national scholarly institution should be. In this mutual transformation lay the deeper meaning of ČAVU's interwar history.

2. Relations with Charles University and Other Research Centres

The relationship between the Czech Academy of Sciences and Arts and Charles University during the First Czechoslovak Republic cannot be understood as a simple institutional hierarchy. It was neither a relationship of direct subordination nor one of complete separation. Rather, it was a relationship of overlapping authority, shared personnel, complementary functions, and occasional structural tension. Charles University was the oldest and most symbolically powerful centre of higher learning in the Czech lands, while the Academy represented the prestige of national scholarship, learned distinction, publication, and cultural recognition. The university educated students, trained future scholars, maintained faculties, and reproduced professional elites. The Academy, by contrast, did not teach in the ordinary university sense, but it selected, recognised, supported, published, and symbolically crowned mature scholarly and artistic achievement. In the interwar republic, these roles became increasingly interdependent. A professor at Charles University could become an academician; an academician could influence university disciplines through authority, publications, committees, and foundations. The same scholars often moved between lecture hall, archive, laboratory, academy class, editorial board, and state advisory body. This overlap made the Prague scholarly world dense and productive, but it also meant that the boundaries between university research, academy prestige, and public expertise were never entirely fixed (*Charles University, n.d.*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The symbolic relationship between the Academy and Charles University rested on a much longer historical continuity. Charles University, founded in 1348, gave Prague one of the deepest academic genealogies in Central Europe. Its medieval, early modern, Enlightenment, and national histories created a scholarly memory that no modern academy could ignore. The Czech Academy of Sciences and Arts, founded in the late 19th century, did not replace this older university tradition; it grew within the intellectual space that the university had helped to sustain. The Academy's own authority depended partly on the fact that Prague was already a recognised city of learning, libraries, disputations, lectures, archives, and scholarly communication. After 1918, the new republic inherited this layered institutional landscape. Charles University embodied continuity with medieval and modern European higher learning, while ČAVU embodied the national academic ambitions of the Czech 19th century. Their coexistence therefore gave Czechoslovak science a double foundation: an old university tradition and a modern national academy. This double foundation mattered because the First Republic wanted to present itself as both historically deep and politically new. The university and the Academy together helped convert Prague into the intellectual capital of the new state (*Charles University, n.d.*; *Agnew, 2004*; *Franc, Kostlán, & Míšková, 2010*).

The First Republic also changed the political meaning of Charles University itself. Before 1918, Czech university life had developed within the constraints of the Habsburg Monarchy and in constant relation to German-language scholarly culture. After the foundation of Czechoslovakia, Charles University became one of the central educational and symbolic institutions of the new republic. It trained civil servants, lawyers, teachers, physicians, scholars, and experts needed by the state. It also became a visible sign that Czech science and

higher education had entered sovereign public life. The Academy's relationship with Charles University was therefore not only academic, but state-building in character. The republic needed the university to produce educated cadres and the Academy to validate the highest levels of intellectual and cultural achievement. In this sense, the two institutions formed different parts of the same republican knowledge system. The university organised the future through education, while the Academy organised distinction through recognition and scholarly memory. Their cooperation was not always formalised, but it was built into the structure of Czech intellectual life. Together they helped the republic claim that its statehood rested not only on diplomacy and administration, but on disciplined knowledge (*Kárník, 2000*; *Orzoff, 2009*; *Mádlová, 2024*).

The connection between the Academy and Charles University was most visible in their shared personnel. Many leading scholars of the First Republic belonged simultaneously to university faculties, academy classes, editorial projects, scholarly societies, and public committees. This was typical of small and medium-sized European academic cultures, where the number of highly specialised experts was limited and the same people often carried several institutional roles. Such overlap could be productive because it allowed methods, reputations, and research agendas to circulate rapidly between institutions. A university professor who became an academician brought teaching experience, disciplinary authority, and networks of pupils into the Academy. An academician who worked within the university brought academy prestige into the lecture hall, the seminar, and the faculty. This circulation helped make Czech scholarship coherent. It also created an elite academic public in which authority was concentrated. The concentration of authority had obvious advantages: continuity, standards, recognisable leadership, and stable traditions. Yet it also created risks of hierarchy, conservatism, and limited access for younger or less institutionally embedded scholars. The relationship between Charles University and ČAVU was therefore intellectually productive but socially selective (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Sayer, 1998*).

The Academy's function in relation to Charles University was partly that of recognition. University appointments, degrees, and professorships certified teaching and disciplinary competence. Academy membership, prizes, publications, and committee roles gave another form of authority: a public mark of scholarly distinction that was not tied to instruction or faculty administration. In many fields, election to the Academy represented the symbolic culmination of a scholarly career. It meant that a researcher had passed beyond local professional recognition into the national learned canon. This mattered for university scholars because their work could be validated by an institution that spoke not only to students and faculties, but to the wider cultural and scientific community. The Academy thus created an additional layer of academic legitimacy. It was not a rival degree-granting institution, but a tribunal of prestige and memory. Its authority was slower, more selective, and more ceremonial than the authority of the university, but it had real consequences. It shaped reputations, influenced publication visibility, and helped determine which scholars would be remembered as representatives of Czech science. This made the Academy an essential partner to Charles University even when direct cooperation remained informal (*Česká akademie věd a umění, 1890–1952*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

At the same time, Charles University had a function that the Academy could not replace: the formation of future scholars. The Academy could award scholarships, support publications, recognise mature achievement, and organise scholarly authority, but it did not create the normal educational pathway through which young people became researchers. The university

seminar, the doctoral dissertation, the laboratory practicum, the clinical training, and the faculty career remained decisive. In this respect, the Academy depended on the university far more than the university depended on the Academy. Without the university's educational function, the Academy's future membership would have no stable source. This dependency was especially clear in the humanities and social sciences, where seminars in history, philology, law, philosophy, and literature trained generations of researchers who later contributed to academy projects. It was also true in medicine and the natural sciences, where laboratories and clinics were crucial to professional formation. The Academy could support the most advanced stages of scholarly work, but the university created the disciplinary habitus of researchers. The relationship between the two institutions therefore rested on a division between formation and recognition. Charles University trained scholarly competence; ČAVU elevated it into national academic authority (*Charles University, n.d.*; *Franc, Kostlán, & Míšková, 2010*; *Jareš, Franc, & kol., 2018*).

The humanities illustrate this relationship particularly clearly. Czech historical scholarship, philology, literary studies, archaeology, art history, philosophy, and legal history were deeply rooted in university teaching, but they also found important forms of recognition and publication through the Academy. Charles University seminars trained students in source criticism, language competence, archival method, textual interpretation, and historical argument. The Academy supported the wider prestige of this work by publishing studies, electing scholars, funding research, and maintaining a learned public. The two institutions therefore helped transform national memory into scholarly knowledge. This was crucial in the First Republic, because the new state needed historical self-understanding but also needed to avoid reducing scholarship to patriotic rhetoric. University method and academy prestige could together discipline the national past. The university supplied professional training; the Academy supplied national learned visibility. Their interaction made Czech historical and philological work more durable than it would have been if confined to either institution alone. The same was true of large editorial, dictionary, archival, and bibliographical projects that required both trained specialists and institutional protection (*Franc, Kostlán, & Míšková, 2010*; *Podaný, 2001*; *Mádlová, 2024*).

The natural sciences and medicine also depended on this inter-institutional relationship, although in a different way. Laboratories, clinics, anatomical institutes, botanical gardens, collections, and experimental facilities were usually connected more directly with universities, technical schools, hospitals, museums, or state institutes than with the Academy as a traditional learned body. Yet the Academy remained important because it could publish results, recognise scientific excellence, support research travel, and include leading scientists within a national hierarchy of scholarly distinction. A chemist, physicist, biologist, physician, or mathematician needed institutional workplaces for daily research, but academy recognition could give that work broader authority. This distinction was becoming more important in the interwar period because experimental and technical fields required expensive infrastructure that learned academies could not easily provide. The Academy's natural-scientific role therefore became less that of direct laboratory management and more that of recognition, publication, funding support, and learned coordination. This was not a weakness, but a sign of modern differentiation. The scientific system was becoming too complex to be concentrated in one institution. ČAVU's task was to remain authoritative within that complexity (*ALLEA, 2008*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The Academy's relationship with Charles University was also shaped by the continuing presence of the German University in Prague. The academic landscape of interwar Prague was not purely Czech, even after Czech statehood had been established. German-language scholarship continued to exist with its own institutions, traditions, journals, and intellectual networks. This gave Prague a distinctive and sometimes tense scholarly geography. Charles University represented the Czech national university tradition; the German University represented a powerful German-speaking academic heritage; ČAVU represented Czech national learned authority; other institutions mediated between museums, libraries, archives, professional societies, and state research. The Academy's relationship with Charles University therefore took place within a multilingual and nationally charged urban environment. It was not only a relationship between two Czech institutions, but part of a broader reorganisation of prestige after 1918. Czech institutions gained political and symbolic strength, while German institutions remained intellectually significant but politically more vulnerable in the new state. This situation required Czech scholarship to define itself as national without becoming intellectually provincial. The Academy's best role was to strengthen Czech science while maintaining standards that could withstand international comparison (*Agnew, 2004*; *Sayer, 1998*; *King, 2002*).

Masaryk University in Brno added another important dimension to the Academy's institutional environment. Founded in 1919, it represented the republic's effort to expand higher education beyond Prague and to give Moravia a stronger university centre. This was a major change in the geography of Czech scholarship. Brno had long possessed regional, industrial, administrative, and cultural significance, but the foundation of a university transformed its scientific role. For ČAVU, this meant that the national learned field could no longer be imagined only through Prague. The Academy remained Prague-centred in many respects, but its representative mission had to include scholars and research cultures developing in other centres. Masaryk University contributed to the pluralisation of Czech science by training new generations, building faculties, and creating scholarly communities outside the old capital. This did not remove Prague's dominance, but it softened the monopoly of the Prague institutional world. The Academy's relation to Brno was therefore part of the larger republican project of building a more territorially balanced intellectual life. In the long run, this regionalisation would become important for the later Czech research system and for the contemporary Academy's presence beyond Prague (*Masaryk University, n.d.*; *Agnew, 2004*; *Franc, Kostlán, & Míšková, 2010*).

The Czech Technical University in Prague and other technical schools also formed an essential part of the research environment around the Academy. Technical education and engineering expertise had special importance in a republic with strong industrial regions, complex infrastructure needs, and ambitions for economic modernisation. ČAVU's original broad conception of knowledge included technical and natural-scientific fields, but the daily work of engineering research depended on institutions designed for technical training and applied problem-solving. The relationship between the Academy and technical centres was therefore mediated through scholars, committees, publications, and applied scientific networks rather than through direct institutional control. The Masaryk Academy of Labour, founded in 1920, made this differentiation even clearer. It represented a more explicitly technical and applied model of science in the service of national economy and public development. This changed the position of ČAVU because technical modernisation could no longer be contained within the symbolic authority of a learned academy. It required specialised organisations capable of interacting with industry, government, and professional engineering communities. The

Academy remained important as a source of prestige and learned legitimacy, but technical research increasingly demanded its own institutional forms (*České vysoké učení technické v Praze, n.d.*; *Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*).

The relationship between the Academy and other research centres was also shaped by museums. The National Museum in Prague, together with regional museums and specialised collections, had long contributed to natural history, archaeology, ethnography, history, and cultural memory. Museums were not merely exhibition spaces. They preserved specimens, artefacts, manuscripts, maps, fossils, archaeological materials, ethnographic records, and scientific collections. This made them essential research centres, especially in fields where knowledge depended on material evidence. The Academy's learned authority interacted with museums through shared scholars, publications, committees, catalogues, collections, and disciplinary networks. A museum specialist could be an academician; an academy publication could use museum collections; a university seminar could train students who worked in museums; a national exhibition could translate scholarship into public culture. This interconnectedness was typical of the First Republic. Scientific work moved through several institutions rather than remaining confined to one administrative body. The Academy's role in this ecology was not to absorb museums, but to help integrate their scholarly labour into the higher symbolic order of Czech science (*Národní muzeum, n.d.*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

Archives formed another crucial research environment. Historical scholarship in the Czech lands depended on access to medieval charters, early modern administrative records, municipal archives, ecclesiastical fonds, noble collections, university records, and state documents. Charles University trained historians and philologists in the methods needed to use these materials, while the Academy supported the scholarly publication and recognition of historical work. Archives, universities, museums, and the Academy therefore formed a tightly connected documentary system. This system was central to the First Republic because historical legitimacy was one of the republic's cultural foundations. The scholarly editing of sources, the writing of national history, the study of legal continuity, and the interpretation of cultural memory all required archival competence. The Academy could not produce this work alone, but it could provide prestige, publication channels, and learned authority. Its relation to archives was therefore part of its broader role as guardian of national scholarly memory. In the Czech context, archival research was never merely antiquarian. It was a way of grounding modern statehood in documented historical knowledge (*Franc, Kostlán, & Míšková, 2010*; *Sayer, 1998*; *Mádlová, 2024*).

The Slavonic Institute and the Oriental Institute show how the interwar republic expanded research beyond the older national scholarly agenda. These institutions reflected the new state's ambition to participate in comparative, linguistic, geopolitical, and cultural scholarship beyond the immediate Czech lands. The Slavonic Institute connected Czechoslovak scholarship with Slavic studies, language research, historical comparison, and cultural diplomacy. The Oriental Institute reflected broader interests in Asia, the Middle East, languages, cultures, commerce, and international knowledge. Their existence shows that the republic's research system was becoming more outward-looking. ČAVU's relationship with such institutes was not simply administrative. It belonged to a shared intellectual environment in which Czech scholarship was trying to move from national consolidation to international and comparative engagement. The Academy's older cultural-national mission remained important, but new research centres broadened the horizon of inquiry. They allowed the republic to

present itself not only as a state studying its own history and language, but as a participant in wider scholarly worlds. This was an important step in the maturation of Czechoslovak science (*Akademie věd České republiky, n.d.*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

The Archaeological Institute occupied a special position among research centres because archaeology joined science, territory, statehood, and cultural memory in a particularly visible way. Archaeological research required fieldwork, excavation, conservation, classification, publication, and cooperation with museums, universities, local authorities, and heritage bodies. It also contributed to the republic's understanding of the deep past of its lands. ČAVU had an obvious interest in archaeological scholarship because archaeology produced evidence that connected territory with historical depth. Charles University trained many of the specialists capable of interpreting archaeological materials, while museums preserved and displayed collections. The Archaeological Institute gave this work a more organised institutional basis. Its emergence showed how certain fields were moving beyond the capacities of a traditional learned academy and towards permanent research infrastructure. Yet the Academy remained relevant because archaeological findings needed scholarly interpretation, national recognition, and publication. The relationship between ČAVU, university archaeology, museums, and the Archaeological Institute therefore demonstrates the interwar pattern of distributed research authority (*Akademie věd České republiky, n.d.*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

Libraries were another domain where the Academy's relations with Charles University and other centres became concrete. The libraries of ČAVU and the Royal Czech Society of Sciences preserved older learned traditions and served the practical needs of researchers. University libraries, the Klementinum, museum libraries, specialised institute collections, and private scholarly libraries formed a documentary infrastructure without which research could not be sustained. The First Republic inherited a complex library landscape shaped by older university, monastic, noble, museum, and learned-society collections. The Academy's libraries were important not because they were the only repositories of knowledge, but because they embodied the memory of organised Czech scholarship. They also linked publication, membership, correspondence, and institutional continuity. Researchers moving between Charles University, the Academy, the National Museum, and other centres depended on this broader library ecology. Bibliographical work, journal exchange, acquisition of foreign literature, and preservation of Czech publications all helped integrate the research system. In this sense, libraries were not passive storage spaces. They were instruments of cooperation between institutions (*Podaný, 2001*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

The Academy's grant and scholarship functions also affected relations with universities and research centres. Many scholars based at Charles University, technical schools, museums, or specialised institutes needed support for travel, publication, archival work, field research, or equipment. ČAVU's ability to redistribute funds from state sources, foundations, and private endowments made it a mediator between scholarly need and financial possibility. This role was especially important in an environment where research funding was not yet organised through modern grant agencies in the contemporary sense. The Academy could help select which projects deserved support and thereby influence the direction of research. This gave it practical power beyond symbolic prestige. University researchers could benefit from academy funds, while the Academy could strengthen fields it considered nationally or scientifically significant. The relationship was therefore reciprocal but asymmetrical. Universities produced much of the research labour, while the Academy could help determine its recognition and support. This

function made ČAVU a key node in the financial and moral economy of interwar Czech science (*Akademie věd České republiky, n.d.*; *Hlávkova nadace, n.d.*; *Mádlová, 2024*).

The interaction between the Academy and Charles University was not free of tension. The university was a large teaching and research institution with its own faculties, career hierarchies, internal politics, and disciplinary ambitions. The Academy was a selective learned body whose authority rested on election, prestige, and cultural representation. These two forms of authority did not always coincide. A university scholar might be productive but not yet recognised by the Academy. An academician might possess immense symbolic status but be less connected to emerging research methods or younger schools. Fields developing rapidly in laboratories or specialised institutes could sometimes move faster than academy structures. Generational tensions were also likely, because academies tend to preserve established reputations while universities continually produce new researchers. Such tensions were not necessarily destructive. They could stimulate debate over standards, renewal, and institutional function. However, they remind us that cooperation between Charles University and ČAVU should not be idealised. It was a relationship shaped by prestige, resources, age, discipline, and competing claims to scholarly authority (*Mádlová, 2024*; *Jareš, Franc, & kol., 2018*; *Franc & Mádlová, 2013*).

The university and the Academy also differed in their relation to students and publics. Charles University had a direct pedagogical public: students attended lectures, entered seminars, passed examinations, wrote dissertations, and became professionals. The Academy's public was more indirect: readers of publications, recipients of prizes, scholars seeking recognition, citizens who understood academic membership as cultural authority, and state bodies that valued expert prestige. This difference shaped institutional culture. The university had to balance research with curricula, examinations, student politics, and professional accreditation. The Academy could focus more on mature scholarship, learned deliberation, publication, and cultural symbolism. In the First Republic, these differences allowed the two institutions to complement each other. The university produced the educated republic; the Academy represented the accomplished republic. Yet the distinction also limited the Academy's social reach. It could influence education and public culture, but mostly through elites rather than through direct teaching. Its power was therefore concentrated and symbolic, while the university's power was formative and generational (*Charles University, n.d.*; *Orzoff, 2009*; *Mádlová, 2024*).

Women's access to scholarly life also reveals the difference between university and academy structures. Universities gradually opened paths for women as students and, more slowly, as researchers and teachers. The Academy opened full membership to women only in the early republican period, and even then the number of women recognised by the Academy remained very limited. This shows that the university and the Academy were both shaped by gendered barriers, but in different ways. The university could admit women into educational pathways before it fully admitted them into professorial authority. The Academy could symbolically recognise a small number of exceptional women while leaving the male structure of learned distinction largely intact. The election of Eliška Krásnohorská in 1924 had great symbolic meaning, but it did not transform the everyday gender order of research. In relation to Charles University and other centres, the Academy therefore reflected the slower pace of elite recognition compared with educational change. The First Republic's democratic ideals opened certain doors, but academic authority remained heavily masculine. This is important because institutional cooperation often reproduced the social hierarchies shared by both

universities and learned bodies (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

Relations with research centres outside Prague also reveal the limits of ČAVU's national reach. The Academy represented Czech scholarly authority, but much of its social and institutional power remained concentrated in Prague. The foundation of Masaryk University in Brno, the importance of Moravian museums, regional archives, technical institutions, and local scholarly societies all challenged any simple Prague-centred model. Yet the Academy's membership, meetings, publications, and cultural prestige remained closely tied to the capital. This created a structural imbalance. Prague could speak for national science, but national science was increasingly produced in several places. The Academy had to incorporate regional scholars and research agendas if it wanted to remain genuinely representative. Its ability to do so was uneven, but the problem itself was historically important. It showed that the Czech academic system was moving from a capital-centred learned culture towards a more distributed research geography. This process would continue after the Second World War and would later become one of the characteristics of the Czech Academy of Sciences as a national, not merely Prague, institution (*Masaryk University, n.d.*; *Franc, Kostlán, & Míšková, 2010*; *Franc & Mádlová, 2013*).

The relation between ČAVU and other centres also involved professional societies and disciplinary associations. By the interwar period, modern scholarship was no longer organised only by universities and academies. Disciplines developed their own journals, conferences, societies, standards, and professional communities. Historians, physicians, chemists, engineers, linguists, archaeologists, mathematicians, and naturalists all operated in networks that could cross institutional boundaries. The Academy interacted with these disciplinary worlds, but it did not control them. Its authority was broad and prestigious, while professional societies were often more specialised and active in everyday disciplinary exchange. This produced another form of complementarity. The Academy could provide national prestige; professional societies could provide regular scholarly communication and disciplinary community. Charles University and other universities supplied teaching and research workplaces. Museums, archives, and institutes supplied materials and specialised infrastructure. The interwar scientific system therefore became a multi-layered ecology. ČAVU's place within it was important precisely because it was no longer alone (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

International representation further connected the Academy with Charles University and other research centres. A state entering international scientific organisations needed recognised scholars, disciplinary committees, institutional credibility, and channels of communication. University professors often supplied the disciplinary expertise, while the Academy supplied national learned authority. Specialised institutes contributed research programmes and technical knowledge. This division of labour helped Czechoslovakia appear as a serious scientific nation in the interwar European system. The Academy's role was particularly important because international academic bodies often expected participation by academies or national learned institutions. Charles University alone could not fully perform this representative function, because universities represent education and research but not always national scholarly distinction in the same way. The Academy could therefore act as a bridge between university scholarship and national scientific diplomacy. Its relationship with Charles University was thus extended outward into international networks. The next chapter theme on international links of Czech science rests on this domestic cooperation between universities,

academies, and specialised centres (*Akademie věd České republiky, n.d.*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

The First Republic's research system was therefore plural but not fully integrated. It contained an old university, newer universities, a national academy, technical schools, museums, archives, state institutes, professional societies, foundations, libraries, and applied research organisations. This plurality created vitality, but it also made coordination difficult. Funding, personnel, publication, fieldwork, research priorities, and international representation could move through several different channels. ČAVU contributed to coordination through prestige, grants, memberships, publications, and committees, but it did not command the system. Charles University remained a powerful centre with its own autonomy, while newer institutions developed their own identities. The republic did not create a central academy of research institutes in the later socialist sense. Instead, it allowed a more liberal and historically layered structure to operate. This structure suited the democratic culture of the First Republic, but it also left unresolved questions about how to organise large-scale research, long-term projects, and national scientific planning. These unresolved questions would return after 1945 in a much more dramatic political environment (*Kárník, 2000*; *Jareš, Franc, & kol., 2018*; *Dvořáčková, Franc, & kol., 2019*).

The later relationship between Charles University and the Czechoslovak Academy of Sciences after 1952 shows why the interwar relationship deserves careful attention. Post-war and socialist restructuring would transform cooperation and overlap into more formal questions of institutional power, competition, and division between university and academy-based research. The Czechoslovak Academy of Sciences would become a centralised organisation of research institutes, changing the balance between university scholarship and academy science. Yet this later transformation did not emerge in a vacuum. The interwar period had already produced specialised research centres, academy-supported offices, overlapping personnel, and debates about the proper institutional home of advanced research. It had already shown that universities could not alone support all forms of modern research, but also that academies depended on universities for training and disciplinary reproduction. The First Republic thus created the prehistory of later competition and cooperation. It preserved a relatively plural arrangement, but the pressures of specialisation were already visible. Understanding ČAVU's relations with Charles University and other centres is therefore essential for understanding why the post-1945 reorganisation of science took the forms it did (*Jareš, Franc, & kol., 2018*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The civic culture of the First Republic gave these institutional relations a distinctive tone. Universities, academies, museums, libraries, and research institutes were not seen merely as technical organisations. They belonged to the moral architecture of the republic. They expressed education, democratic seriousness, cultural maturity, and the belief that public life should be guided by knowledge. This is why the relationship between Charles University and the Academy had meaning beyond internal academic administration. Together they embodied the republic's aspiration to be a state of scholarship, law, culture, and reason. This aspiration was never fully realised, and the republic's social and national conflicts should not be ignored. Yet the ideal mattered. It gave academic institutions a public dignity that would become painfully visible when this world was threatened by Munich, occupation, and war. The Academy's relations with Charles University and other centres therefore formed part of a larger republican confidence in knowledge as a foundation of public life. That confidence would later be tested under catastrophic conditions (*Agnew, 2004*; *Orzoff, 2009*; *Hájková & Horák, 2018*).

Thus, the relations between the Czech Academy of Sciences and Arts, Charles University, and other research centres during the First Czechoslovak Republic formed a dense institutional ecology rather than a simple system of command. Charles University trained scholars, reproduced disciplines, and carried the prestige of Prague's ancient university tradition. ČAVU recognised achievement, supported research, published scholarly work, mediated grants, and represented national learned authority. Technical schools, museums, archives, professional societies, libraries, and specialised institutes supplied the material, disciplinary, and practical infrastructures of modern research. Masaryk University and other centres expanded the geography of Czech scholarship beyond Prague, while German-language institutions reminded the republic that academic life remained multilingual and historically layered. The Academy's role was therefore not to dominate the whole research system, but to give it symbolic coherence, continuity, and national visibility. Its cooperation with Charles University was productive because the two institutions performed different but complementary functions: formation and recognition, teaching and distinction, disciplinary reproduction and learned memory. At the same time, their relationship contained tensions over prestige, resources, generation, gender, regional representation, and the changing demands of specialised research. The First Republic did not resolve all these tensions, but it created a plural academic culture in which universities, academies, and research centres could together sustain the intellectual life of a democratic state. This pluralism became one of the most valuable inheritances of interwar Czech science, even though later political regimes would reorganise it in far more centralised and ideologically charged forms.

3. International Links of Czech Science in the Interwar Period

The international links of Czech science in the interwar period must be understood as one of the most important consequences of Czechoslovak statehood after 1918. Before the foundation of the republic, Czech scholars had already participated in European networks, published abroad, corresponded with foreign colleagues, and belonged to the wider Central European learned world. Yet they usually did so from within the framework of the Habsburg Monarchy, where institutional representation was mediated through imperial structures, German-language scholarly networks, and the complex hierarchy of Austro-Hungarian academic life. After 1918, the situation changed fundamentally because Czech science could increasingly appear abroad under the name of a new state. The Czech Academy of Sciences and Arts therefore acquired a new representational task. It did not merely cultivate scholarship within the Czech lands; it helped present Czech and, more broadly, Czechoslovak science to the European and international academic community. This role was not purely ceremonial. International recognition mattered for research quality, scholarly mobility, publication exchange, access to congresses, state prestige, and the republic's broader diplomatic self-presentation. In this sense, the Academy's foreign relations were part of the same process that transformed Czechoslovakia from a newly founded political entity into a recognised participant in European intellectual life. The republic needed embassies, treaties, armies, ministries, and economic institutions, but it also needed universities, academies, scholars, journals, and international scientific memberships. ČAVU was one of the institutions through which this intellectual diplomacy became possible (*Agnew, 2004*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

The interwar internationalisation of Czech science did not begin from zero. It rested on older foundations created by the Royal Czech Society of Sciences, Charles University, German and Czech university traditions, learned publications, private correspondence, and the late 19th-century Academy itself. Czech scholars had long been accustomed to moving between languages and scientific cultures. Latin, German, Czech, French, and later English formed different routes into European scholarly communication. This multilingual inheritance gave Czech science a certain flexibility after 1918, even though the republic's new political situation also changed the symbolic meaning of language. Czech could now function more confidently as the language of a state-supported scholarly culture, but international science still required communication through broader European languages. The Academy therefore operated in a double linguistic field. Domestically, it strengthened Czech scientific and cultural authority. Externally, it had to make Czech scholarship visible to readers, institutions, and academies that did not read Czech. This made translation, foreign-language summaries, correspondence, exchange of publications, and international memberships especially important. The interwar Academy did not abandon the national language; rather, it tried to place Czech-language scholarship within a European framework of recognition. This was one of the enduring tensions of smaller national sciences in the 20th century (*Gordin, 2015*; *Franc, Kostlán, & Míšková, 2010*; *Sayer, 1998*).

The First Czechoslovak Republic entered a Europe in which science was being reorganised after the catastrophe of the First World War. International scholarly cooperation had been damaged by wartime nationalism, ruptured communication, political hostility, and the collapse of empires. At the same time, the post-war period created new institutions and new opportunities for smaller states. The diplomatic order associated with Versailles and with the League of Nations gave cultural and scientific representation a new political significance. A newly recognised state had to demonstrate that it belonged to the civilised and modern community of nations. Scholarship was one of the strongest ways to make that claim. Czechoslovakia could present itself not only as a political successor state, but as a country with universities, academies, archives, museums, scientific talent, and democratic intellectual culture. This was especially important because the republic's political legitimacy was partly grounded in the idea that it represented a progressive, educated, and Western-oriented alternative to the imperial past. The Academy's international links therefore helped translate national scholarly achievement into external prestige. They showed that Czech science did not exist only for domestic identity, but could participate in the reconstruction of European academic life after the war (*Kárník, 2000*; *Orzoff, 2009*; *Agnew, 2004*).

The Academy's international role was closely connected with its system of membership. Foreign and corresponding members had long been an important feature of academy culture across Europe, and ČAVU used these categories to connect Czech scholarship with wider learned networks. Such memberships were never merely decorative. They created channels of recognition, correspondence, exchange, and prestige. When a foreign scholar became associated with the Academy, the institution signalled that Czech science belonged to a broader community of judgement. When Czech scholars were recognised abroad, they demonstrated that Czech research could stand beyond the limits of national culture. Prosopographical work on the Academy's members is therefore especially useful because it allows historians to examine how scholarly networks were embodied in persons rather than only in institutions. Membership lists show not only who belonged to the Academy, but also which disciplines, countries, and intellectual traditions were considered important for Czech

science. They reveal the Academy as a social map of scholarly authority. In the interwar period, this map acquired an explicitly state-representational function. The Academy's members were not only distinguished individuals; they were carriers of Czech and Czechoslovak visibility in international scholarship (*Šlechtová & Levora, 2004*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

International links were also maintained through publication exchange. For an academy, publications are not simply outputs of research; they are diplomatic objects. A volume of proceedings, a scholarly monograph, a memoir, a bulletin, or a report can travel where scholars themselves cannot always travel. It can enter a foreign library, be reviewed by foreign colleagues, be cited in another country, or serve as evidence that an institution is active and serious. ČAVU's publication activity therefore had an international dimension even when texts were written primarily for a Czech audience. Exchange arrangements with foreign academies and libraries helped place Czech scholarly work into European documentary circulation. At the same time, foreign publications arriving in Prague enriched local research by giving Czech scholars access to international developments. This two-way exchange was especially important for a medium-sized scientific culture. It prevented isolation without requiring full dependence on foreign centres. It also created a paper infrastructure of internationalism, quieter than congresses or diplomatic speeches but often more durable. Through publication exchange, the Academy became part of an archival and bibliographical network that joined Prague to other scholarly capitals (*Česká akademie věd a umění, 1890–1952*; *Podaný, 2001*; *Franc & Mádlová, 2013*).

Participation in international academic organisations gave this foreign orientation a more formal structure. In the interwar period, the Academy became connected with international bodies that brought together national academies, research councils, and scholarly unions. Such participation mattered because international science was increasingly organised not only through personal correspondence, but through federated institutions. National committees, academies, unions, and councils became the mechanisms through which countries entered collective scientific governance. For Czechoslovakia, this was particularly significant because the state was new but its scholarly traditions were older. Membership in international structures allowed Czech science to convert inherited intellectual capital into recognised state representation. It also created obligations. A country that belonged to international scientific organisations had to maintain standards, submit representatives, participate in congresses, exchange information, and sustain disciplines capable of meaningful contribution. The Academy's role in this setting was therefore both symbolic and practical. It helped ensure that Czech science was visible in the institutional architecture of interwar international scholarship. It also helped align domestic scholarly life with European and global forms of organisation (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*; *Franc & Mádlová, 2013*).

The relation between the Academy and international science was inseparable from the broader foreign policy of the First Republic. Czechoslovakia under Masaryk and Beneš cultivated an image of democratic modernity, cultural maturity, and responsible European belonging. Science and scholarship fitted this image particularly well. Universities, academies, technical institutes, museums, and cultural bodies could show that the republic was not a peripheral or accidental state. They allowed Czechoslovakia to present itself as a country with intellectual depth and institutional seriousness. The Academy's international contacts contributed to this cultural diplomacy without becoming identical to state propaganda. Its authority depended precisely on the fact that scholarly recognition could not be manufactured by the foreign

ministry alone. Academic prestige had to rest on publications, members, research achievements, and institutional continuity. The republic could use this prestige, but it could not simply decree it. ČAVU therefore occupied a delicate position: it served the international image of Czechoslovakia, yet it had to remain credible as an autonomous scholarly body. This balance between public representation and academic standards was one of the defining features of its interwar foreign role (*Orzoff, 2009*; *Kárník, 2000*; *Mádlová, 2024*).

Internationalisation was not the same in all disciplines. Mathematics, physics, chemistry, medicine, and biology entered international networks through journals, congresses, laboratories, terminology, instruments, and increasingly specialised research communities. Historical scholarship, philology, archaeology, art history, Slavic studies, and literary studies entered through source editions, comparative work, archival discoveries, foreign academies, and cultural institutes. The arts entered through exhibitions, prizes, performances, translations, and aesthetic reception. The Academy's broad structure made it capable of touching all these forms of international connection. Yet the mechanisms differed significantly. A mathematician could communicate through formal notation and foreign-language articles, while a historian of Czech medieval sources had to make national materials intelligible to foreign readers. A chemist might need laboratory exchange and access to international periodicals, while a philologist might require knowledge of Slavic, Germanic, Latin, and Romance traditions. The Academy's international role therefore cannot be reduced to a single model of scientific exchange. It was a layered system of contacts shaped by discipline, language, method, and institutional culture. This complexity reflected the Academy's original identity as an institution of sciences, letters, and arts (*Franc, Kostlán, & Míšková, 2010*; *Gordin, 2015*; *Mádlová, 2024*).

The natural sciences in interwar Czechoslovakia benefited from the wider European turn towards disciplinary specialisation. Research fields were increasingly organised around international journals, congresses, laboratories, standardised methods, and specialised societies. Czech scientists who worked in chemistry, physics, mathematics, medicine, geology, biology, and related fields had to connect their work with these international standards. The Academy could support this process through recognition, publication, grants, and representation, but much of the daily scientific internationalisation also passed through universities, technical schools, laboratories, and professional societies. This reinforces a point already visible in the relationship with Charles University and other research centres: ČAVU did not monopolise international science, but it gave it a national learned frame. Its elected members and supported publications helped identify which Czech scientific achievements could represent the country abroad. At the same time, the Academy's prestige encouraged researchers to measure themselves against standards beyond Czech circles. International comparison protected Czech science from becoming self-referential. It also made visible the areas in which Czech research could contribute original results to world science. The Academy's international function therefore consisted not only in sending Czech science abroad, but also in bringing external judgement back into Czech scholarly culture (*ALLEA, 2008*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The humanities and social sciences had a different, but no less important, international significance. The new republic needed historical, linguistic, archaeological, legal, and cultural scholarship to explain itself both domestically and abroad. Foreign audiences did not automatically understand the historical arguments behind Czechoslovak statehood, the place of the Bohemian lands in Europe, the relation between Czechs and Slovaks, or the importance

of Slavic studies. Scholars therefore had to translate national historical knowledge into forms that could circulate internationally. This did not mean turning scholarship into political advocacy. Rather, it meant producing research serious enough to show that the republic's cultural claims rested on documented history and not only on diplomatic rhetoric. The Academy was well placed to support such work because it had inherited the 19th-century connection between scholarship and national culture. In the interwar period, this connection became outward-facing. Czech history, language, literature, and art were no longer only foundations of domestic identity; they became materials through which Czechoslovakia could present itself to Europe. The Academy's international links therefore extended the work of national scholarship into cultural diplomacy (*Sayer, 1998*; *Franc, Kostlán, & Míšková, 2010*; *Orzoff, 2009*).

Slavic studies formed a particularly important bridge between national scholarship and international research. Czechoslovakia's position in Central Europe and its official Czechoslovak ideology gave Slavic questions both scholarly and political significance. Czech scholars were interested in Slavic languages, literatures, histories, cultures, and comparative identities not only as academic subjects, but also as part of the republic's intellectual orientation. The establishment and activity of the Slavonic Institute reflected this wider field of interest. ČAVU's own scholarly culture intersected with Slavic studies through philology, history, literary studies, and cultural research. International links in this field connected Prague with scholars in Poland, Yugoslavia, Russia, Ukraine, Bulgaria, France, Britain, and other countries where Slavic studies were cultivated. Yet this field also required caution because Slavic scholarship could easily become entangled with political visions of Slav solidarity, anti-German positioning, or state ideology. The strongest academic value of Slavic studies lay in its comparative method and linguistic discipline, not in sentimental pan-Slavism. The Academy's role was therefore to support a scholarly rather than merely ideological Slavic horizon (*Franc, Kostlán, & Míšková, 2010*; *Agnew, 2004*; *Mádlová, 2024*).

The Oriental Institute and other outward-facing scholarly institutions expanded the republic's intellectual geography still further. Their existence shows that interwar Czech science was not limited to the recovery and representation of national history. The republic also sought to participate in the study of Asia, the Middle East, non-European languages, comparative cultures, and international economic and diplomatic knowledge. This was a significant development for a new state that had no colonial empire but did have ambitions for cultural and commercial presence beyond Central Europe. Such research widened the meaning of international scholarship. It was not only about being recognised by Western European academies, but also about building Czech expertise on regions and civilisations outside Europe. The Academy's relation to this wider field was indirect but important because it belonged to the same national research ecology. A mature scholarly culture needed both inward memory and outward curiosity. Interwar institutions therefore helped Czechoslovakia move beyond the position of a nation explaining itself to Europe and towards the position of a country studying the wider world. This was one of the signs of academic maturity in the First Republic (*Akademie věd České republiky, n.d.*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

Scientific travel was another crucial form of international connection. Scholars travelled to archives, laboratories, congresses, universities, museums, libraries, archaeological sites, and specialist meetings. Travel allowed researchers to acquire methods, inspect sources, learn techniques, exchange publications, build friendships, and become visible to foreign colleagues. In the interwar period, such mobility was still socially and financially selective, but

it was increasingly recognised as a necessary part of serious research. The Academy's scholarships and grants could support travel, while university and state structures also contributed to mobility. Travel mattered especially for younger scholars who needed to enter international disciplines and not merely read foreign literature from Prague. It also mattered for fields in which instruments, collections, and archives could not be replaced by printed materials. The scholar abroad functioned as a carrier of Czech science, but also as a recipient of foreign practices. On return, such scholars could bring methods, standards, contacts, and intellectual expectations back into the domestic environment. International travel therefore helped transform Czech research from a nationally organised culture into a more mobile and comparative scientific system (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*; *Gordin, 2015*).

Congresses and conferences gave internationalisation a public and performative form. A congress is not only a place where papers are read; it is a site where disciplines recognise one another, where countries appear through their delegations, and where scholarly prestige becomes visible. For Czechoslovak science, participation in congresses was one of the ways to normalise the republic's presence in European academic life. Czech scholars could present results, meet colleagues, negotiate exchanges, and demonstrate that Prague, Brno, and other centres belonged to the international map of research. The Academy's members often had the status necessary to represent Czech science at such events. Their presence linked individual expertise with institutional and national prestige. Congress participation also created pressures. Scholars had to present work in languages accessible to foreign audiences, meet current standards of argument, and respond to external criticism. This made internationalisation a discipline of quality as much as a channel of prestige. The Academy's international role therefore included exposure to judgement, not only the display of achievement (*Šlechtová & Levora, 2004*; *Gordin, 2015*; *Franc & Mádlová, 2013*).

The exchange of books and periodicals was particularly important because interwar science depended heavily on printed communication. Before the age of digital databases and rapid online access, scientific visibility required physical circulation. Journals, proceedings, monographs, catalogues, and reports had to be printed, shipped, catalogued, reviewed, and preserved. Academy libraries and university libraries therefore became instruments of international connection. They did not merely store books; they connected Prague with foreign research centres through exchange agreements and acquisition networks. The arrival of foreign journals allowed Czech scholars to follow developments in their fields, while the sending of Czech publications abroad made domestic work visible. This documentary exchange was slow by contemporary standards, but it created durable traces. A Czech academy volume in a foreign library could be discovered years later by another scholar. A foreign bulletin in Prague could shape a local research programme. The international life of science was therefore built not only through dramatic meetings, but through the regular movement of printed matter (*Podaný, 2001*; *Česká akademie věd a umění, 1890–1952*; *Franc & Mádlová, 2013*).

Language remained one of the central problems of international connection. Czech was essential for the republic's cultural identity and for the consolidation of a national scholarly public, but it was not enough for international visibility. German remained highly important in Central European scholarship, despite the political tensions that followed the collapse of Austria-Hungary and the reorganisation of Czech-German relations. French retained diplomatic and cultural prestige and remained significant in many areas of European intellectual life. English was rising in importance, though it had not yet acquired the

overwhelming dominance it would later possess. Latin survived in particular scholarly and terminological contexts, especially in historical, legal, biological, and philological work. Czech scholars therefore had to operate in a multilingual world, and the Academy had to support a culture capable of crossing linguistic borders. This was not merely a practical issue; it affected the reception of Czech science. Work that remained inaccessible linguistically risked remaining invisible, however strong it was. The Academy's international role therefore required not only scholarship, but linguistic mediation (*Gordin, 2015*; *Franc, Kostlán, & Míšková, 2010*; *Sayer, 1998*).

The relationship with French intellectual culture had particular importance in the First Republic. France was one of Czechoslovakia's major diplomatic partners, and French culture had long carried prestige in European learned and political life. Czechoslovak foreign policy, military alliances, university exchanges, and cultural diplomacy all strengthened the French connection. For Czech science and scholarship, French offered a route into international recognition that was not dependent on German Central Europe. This mattered after 1918 because Czech institutions wished to present themselves as part of a democratic and Western-oriented Europe. French scholarly contacts, publications, and academic models helped support that orientation. Yet the French connection should not be exaggerated into an exclusive dependence. Czech science remained connected with German, Austrian, British, Italian, Polish, Russian, and other scholarly environments. The strength of interwar internationalisation lay in plurality rather than in a single foreign orientation. The Academy's task was to help Czech scholarship move confidently among these different worlds (*Agnew, 2004*; *Orzoff, 2009*; *Gordin, 2015*).

German-language science remained both indispensable and politically sensitive. Many Czech scholars had been trained through German-language literature, universities, and scholarly practices, and German remained a major language of Central European research. At the same time, the First Republic was marked by tensions between Czech and German political communities, and the international relations of scholarship could not be fully separated from this context. The Academy represented Czech scholarly emancipation, but it could not ignore the intellectual weight of German science. Czech researchers continued to read German journals, correspond with German-speaking scholars, use German reference works, and participate in fields shaped by German academic traditions. The challenge was to maintain scientific connection without accepting older hierarchies of cultural subordination. This was one of the most delicate achievements of interwar Czech scholarship. It had to be national without being closed, independent without being provincial, and European without losing its Czech voice. ČAVU's international links helped mediate this difficult balance (*Agnew, 2004*; *King, 2002*; *Sayer, 1998*).

Relations with neighbouring scholarly cultures also mattered. Poland, Austria, Germany, Hungary, Yugoslavia, and other Central European and East-Central European countries formed a regional environment in which historical experience, language politics, minority questions, and academic structures often overlapped. Czechoslovak science had to position itself within this region as well as within Western European and global networks. Prague could aspire to be a major Central European intellectual centre, but that aspiration required active exchange with neighbouring countries. Comparative history, Slavic studies, archaeology, law, linguistics, geography, medicine, and technical sciences all benefited from regional communication. Such relations were sometimes cooperative and sometimes politically strained. Border disputes, minority issues, and ideological differences could affect scholarly contacts. Yet the very

complexity of Central Europe made comparative scholarship necessary. The Academy's international links therefore had a regional dimension that should not be overshadowed by contacts with Paris, London, or other larger Western centres. Czech science became international not only by looking westward, but by working within its own complicated neighbourhood (*Agnew, 2004*; *Kárník, 2000*; *Franc, Kostlán, & Míšková, 2010*).

International links also involved the arts and letters. Since ČAVU included sciences, literature, and arts, its foreign connections were not restricted to laboratory or archival scholarship. Literary translation, artistic exhibitions, musical performance, art-historical scholarship, and aesthetic criticism all contributed to the republic's cultural visibility. Czech modernism, architecture, music, literature, and visual arts participated in European debates and helped define Czechoslovakia as a culturally creative state. The Academy's prizes, memberships, and recognition in the arts therefore had international implications. They helped identify which works and figures represented Czech culture at its highest level. Yet art, like science, had to be judged by more than national sentiment. International visibility required quality, originality, and the ability to enter comparative aesthetic conversations. The Academy's broad mission therefore helped connect scholarly and artistic internationalisation. It preserved the 19th-century Czech idea that science and art together formed national intellectual maturity, while placing that maturity in the outward-looking environment of the First Republic (*Ústav dějin umění AV ČR, 2015*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The Academy's internationalism was also shaped by the republic's internal diversity. Czechoslovakia was not a culturally homogeneous state, and its scientific representation was complicated by Czech, Slovak, German, Hungarian, Jewish, Ruthenian, and other intellectual communities. ČAVU was historically a Czech institution, yet it operated in a state that claimed a broader Czechoslovak identity. This gave its international role both strength and limitation. It could present the mature institutional tradition of Czech scholarship, but it could not fully embody all scholarly communities within the republic. Slovak scholarly development had a different institutional history and required its own forms of growth after 1918. German-language scholarship within the republic also remained significant, though politically contested. The Academy's international links therefore sometimes represented Czechoslovak science through a predominantly Czech institutional lens. This does not diminish its importance, but it complicates interpretation. A careful history must recognise both the usefulness of ČAVU for state representation and the asymmetries built into that representation (*Agnew, 2004*; *Kárník, 2000*; *Dvořáčková, Franc, & kol., 2019*).

International cooperation strengthened the Academy's national mission rather than weakening it. For a national scientific institution, foreign links are sometimes imagined as a threat to cultural specificity. In the Czech case, the opposite was usually true. International recognition made Czech scholarship more credible at home because it showed that the national language and national research tradition could enter wider systems of judgement. A Czech historian, chemist, mathematician, physician, linguist, or artist who received foreign attention became evidence that Czech intellectual life was not provincial. The Academy's foreign relations therefore supported the very national maturity that it had been founded to express. This is an important point because it prevents a false opposition between national science and universal science. ČAVU's interwar task was not to choose between them. It was to make Czech scholarly work serious enough to matter beyond the nation and rooted enough to serve the nation. Internationalisation was therefore a means of deepening, not dissolving, the Academy's Czech mission (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Gordin, 2015*).

At the same time, international links exposed Czech science to comparison, and comparison could be uncomfortable. It revealed uneven resources, gaps in laboratory infrastructure, limitations of publication reach, and the small scale of certain research communities. A newly established state could not instantly match the scientific capacities of France, Germany, Britain, or the United States. The Academy therefore had to combine ambition with realism. Its international work was partly about demonstrating excellence, but also partly about learning from stronger research systems. This learning involved methods, organisation, instrumentation, funding models, disciplinary standards, and publication practices. Internationalism was therefore not only a stage on which Czech science displayed itself. It was also a school in which Czech science observed how research was organised elsewhere. The Academy's value lay in helping to absorb these lessons without reducing Czech scholarship to imitation. It allowed foreign standards to enter domestic debate while preserving continuity with Czech intellectual traditions (*McClellan, 1985*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

The interwar period also demonstrated that international science was not immune to politics. The intellectual optimism of the 1920s coexisted with exclusions, post-war resentments, national rivalries, and uneven access to international organisations. The rise of authoritarian regimes in the 1930s increasingly threatened the liberal and cooperative assumptions of academic internationalism. Scholars could become refugees, institutions could be politicised, and scientific communication could be disrupted by ideology and state pressure. Czechoslovakia's own security situation deteriorated sharply as Nazi Germany grew more aggressive. In this context, the Academy's international links acquired an additional significance. They were not only channels of prestige, but potential lines of solidarity, information, and scholarly refuge. Yet they were also vulnerable. International recognition could not protect Czech institutions from the political disasters that followed Munich and occupation. The limits of interwar academic internationalism would become painfully clear in the next historical phase. Nevertheless, the networks built before the crisis remained part of the scholarly memory that survived it (*Agnew, 2004*; *Orzoff, 2009*; *Míšková, Barvíková, & Šmidák, 1998*).

The 1930s therefore changed the emotional tone of scientific internationalism. What had seemed in the 1920s to be an expression of republican confidence increasingly became a fragile defence of intellectual civilisation. Czech science still participated in international exchange, but the surrounding world was less stable. Political radicalisation, economic crisis, anti-democratic movements, and the persecution of scholars in neighbouring countries altered the meaning of academic cooperation. For Czech institutions, foreign contacts could confirm belonging to democratic Europe, but they could not remove geopolitical vulnerability. The Academy's international links thus acquired a tragic retrospect. They show how deeply Czech scholarship wished to belong to the European republic of knowledge, and how little that belonging could protect the republic when political violence advanced. This does not make the interwar links insignificant. It makes them historically more poignant. They represent a real effort to make science a language of cooperation in an age that was moving towards coercion and war (*Kárník, 2000*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

The foreign relations of Czech science also helped create personal trajectories that would matter after the collapse of the First Republic. Scholars who had studied abroad, corresponded internationally, or participated in foreign congresses possessed networks that could later support exile, publication, or post-war reconstruction. International experience

became a form of intellectual capital that could survive political rupture. This was especially important for those who left Czechoslovakia during periods of danger or after later political transformations. The history of Czech scholars in exile demonstrates how international networks could preserve intellectual continuity when domestic institutions were damaged. Although the major waves of exile belong especially to later moments, the interwar republic helped create habits of international orientation that made such continuity possible. The Academy's foreign connections therefore had long-term consequences beyond the interwar decades themselves. They contributed to the resilience of Czech scholarship by connecting it with institutions, colleagues, and audiences outside the country. Internationalism was not only expansion; it was also insurance against isolation and catastrophe (*Štrbáňová & Kostlán, 2011*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The international links of the Academy were closely tied to its archival and documentary memory. Correspondence with foreign institutions, membership records, publication exchanges, reports, travel grants, and congress participation all left traces in institutional archives. These traces are historically valuable because they allow the historian to reconstruct not only formal affiliations, but the actual practices of scholarly contact. They show how international science was made through letters, lists, minutes, accounts, invitations, acknowledgements, and printed exchanges. Such documents may look administrative, but they reveal the everyday machinery of academic internationalism. They also show that foreign relations were not occasional ornaments added to domestic science. They were built into the routine work of an academy. The preservation of these records by archival institutions is therefore essential for understanding the Academy's interwar history. Without them, internationalisation would appear only as a set of famous names or congresses. With them, it becomes a concrete institutional practice (*Masarykův ústav a Archiv AV ČR, n.d.*; *Česká akademie věd a umění, 1890–1952*; *Franc & Mádlová, 2013*).

The Academy's interwar international role also needs to be placed in the longer genealogy of Czech academic institutions. The Royal Czech Society of Sciences had already connected Prague with European learned culture in the 18th and 19th centuries. The Czech Academy of Sciences and Arts transformed that older learned internationalism into a more national and representative form. The First Republic then inserted it into the framework of state diplomacy and formal international scientific organisation. Later, the Czechoslovak Academy of Sciences would inherit and radically reorganise these functions under socialist conditions, where international relations were shaped by the Soviet bloc, ideological restrictions, and selective access to Western science. The modern Czech Academy of Sciences after 1993 would again reinterpret internationalisation through European integration, global publication standards, and competitive research evaluation. The interwar period therefore stands between older learned cosmopolitanism and later state-organised scientific internationalism. It was neither purely private nor fully bureaucratic. It was a republican model of international scholarly representation, rooted in national culture but open to European comparison (*Akademie věd České republiky, n.d.*; *Franc & Mádlová, 2013*; *Dvořáčková, Franc, & kol., 2019*).

The deeper meaning of interwar internationalisation lies in the way it changed the self-image of Czech science. Before 1918, Czech scholarship often had to prove that it deserved equality within an imperial and multilingual environment. After 1918, it had to prove that it could responsibly represent a state. This was a different burden. It demanded maturity, organisation, and external credibility. The Academy's foreign links helped Czech science move from the position of cultural assertion to the position of institutional representation. This did not mean

that national questions disappeared. Language, identity, Czech-German relations, Czech-Slovak asymmetries, and historical legitimacy remained central. Yet these questions were now placed within a broader international arena. The Academy had to show that Czech scholarship could be both national and European, both culturally rooted and methodologically serious, both independent and cooperative. That task defined much of its interwar significance. It also explains why the Academy's international contacts should be treated as central to its history rather than as an appendix to domestic development (*Agnew, 2004*; *Orzoff, 2009*; *Mádlová, 2024*).

Thus, the international links of Czech science in the interwar period transformed ČAVU from a national learned institution into one of the chief vehicles of Czechoslovak scholarly representation. Its foreign members, publication exchanges, congress participation, grants, travel support, contacts with international organisations, and cooperation with universities and specialised institutes helped insert Czech science into the post-war European academic order. These links strengthened the Academy's national mission because they allowed Czech scholarship to be tested, recognised, and compared beyond domestic circles. They also helped the First Republic present itself as a democratic and intellectually mature state, capable of contributing to universal science while preserving its own language, culture, and historical memory. Yet internationalisation was never simple. It depended on multilingual competence, uneven resources, disciplinary differences, political alliances, and the fragile international order of the 1920s and 1930s. It also reflected the asymmetries of Czechoslovakia itself, where a historically Czech academy helped represent a broader and internally diverse state. The achievement of ČAVU lay in its ability to turn older Czech learned traditions into instruments of modern international visibility. The tragedy of the period lay in the fact that this international scholarly world could not prevent the political catastrophe that soon threatened Czech academic autonomy. Nevertheless, the interwar networks, standards, publications, and personal contacts created a legacy that later helped preserve Czech scientific memory through occupation, post-war reconstruction, socialist transformation, exile, and eventual democratic renewal.

War, Occupation, and the Crisis of Academic Autonomy

1. Czech Science under the Protectorate

The German occupation of the Czech lands in March 1939 transformed the conditions of Czech science more violently than any previous institutional reform, political disagreement, or financial crisis had done. The Protectorate of Bohemia and Moravia was not merely a new administrative framework imposed after the destruction of Czechoslovakia; it was a regime of constrained existence in which Czech public life survived only under German sovereignty, surveillance, censorship, and coercive power. Scientific institutions, universities, museums, libraries, archives, and learned societies did not all disappear, but none of them could operate as fully autonomous bodies. The Czech Academy of Sciences and Arts entered this period carrying the prestige accumulated during the national revival, the late Habsburg decades, and

the First Czechoslovak Republic. Yet the meaning of that prestige changed immediately when the political order that had sustained republican scholarship collapsed. The Academy could no longer represent a confident democratic state, nor could it freely cultivate international scholarly exchange as it had done during the interwar period. Its work had to be conducted under the shadow of occupation, in a society where public speech, publication, travel, personnel policy, and institutional memory were exposed to political control. Czech science under the Protectorate therefore cannot be described simply as a story of interruption or continuity. It was both: a catastrophic interruption of autonomy and a difficult preservation of scholarly life inside damaged institutions. This duality makes the Protectorate one of the most important moments in the history of Czech academic culture. It exposed how dependent science is on political freedom, but also how much intellectual continuity can survive when institutions are forced into defensive, restricted, and morally ambiguous forms of existence (*Agnew, 2004*; *Bryant, 2007*; *Mádlová, 2024*).

The establishment of the Protectorate followed the Munich crisis, the loss of the borderlands, the weakening of the Second Republic, and the final German occupation of Bohemia and Moravia. For Czech scholarly institutions, this sequence was psychologically devastating because it turned the confident interwar world into a landscape of defeat, dependency, and fear. The First Republic had treated education, culture, and science as pillars of democratic statehood, but the Protectorate reduced them to tolerated functions inside an occupied order. German authority did not need to abolish every Czech institution in order to break autonomy. It could leave institutional shells in place while controlling their conditions of operation. This was particularly effective in the cultural and scientific sphere because continuity itself could become ambiguous. A meeting, a publication, a lecture, or an award could seem to preserve Czech intellectual life, but it also took place under a regime that defined the limits of what could be said and done. The Czech Academy of Sciences and Arts therefore found itself in a position very different from that of the First Republic. It had to decide how to maintain scholarly work without giving the appearance of normality to an abnormal political order. This was not an abstract ethical problem, but a practical daily reality. Every institution that survived under the Protectorate had to negotiate the boundary between preservation and accommodation. Czech science entered a period in which survival itself became a form of institutional strategy (*Bryant, 2007*; *Kárník, 2002*; *Gebhart & Kuklík, 2006*).

The most dramatic blow to Czech academic life came with the closing of Czech universities after the demonstrations of autumn 1939 and the repressions of 17 November. The funeral of Jan Opletal and the student protests that followed became a turning point because they revealed that the occupation regime regarded Czech universities not merely as educational institutions, but as potential centres of national mobilisation. The German response was deliberately terroristic: Czech higher education was closed, student leaders were executed, and large numbers of students were sent to concentration camps. The closure was announced as temporary, but in practice Czech universities remained closed for the rest of the occupation. This action attacked the entire reproductive mechanism of Czech scholarship. It deprived students of education, young researchers of academic careers, professors of their teaching function, and the nation of one of its main institutions of intellectual continuity. Charles University, which had been one of the oldest symbols of Czech and Central European learning, could no longer operate as a Czech university in the ordinary sense. The consequences were not limited to classrooms. Laboratories, seminars, clinics, libraries, and research communities were disrupted, dispersed, or subordinated to new controls. The university

closure also changed the relative importance of non-university institutions, including the Academy, museums, archives, professional societies, and specialised offices. They became some of the few remaining places where fragments of Czech scholarly life could still continue, although under severe constraint (*Connelly, 2000*; *Bryant, 2007*; *Charles University, n.d.*).

The suppression of Czech universities created a deep institutional wound because universities had been the primary sites for training future scholars. The Academy could recognise distinction, publish research, support projects, and preserve learned memory, but it could not fully replace the university's formative function. No academy could reproduce the ordinary pedagogical life of lectures, seminars, examinations, doctoral supervision, laboratory practice, clinical instruction, and faculty debate. The loss of university teaching therefore created a generational break in Czech science. Students who should have entered academic careers were forced into labour, private study, clandestine education, exile, imprisonment, or professional redirection. Younger assistants and early-career scholars lost institutional pathways at the very moment when they should have been forming research identities. Senior scholars were deprived of pupils and seminars, which weakened the transmission of methods and disciplines. This mattered especially in fields dependent on long apprenticeship, such as medicine, experimental science, philology, history, law, and technical disciplines. A discipline is not sustained only by books and archives; it is sustained by the living movement from teacher to student. The occupation interrupted that movement. The Academy's wartime role must therefore be seen against this background: it preserved certain forms of learned continuity, but it could not repair the full damage caused by the destruction of Czech university life (*Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Connelly, 2000*; *Franc & Mádlová, 2013*).

The asymmetry between Czech and German academic institutions under the Protectorate was one of the most visible signs of occupied intellectual life. Czech universities were closed, while German-language higher education and German scholarly structures were favoured, protected, or reorganised in accordance with Reich interests. This did not simply mean that one language gained institutional advantage over another. It meant that academic space itself became an instrument of political hierarchy. German science in Prague could operate within a privileged order, while Czech science was deprived of its normal educational foundations. This asymmetry had deep symbolic meaning because Prague had long been a multilingual scholarly city where Czech and German academic cultures had coexisted, competed, and interacted. Under the Protectorate, that historical complexity was replaced by a coercive racial and political hierarchy. German institutional presence no longer functioned as one part of a plural scholarly landscape; it became part of the apparatus of domination. Czech scholars could not interpret this as ordinary academic competition. It was the conversion of intellectual geography into occupation policy. The Czech Academy of Sciences and Arts, as a Czech learned institution, therefore carried a symbolic burden far greater than before. Its continued existence reminded society that Czech scholarly authority had not been entirely erased, even though the university basis of that authority had been violently broken (*Agnew, 2004*; *King, 2002*; *Bryant, 2007*).

The Academy itself was not abolished, and this fact is historically important. Its survival, however, should not be mistaken for institutional freedom. The occupation regime often preserved selected Czech cultural institutions because complete destruction could have been administratively inconvenient and politically destabilising. Keeping certain institutions alive allowed the regime to manage Czech society while limiting its autonomy. ČAVU could continue some activities, but within an environment shaped by censorship, supervision, personnel

restrictions, financial difficulty, and the general atmosphere of fear. The Academy's older functions — meetings, publications, prizes, scholarly recognition, and support of research — had to be adapted to wartime conditions. Its public visibility could not carry the same meaning as during the First Republic. Every act of continuity now had a defensive character. To publish a scholarly work, maintain a committee, preserve a library, or support a long-term project meant keeping fragments of Czech intellectual infrastructure alive until better conditions might return. This was a modest but significant form of resistance through preservation, although it should not be romanticised as open defiance. The Academy's wartime existence was marked by constraint, compromise, and a constant narrowing of possibilities (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Česká akademie věd a umění, 1890–1952*).

Nazi occupation policy toward Czech science combined repression, instrumental tolerance, ideological suspicion, and pragmatic exploitation. The regime did not treat all fields in the same way. Disciplines connected with national memory, language, history, law, and public identity were politically dangerous because they could nourish Czech collective consciousness. Universities were especially dangerous because students could become politically active and professors could retain moral authority. Technical, industrial, medical, and applied fields could be useful to the war economy, but they too were controlled and redirected. This uneven policy created different wartime experiences across disciplines. A historian or philologist might be constrained by censorship and fear of national interpretation, while a technician or chemist might face pressure to serve production needs. A physician might continue certain forms of professional work while medical education remained damaged. A librarian or archivist might preserve materials quietly while public scholarly interpretation became restricted. The Academy's broad structure exposed it to all these tensions. Its identity as an institution of sciences, letters, and arts meant that it could not retreat into a single safe field. It had to preserve both technical competence and cultural memory under a regime hostile to the independent existence of Czech intellectual life (*Bryant, 2007*; *Gebhart & Kuklík, 2006*; *Mádlová, 2024*).

Censorship was one of the most pervasive mechanisms through which academic autonomy was weakened. In an occupied society, censorship does not operate only by forbidding particular books or statements. It changes the atmosphere in which scholars write, editors decide, publishers risk, and institutions choose topics. It produces self-censorship, cautious language, avoidance of politically sensitive subjects, and the narrowing of public debate. For Czech science, censorship affected especially the humanities and social sciences, but no field was entirely outside its influence. Historical interpretation, Czech-German relations, democratic traditions, statehood, national revival, modern politics, Jewish history, Slavic studies, and contemporary social analysis could all become dangerous. Scientific publications might still appear, but the range of permissible meanings was reduced. Even a seemingly technical or antiquarian topic could carry national implications. The Academy's publication activity therefore had to be conducted with care. The older interwar confidence that scholarship could participate openly in public life was replaced by a defensive editorial culture. Academic prose under censorship often becomes indirect, archival, technical, or deliberately restrained. Such restraint helped preserve scholarship, but it also marked the loss of the free argumentative space that had characterised democratic academic culture (*Bryant, 2007*; *Kárník, 2002*; *Franc & Mádlová, 2013*).

The persecution of Jewish scholars and the racialisation of public life constituted one of the deepest moral and intellectual catastrophes of the Protectorate. Czech science had

developed within a multilingual and multicultural Central European environment in which Jewish scholars, physicians, lawyers, writers, scientists, and public intellectuals had played significant roles. Nazi racial policy destroyed that world with systematic violence. Jewish academics were excluded, dispossessed, deported, murdered, forced into hiding, or driven into exile. Their removal was not only a human tragedy, but also an attack on the intellectual fabric of Czech and Central European scholarship. Disciplines lost teachers, colleagues, editors, physicians, researchers, and students. Libraries, collections, and institutions lost the contributions of people whose intellectual identities had often crossed Czech, German, Jewish, and broader European cultures. The Academy and related scholarly institutions operated in a society where racial exclusion had become a compulsory principle of public life. Even when an institution tried to preserve its own continuity, it could not escape the moral damage produced by the removal of colleagues. The history of Czech science under the Protectorate must therefore include not only institutional survival, but also the violent destruction of intellectual plurality. Any account that speaks only of Czech national suffering without recognising the specific destruction of Jewish scholarly life would be incomplete (*Bryant, 2007*; *Čapková, 2012*; *Heimann, 2009*).

Political repression extended beyond racial persecution. Scholars, students, writers, teachers, physicians, clergy, and public intellectuals could be arrested, interrogated, imprisoned, executed, or sent to concentration camps because of resistance, suspected disloyalty, earlier republican commitments, or symbolic public influence. The occupation regime understood that intellectuals could serve as carriers of national memory and moral authority. This made them dangerous even when they were not actively engaged in organised resistance. The execution of student representatives in November 1939 was an early demonstration of this logic. Later waves of repression, especially during the period associated with Reinhard Heydrich and after his assassination, intensified the atmosphere of terror. Academic institutions therefore existed in a society where any visible national or democratic symbolism could become risky. Many scholars responded by withdrawing into specialised work, private study, technical tasks, or archival preservation. Others joined resistance networks, supported students, helped persecuted colleagues, or maintained contact with exile circles. Still others adapted passively or actively to the occupation order. The Protectorate thus created a fragmented moral landscape in which scholarship, fear, survival, opportunism, and resistance could coexist within the same institutional world (*Bryant, 2007*; *Gebhart & Kuklík, 2006*; *Frommer, 2005*).

International contacts, which had been one of the strengths of interwar Czech science, were sharply restricted under the Protectorate. Scientific travel, correspondence, publication exchange, participation in congresses, and membership in international organisations could no longer function freely. War conditions, censorship, diplomatic isolation, occupation control, and the broader reorganisation of Europe under Nazi power all weakened the international horizon of Czech scholarship. This isolation was especially painful because interwar Czech science had worked hard to present itself as both national and European. The Academy's earlier international links had helped place Czech scholarship within the wider republic of knowledge. Under the Protectorate, those connections were narrowed, monitored, or broken. Foreign literature became harder to obtain, especially from countries at war with Germany or outside the permitted sphere. Personal contacts with Western scholars became risky or impossible. Exiled Czech scholars could continue international work abroad, but their relation to domestic institutions became fragile and often indirect. The Academy's domestic

survival therefore came at the price of international immobility. Czech science was forced back into a constrained national space at precisely the moment when modern research increasingly depended on international exchange (*Gordin, 2015*; *Orzoff, 2009*; *Štrbáňová & Kostlán, 2011*).

The natural and technical sciences experienced the Protectorate in a particularly ambiguous way. On one hand, the closure of Czech universities and restrictions on autonomous research damaged laboratories, careers, teaching, and disciplinary reproduction. On the other hand, the German war economy required technical expertise, industrial production, medicine, chemistry, engineering, and applied knowledge. Czech lands possessed an advanced industrial base, and the occupation regime was interested in using it. This meant that some forms of technical and applied work could continue, but under conditions that linked them to German military and economic priorities. Such continuation did not equal freedom. It often placed scientists, engineers, and technicians in situations where professional competence was useful to an oppressive regime. Some scholars may have tried to preserve expertise by working within permitted spaces; others may have been drawn into collaboration, compulsion, or morally compromised production. The Academy's relationship to these fields was shaped by this ambiguity. It could value technical science as part of national intellectual capacity, but the wartime meaning of technical work was no longer innocent. Science under occupation had to confront the fact that knowledge can be preserved, exploited, and morally damaged at the same time (*Bryant, 2007*; *Gebhart & Kuklík, 2006*; *Dvořáčková, Franc, & kol., 2019*).

The humanities faced a different but equally severe danger. Historical scholarship, philology, archaeology, literary studies, art history, philosophy, and legal studies had all contributed to the formation of Czech national identity before 1918 and during the First Republic. Under the Protectorate, precisely this relationship between scholarship and national memory became politically sensitive. The occupation regime could tolerate certain antiquarian, technical, or depoliticised forms of research, but it was hostile to interpretations that strengthened Czech state tradition, democratic memory, or cultural autonomy. Scholars therefore had to guard language, sources, archives, dictionaries, editions, and historical knowledge under conditions in which public interpretation was constrained. The Academy's older mission as an institution of sciences and arts became especially significant here. It helped preserve the idea that Czech culture was a scholarly object with its own dignity, even when political sovereignty had been destroyed. Yet the Academy could not openly perform the same national-representative role it had performed during the First Republic. Its humanistic work often had to become quieter, more technical, and more archival. This did not make it unimportant. On the contrary, the preservation of philological and historical competence during occupation was one of the conditions for post-war intellectual recovery (*Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*; *Sayer, 1998*).

Archives, libraries, museums, and collections became crucial sites of scholarly survival. When universities were closed and public speech was constrained, documentary institutions could still preserve materials for a future that could not yet be named. A library catalogue, an archive inventory, a museum collection, or a manuscript edition may seem modest compared with open intellectual debate. Under occupation, however, such work could become a means of protecting cultural continuity. The Academy's library and documentary connections belonged to this wider ecology of preservation. So did the archives and libraries associated with universities, museums, learned societies, and state offices. These institutions were vulnerable to censorship, seizure, staffing changes, war damage, and ideological misuse, but they also provided spaces where scholarly labour could continue in less visible forms. Preservation was

not passive. It required decisions about cataloguing, storage, access, concealment, conservation, and institutional responsibility. The survival of Czech scientific memory depended partly on such quiet work. Later historians often rely on precisely the records that survived because archivists, librarians, museum workers, and scholars treated preservation as a duty during the years of occupation (*Podaný, 2001*; *Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

The Academy's role as a symbolic refuge for Czech scholarship should be understood carefully. It was not a refuge in the full sense, because it could not protect all scholars, restore universities, or guarantee safety from repression. Yet it could preserve forms of recognition, memory, and continuity that mattered deeply in a society where the normal structures of intellectual life had been damaged. A Czech scholar deprived of university teaching might still belong to a learned community through academy membership, committee work, publication, correspondence, or archival projects. A long-term dictionary, edition, scientific catalogue, or bibliographical enterprise could continue as evidence that Czech scholarship had not been reduced to silence. Academy buildings, meetings, and publications could carry symbolic meaning even when their public language had to be restrained. This symbolic value is difficult to measure, but it was historically real. Institutions often matter most when their functions are reduced because their very survival communicates continuity. The Academy represented the memory of a learned nation that had existed before the occupation and that might exist again after it. In this sense, ČAVU helped preserve not only knowledge, but the expectation that Czech scholarship would return to freer public life (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Česká akademie věd a umění, 1890–1952*).

The practical conditions of academic work under the Protectorate were extremely difficult. Wartime shortages affected paper, printing, travel, heating, salaries, equipment, and access to foreign literature. Meetings could be limited by regulations, surveillance, transport difficulties, illness, or fear. Publication delays and censorship reduced the normal rhythm of scholarly communication. Younger researchers struggled to find institutional support because universities were closed and career pathways were blocked. Senior scholars had to decide how much public visibility was safe or useful. Libraries and archives operated under pressure, with personnel changes, administrative demands, and material scarcity. Even when an institution was not directly attacked, the general degradation of public life affected every part of its work. Science depends on routines, and occupation disrupted routines at every level. The Academy's ability to continue any scholarly functions therefore required a great deal of administrative endurance. This practical dimension should not be overlooked. Academic survival under occupation was not only a matter of heroic gestures; it was also the daily labour of keeping offices, manuscripts, catalogues, finances, correspondence, and publications alive in a society organised by coercion and scarcity (*Bryant, 2007*; *Mádlová, 2024*; *Podaný, 2001*).

Scholars responded to occupation in different ways, and any serious history must avoid simplifying them into a single moral category. Some entered resistance, some were persecuted, some withdrew into private or technical work, some tried to protect students and colleagues, some maintained institutions through compromise, and some collaborated with the occupation order. The moral complexity of the Protectorate cannot be erased without losing historical truth. Academic life under dictatorship often produces grey zones because institutions require signatures, permissions, budgets, and negotiations even when the political authority is illegitimate. A scholar who remains in office may preserve an archive or protect staff, but may also be required to obey humiliating regulations. A scholar who refuses

cooperation may preserve moral clarity, but lose the capacity to protect an institution. A scholar who adapts too far may become complicit. The Academy and other Czech scholarly institutions existed within these tensions. Their history should therefore be written neither as pure resistance nor as pure accommodation. It should be written as a history of constrained agency, in which intellectuals tried, with different degrees of courage and failure, to protect knowledge under conditions designed to break autonomy (*Frommer, 2005*; *Bryant, 2007*; *Heimann, 2009*).

Exile added another dimension to Czech science under the Protectorate. Scholars who left Czechoslovakia before or during the occupation could maintain foreign contacts, publish abroad, participate in political and cultural work, and preserve the image of Czech scholarship in democratic countries. Exile scholarship did not replace domestic institutions, but it complemented them in a crucial way. Inside the Protectorate, scholars often faced silence, censorship, or restricted technical work. Abroad, Czech intellectuals could speak more openly about the destruction of Czechoslovakia, the meaning of Czech culture, and the crimes of Nazism. They could also maintain international networks that would later be important for post-war reconstruction. Yet exile was also a form of rupture. Scholars abroad were separated from archives, pupils, institutions, families, and the everyday life of Czech research. Their relationship with domestic institutions such as the Academy was often interrupted or mediated by political circumstances. The exile and domestic dimensions of Czech science therefore formed two incomplete halves of a damaged scholarly world. Both were necessary for continuity: domestic institutions preserved material and local memory, while exile networks preserved international visibility and free speech (*Štrbáňová & Kostlán, 2011*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

The period of Reinhard Heydrich's rule and the repressions following his assassination intensified the crisis of Czech public and intellectual life. Heydrich's policy combined terror with administrative calculation, seeking both to crush resistance and to mobilise Czech labour for the Reich. The consequences for scientific and cultural institutions were severe because fear became even more pervasive. Arrests, executions, collective punishments, and expanded surveillance shaped the atmosphere in which scholars worked. The destruction of Lidice and Ležáky showed that the regime was willing to make exemplary violence central to its rule. In such an environment, academic autonomy was not merely restricted; it became almost unreal as a public principle. Scholars could continue certain tasks, but their work took place inside a society marked by existential danger. The Academy's restrained continuity must be read against this atmosphere. To hold a meeting or prepare a publication during such years was not a normal institutional act. It occurred within a moral landscape where speech, silence, and survival were all charged with danger. The Protectorate's later years therefore deepened the defensive character of Czech scholarly life (*Bryant, 2007*; *Gebhart & Kuklík, 2006*; *Kárník, 2002*).

The relationship between Czech scholarly institutions and Protectorate administration was inevitably complicated. Czech officials continued to work in many offices, but under German supervision and within a structure of limited autonomy. Scientific institutions had to interact with administrative bodies for budgets, permissions, publications, personnel matters, and building maintenance. This did not mean that they freely recognised the legitimacy of the regime, but it did mean that institutional survival required bureaucratic contact. The Academy, like museums, libraries, archives, and other learned bodies, had to navigate this administrative terrain. Such navigation could involve requests, delays, tactical language, formal compliance, and attempts to protect institutional interests without provoking intervention. The historian

must take this bureaucracy seriously because dictatorship often functions through forms, stamps, approvals, and regulations as much as through spectacular violence. Academic autonomy is damaged not only when police arrest scholars, but also when administrators decide what may be printed, who may be employed, where funds may go, and which activities require permission. The Protectorate reduced Czech science through both terror and paperwork. ČAVU's wartime existence was shaped by this double pressure (*Bryant, 2007*; *Mádlová, 2024*; *Česká akademie věd a umění, 1890–1952*).

The Protectorate years also revealed the fragility of the interwar ideal of science as a public good. During the First Republic, science had been linked with democracy, cultural maturity, education, and international cooperation. Under occupation, the same knowledge could be censored, instrumentalised, racialised, or cut off from its public. Scientific institutions were forced to ask what remained of their mission when the state no longer represented their values. For the Academy, this question was especially acute because its earlier role had been tied to Czech national emancipation and republican public life. Under the Protectorate, open national representation was dangerous, and republican values were suppressed. The Academy's mission therefore contracted towards preservation. This contraction was not failure; it was a historically forced adaptation. Yet it changed the nature of academic work. Research became less public, less international, and less confident. The Academy's wartime role shows that when political freedom collapses, the academy may survive as a repository of memory before it can again become a full institution of public science (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Agnew, 2004*).

The distinction between institutional continuity and moral continuity is important here. An institution may continue to exist legally or administratively, but its moral and intellectual meaning may be damaged. ČAVU survived the Protectorate, but the society around it was transformed by repression, exclusion, fear, and loss. The Academy's continuity therefore cannot be celebrated in a simple way. It continued under circumstances in which some members or associated scholars were persecuted, some fields were censored, and the normal development of younger generations was blocked. Yet it also preserved knowledge, records, publications, and forms of association that would matter after liberation. The same institution could therefore be both compromised by circumstances and valuable as a carrier of memory. This is a central problem in the history of science under authoritarian rule. To condemn all institutional survival as collaboration is too simple. To celebrate survival without recognising compromise is equally false. The Protectorate forces the historian to hold both truths together: Czech scholarly institutions were damaged by their constrained existence, and their constrained existence helped prevent complete rupture (*Frommer, 2005*; *Bryant, 2007*; *Franc & Mádlová, 2013*).

The generation of students excluded from universities after 1939 represents one of the most painful consequences of occupation for Czech science. Some students were imprisoned; others were forced into labour; many lost years of education; some continued private study or informal learning; some joined resistance; some never returned to academic life. This was not only an individual tragedy, but a structural loss. Science depends on generational succession, and the Protectorate interrupted that succession at a crucial stage. The Academy could preserve mature scholarship, but it could not produce a normal cohort of new researchers without universities. This created problems that would persist after the war, when institutions had to absorb delayed students, returning prisoners, older interrupted careers, and urgent demands for reconstruction. The war thus compressed and distorted academic time. Young

people who should have advanced gradually through education entered post-war life with traumatic gaps. Older scholars who should have trained successors had lost years of teaching. The Academy's post-war environment would therefore be shaped by the educational destruction of the Protectorate. The closure of universities was not a temporary administrative measure; it was an attack on the future of Czech science (*Connelly, 2000*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Bryant, 2007*).

The ethical meaning of scholarship changed under occupation because truth itself became politically charged. In a democratic academic environment, the scholar's duty to evidence, criticism, and intellectual honesty is difficult but institutionally supported. Under dictatorship and occupation, the same duty may place the scholar in danger or become impossible to fulfil publicly. Historical truth about the Czech nation, legal truth about statehood, social truth about occupation, medical truth about racial policy, and political truth about violence could not be freely spoken. Even natural science could be drawn into ideological misuse or wartime exploitation. Scholars therefore had to ask what kind of truth could be preserved when it could not be openly declared. Some turned to archival work, source editing, private teaching, technical competence, or personal notes. Others used indirect language, metaphor, or narrow specialisation to keep scholarly standards alive. The Academy's preservation of publications and records belonged to this ethics of delayed truth. It maintained the materials and habits that would allow freer scholarship to resume later. Under the Protectorate, academic integrity often meant protecting the conditions of future truth when present truth was censored (*Sayer, 1998*; *Bryant, 2007*; *Mádlová, 2024*).

The Protectorate also prepared the ground for post-war debates about reorganisation. By 1945, Czech science had suffered university closure, personnel losses, interrupted careers, damaged international contacts, material shortages, censorship, and moral compromise. Liberation could not simply restore the interwar system unchanged. The experience of occupation strengthened the desire to rebuild research capacity, protect national scholarly institutions, and reconsider how science should be organised in a modern state. At the same time, the war had shown the importance of technical expertise, state planning, and large-scale institutional coordination. These lessons would later be interpreted in different political ways. Democratic reconstruction and communist centralisation both drew, in part, on the perception that older institutional forms had been insufficient for the challenges of the 20th century. The Academy's wartime survival therefore became part of a larger post-war question: should Czech science return to the plural republican model, or should it be reorganised into a more centralised research system? The answer would not be settled immediately in 1945. It would unfold through post-war reforms, the changing role of universities, the transformation of research institutes, and ultimately the establishment of the Czechoslovak Academy of Sciences in 1952 (*Míšková, 2010*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Dvořáčková, Franc, & kol., 2019*).

The crisis of academic autonomy under the Protectorate was therefore not only a wartime episode. It changed the long-term trajectory of Czech scientific institutions. The interwar Academy had stood between national mission and universal science, between university scholarship and specialised research centres, between Czech cultural memory and international representation. Under occupation, all these balances were broken or distorted. National mission became dangerous, universal science became inaccessible or ideologically compromised, universities were closed, specialised research was redirected or restricted, and international representation was fragmented by war and exile. Yet the Academy and related

institutions preserved enough continuity for post-war reconstruction to begin from inherited structures rather than from emptiness. This is the paradox of the period. The occupation regime severely damaged Czech science, but it did not completely extinguish Czech scholarly memory. The Academy's survival made sense precisely because it carried that memory through a time in which open academic freedom had been impossible. Its later fate would be shaped by how post-war actors interpreted this inheritance. Some would see in it a reason to restore older traditions; others would see in it a reason to build a new model of organised science (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

Thus, Czech science under the Protectorate existed in a condition of damaged continuity, where institutional survival and academic autonomy no longer coincided. The closure of Czech universities destroyed the normal reproductive structure of scholarship and produced a generational rupture that the Academy could not repair by itself. Censorship, racial persecution, political repression, international isolation, material scarcity, and administrative supervision weakened every part of Czech intellectual life. At the same time, the Czech Academy of Sciences and Arts, together with libraries, archives, museums, specialised offices, and individual scholars, preserved fragments of scientific and cultural memory that later became essential for renewal. Its wartime role was neither heroic in a simple sense nor merely passive. It was a constrained form of guardianship, conducted under conditions that made normal scholarship impossible and open resistance dangerous. The Protectorate showed that science requires more than intelligence, publications, or institutions; it requires freedom, generational continuity, public trust, international communication, and protection from ideological violence. Yet it also showed that scholarly traditions can survive in reduced and defensive forms when institutions preserve records, methods, language, and the expectation of future recovery. For the history of the Czech Academy, the Protectorate was therefore a decisive crisis of autonomy and a severe test of institutional memory. The Academy emerged from the war damaged, morally burdened, and structurally challenged, but not erased. This damaged survival would shape the post-war reorganisation of Czech science and prepare the difficult transition from the older ČAVU tradition to the radically different model of ČSAV.

2. Restrictions, Repression, Survival, and Institutional Continuity

The restrictions imposed on Czech science during the Protectorate did not operate as a single act of destruction, but as a layered system of political pressure, administrative control, symbolic humiliation, personnel intervention, and everyday institutional narrowing. The closure of Czech universities was the most visible and traumatic measure, but it was only one part of a wider occupation order that gradually deprived Czech scholarly life of its normal conditions. Academic autonomy was weakened not only when lectures were prohibited or students arrested, but also when permissions were required, correspondence was monitored, travel became impossible, publications were censored, and institutional budgets were subjected to political control. The Czech Academy of Sciences and Arts survived as an institution, yet survival itself acquired a new and painful meaning. It no longer meant the free continuation of a learned tradition, but the preservation of fragments of scholarship under conditions of domination. The Academy had to operate in a world where open national representation was dangerous, international contact was restricted, and institutional decisions could be shaped by fear. Its work became defensive, archival, cautious, and often indirect. The distinction between academic activity and academic freedom therefore became

sharply visible. Czech scholars could still write, classify, catalogue, edit, correspond within limits, and preserve materials, but they could no longer assume that scholarship belonged to a free public sphere. Under the Protectorate, the ordinary practices of science were transformed into acts of endurance. The institution remained, but the political meaning of remaining was deeply ambiguous (*Bryant, 2007*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The structure of repression was particularly destructive because it attacked both the visible and invisible foundations of scholarly life. Visible repression included arrests, executions, deportations, censorship, university closure, racial exclusion, and the public humiliation of Czech institutions. Invisible repression worked through anxiety, uncertainty, self-censorship, surveillance, administrative delays, and the erosion of professional confidence. A scholar who did not know whether a manuscript would pass censorship, whether a colleague might be arrested, whether a meeting would be tolerated, or whether a field of research might suddenly become politically suspicious could not work in the same intellectual atmosphere as before. This mattered because science depends on more than formal institutional existence. It depends on trust, routine, open argument, access to sources, confidence in the future, and the ability to form younger generations. The Protectorate damaged all these conditions. It also narrowed the moral horizon of academic work, because scholars had to ask not only whether a research problem was valid, but whether its pursuit would endanger themselves, their colleagues, or their institution. The Academy's survival therefore had to be understood as survival inside a field of constant pressure. It preserved continuity, but continuity under repression was never identical to normal development. It was a reduced, strained, and often silent form of continuity (*Gebhart & Kuklík, 2006*; *Bryant, 2007*; *Frommer, 2005*).

The closure of Czech universities after November 1939 created the most severe institutional rupture in the reproduction of Czech science. Universities are not only teaching organisations; they are mechanisms through which disciplines renew themselves across generations. When Czech higher education was closed, the damage extended far beyond students who lost access to lecture halls. It disrupted doctoral supervision, laboratory training, clinical education, legal study, philological seminars, historical research, and technical preparation. It also destroyed the ordinary rhythm through which assistants became lecturers, lecturers became professors, and students entered scholarly communities. The Academy could maintain certain forms of learned authority, but it could not replace this generational machinery. No academy can manufacture a research generation without universities, seminars, laboratories, libraries, examinations, and professional pathways. This is why the repression of universities must be treated as an attack on the future rather than only on the present. The occupation regime understood that universities were dangerous because they united youth, knowledge, national consciousness, and public authority. By closing them, it tried to deprive Czech society of one of its most important instruments of cultural and scientific continuity. The consequences were still visible after liberation, when interrupted cohorts had to re-enter academic life under compressed, difficult, and politicised post-war conditions (*Connelly, 2000*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Charles University, n.d.*).

The Academy's position in this situation was paradoxical. It survived because it was not a mass educational institution and therefore did not mobilise students in the same direct way as the universities. Its elitist and learned character, which in the First Republic had sometimes limited its social reach, now helped shield it from the most immediate form of repression directed at university youth. Yet this protection was incomplete and morally costly. The Academy could continue some meetings, publications, and internal work, but it did so in a society whose

educational foundations had been broken. Its members could no longer rely on normal university structures to train successors, test ideas before students, or sustain open disciplinary debate. The Academy therefore became more important and weaker at the same time. It was more important because it remained one of the few prestigious Czech scholarly institutions still capable of preserving national intellectual memory. It was weaker because it had been separated from the living educational system that fed its future. This paradox explains why wartime continuity should never be overstated. ČAVU could protect certain forms of scholarly capital, but it could not prevent the deeper structural damage inflicted on Czech science by the suppression of higher education (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*).

Restrictions on publication formed another central mechanism of academic control. A scientific institution lives through its printed record, and the Academy's authority had always depended heavily on proceedings, memoirs, reports, editions, catalogues, and scholarly series. Under occupation, publication did not cease entirely, but it became vulnerable to censorship, paper shortages, ideological suspicion, and reduced international circulation. The meaning of print changed. In the First Republic, an Academy publication could confidently demonstrate the maturity of Czech scholarship; under the Protectorate, publication became a cautious act of preservation within a controlled public sphere. Editors and authors had to avoid themes that could appear politically dangerous, nationally assertive, democratically nostalgic, or ideologically unacceptable. Even neutral topics could acquire hidden meanings if they touched Czech history, language, territory, statehood, German-Czech relations, Slavic culture, Jewish scholarship, or public memory. Publication therefore became an art of limitation. Scholars had to decide what could be said directly, what had to be deferred, what could be hidden in technical language, and what should not be risked. The Academy's documentary work continued, but its voice was narrowed. Its publications preserved scholarly labour, yet they also bore the marks of an occupied intellectual environment (*Česká akademie věd a umění, 1890–1952*; *Podaný, 2001*; *Mádlová, 2024*).

Censorship affected the humanities and social sciences with special force because these fields were closely connected with national self-understanding. Czech history, philology, literary studies, archaeology, legal history, philosophy, ethnography, and art history had contributed powerfully to the construction of Czech cultural identity from the national revival through the First Republic. Under occupation, precisely this connection made them suspicious. A study of medieval Czech statehood, a philological defence of the Czech language, an edition of national revival texts, or an interpretation of Hussite traditions could easily become more than scholarship in the eyes of the regime. It could become a symbolic assertion of Czech historical dignity. Scholars therefore often retreated into specialised, source-based, editorial, or antiquarian forms of work. This retreat should not be dismissed as timidity. In many cases, technical scholarship became a way of keeping intellectual materials alive until they could be interpreted more freely. A carefully prepared edition, a dictionary file, a catalogue, or an archive inventory could preserve the infrastructure of future historical consciousness. Under the Protectorate, the humanities survived partly by narrowing their public claims and deepening their documentary labour. The Academy's humanistic traditions were therefore not eliminated, but they were forced into a protective, restrained, and often indirect mode (*Franc, Kostlán, & Míšková, 2010*; *Sayer, 1998*; *Mádlová, 2024*).

The natural and technical sciences faced different restrictions, but they were not free from political pressure. Occupation authorities could tolerate or even encourage certain forms of

technical, medical, chemical, industrial, or agricultural work when they served the war economy or administrative needs. This created an ambiguous space for scientists and engineers. Their expertise might continue to be used, but not necessarily under conditions that respected intellectual autonomy or ethical independence. Laboratories, industrial research facilities, medical institutions, and technical offices could remain active, yet their work might be redirected, constrained, or placed under German supervision. The closure of universities still damaged the training of natural scientists and physicians, while shortages and restricted international access limited research quality. The problem was therefore not simply whether research continued, but what its continuation meant. A chemical experiment, an engineering calculation, or a medical study could preserve Czech expertise, but it could also be absorbed into a system of occupation needs. The Academy's broad scientific culture had to live with this ambiguity. Technical survival did not automatically equal moral or institutional autonomy (*Bryant, 2007*; *Gebhart & Kuklík, 2006*; *Dvořáčková, Franc, & kol., 2019*).

Personnel policy was one of the most effective instruments of repression. Scientific institutions depend on people more deeply than their statutes admit. A single dismissed professor, deported scholar, imprisoned student, censored editor, or exiled researcher can represent the loss of an entire line of teaching, a laboratory tradition, an archive competence, or an international connection. Under the Protectorate, personnel losses came through racial persecution, political repression, forced retirement, exclusion from public work, exile, imprisonment, and death. The effects were cumulative. The removal of Jewish scholars destroyed part of the multicultural fabric of Czech and Central European science. The arrest or intimidation of politically active students and professors weakened the moral authority of academic communities. The closure of universities prevented younger scholars from entering stable careers. Exile separated talented researchers from domestic institutions. Even when an institution such as ČAVU remained formally in existence, the human world around it was fractured. Institutional continuity without personnel continuity becomes fragile because knowledge lives in trained persons, habits, memory, and mentorship. The Academy preserved records and prestige, but it could not fully compensate for the destruction of human scholarly capital (*Čapková, 2012*; *Bryant, 2007*; *Štrbáňová & Kostlán, 2011*).

The persecution of Jewish scholars deserves particular attention because it was not only one element within a general national tragedy. It was a specific racial and civilisational assault that transformed the intellectual landscape of the Czech lands. Jewish academics, physicians, lawyers, writers, scientists, students, and cultural figures had participated in Czech, German, Jewish, and broader Central European scholarly worlds. Their identities often crossed linguistic and national boundaries, making them especially important carriers of intellectual mediation. Nazi policy destroyed this plurality with systematic violence. Exclusion from institutions was followed by dispossession, deportation, forced labour, murder, exile, and the erasure of professional lives. The loss was intellectual as well as human. Disciplines lost specialists; students lost teachers; libraries and journals lost contributors; scholarly networks lost mediators between cultures. Czech academic institutions that survived under occupation did so in a society from which many Jewish colleagues had been forcibly removed. This fact must remain central to any account of institutional continuity. Continuity after such destruction was necessarily broken, partial, and haunted by absence (*Čapková, 2012*; *Heimann, 2009*; *Bryant, 2007*).

Political repression also reshaped the boundaries of acceptable scholarship. The occupation regime did not need to arrest every scholar in order to control academic life. It was enough to

make examples, maintain surveillance, impose censorship, and create uncertainty about the consequences of public speech. Professors, writers, historians, students, journalists, librarians, and cultural organisers understood that intellectual activity could be interpreted politically even when it was not intended as direct resistance. This produced a climate in which self-censorship became a form of survival. It also encouraged withdrawal into private work, closed circles, and technical specialisation. Yet the same climate also produced quiet acts of defiance: private teaching, preservation of forbidden materials, support for persecuted colleagues, maintenance of Czech terminology, and careful continuation of long-term scholarly projects. The Academy's members and associated scholars were not uniform in their responses. Some acted courageously, others cautiously, some pragmatically, and some compromised too far. A historically responsible account must preserve this complexity. Repression does not produce one moral type; it produces a field of constrained choices (*Frommer, 2005*; *Bryant, 2007*; *Gebhart & Kuklík, 2006*).

The loss of international contact was one of the less visible but deeply damaging restrictions imposed on Czech science. In the interwar period, the Academy had helped insert Czech scholarship into European networks through publication exchange, foreign memberships, congress participation, correspondence, and scholarly travel. Under occupation, this world narrowed dramatically. War cut routes of communication, censorship monitored correspondence, travel became impossible for many scholars, and access to foreign literature depended on political geography. Contacts with Britain, France, the United States, and other non-Axis academic worlds became restricted or dangerous. German-controlled European networks could not substitute for free international exchange, because they were shaped by political hierarchy and ideological power. A science cut off from international debate risks provincialisation, even when individual scholars remain talented. Czech researchers could still read older literature, preserve files, or continue limited correspondence, but they were deprived of the normal movement of ideas. The Academy's international function therefore shrank from active representation to the preservation of earlier links and the hope of future restoration. Occupation forced Czech science into an involuntary isolation that contradicted the universal vocation of research (*Gordin, 2015*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

Material scarcity compounded political restriction. Science requires paper, instruments, chemicals, books, journals, heated rooms, trained assistants, transport, salaries, printing facilities, and time. Wartime occupation disrupted all of these. Paper shortages affected publication; restricted imports affected libraries and laboratories; transport difficulties affected meetings and fieldwork; economic pressure affected salaries and institutional budgets; forced labour and mobilisation affected personnel; censorship delayed or altered printing. Such material constraints may appear secondary compared with arrests and university closure, but they mattered greatly in daily scholarly life. A research project can fail not only because it is banned, but because the necessary journal never arrives, the instrument cannot be repaired, the assistant disappears, or the paper allocation is denied. The Academy's institutional continuity therefore depended on administrative perseverance. Keeping a publication series alive, maintaining a library, protecting correspondence, or continuing a committee required practical labour under adverse conditions. Wartime science was not only a moral drama; it was an exhausting struggle against the erosion of ordinary scholarly infrastructure (*Podaný, 2001*; *Mádlová, 2024*; *Bryant, 2007*).

Libraries and archives became central instruments of survival because they could preserve continuity even when public scholarly life was reduced. The Academy's library connections,

the collections of the Royal Czech Society of Sciences, university libraries, museum libraries, and archival institutions all carried parts of Czech scientific memory. Their function under occupation was not simply to store books and papers. They protected the documentary conditions for future scholarship. Cataloguing, conserving, hiding, organising, and maintaining access within limits could become acts of cultural preservation. Archives and libraries also made it possible for scholars deprived of normal university work to continue certain forms of research. A historian could work with sources; a philologist could collect citations; a bibliographer could organise records; a scientist could consult older literature. These activities did not restore academic freedom, but they kept methods and materials alive. The survival of Czech scholarly memory after 1945 depended heavily on such quiet institutional labour. In this sense, librarians, archivists, and editors were among the hidden guardians of continuity during the Protectorate (*Podaný, 2001*; *Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

Museums and collections performed a similar function. Natural history collections, archaeological materials, ethnographic objects, art collections, maps, manuscripts, photographs, and scientific instruments preserved knowledge in material form. Under occupation, such collections were vulnerable to seizure, neglect, ideological reinterpretation, and administrative reorganisation. Yet they also offered continuity because objects can outlast regimes if they are protected. A collection may preserve evidence that cannot be publicly interpreted at a given moment, but can later return to scholarly life. This was especially important for archaeology, ethnography, art history, and natural history, where materials are not easily replaced. The Academy's relationship to museums and collections was part of the broader ecology of Czech scholarly survival. The institution itself may not have controlled every collection, but its members, committees, publications, and intellectual authority helped give them scholarly meaning. During the Protectorate, the preservation of objects and records became inseparable from the preservation of national scientific capacity. A future renewal of Czech science required not only people and statutes, but also surviving materials through which research could resume (*Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*; *Národní muzeum, n.d.*).

Long-term projects acquired particular importance under conditions of restriction. Dictionaries, editions, catalogues, inventories, bibliographies, source collections, and specialised files could continue quietly when open intellectual debate was dangerous. These projects had a double character. They were scholarly in their own right, but they were also reservoirs of future cultural life. Work on the Czech language, historical sources, artistic heritage, natural collections, or scientific bibliography helped preserve the infrastructure of a learned nation. The Academy had long been associated with such projects, and the Protectorate made their preservative value more visible. They allowed scholars to keep working without necessarily entering direct confrontation with the regime. Yet this did not mean they were politically meaningless. In an occupied society, the maintenance of Czech scholarly language and historical documentation could itself carry cultural significance. The quiet accumulation of citations, terms, records, and editions helped resist the erosion of memory. It was not open resistance in the military or political sense, but it was a form of intellectual continuity under pressure (*Dvořáčková, 2024*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

Private and informal scholarship also became more important as formal institutions were restricted. When universities were closed, some forms of teaching, reading, discussion, and mentorship moved into private spaces. Scholars met students informally, circulated books,

advised younger colleagues, and sustained intellectual habits outside official structures. Such activities were risky and uneven, and they could not replace universities, but they helped preserve disciplinary culture. The Academy's formal survival existed alongside this informal scholarly world. Some academicians and university scholars may have contributed to private education or intellectual support networks, while others focused on institutional preservation. The boundary between official and unofficial scholarship became more porous than in normal times. A manuscript prepared in private might later enter an institutional publication; a student educated informally might return to university after liberation; a preserved archive note might become the foundation of post-war research. The occupation therefore produced alternative forms of scholarly continuity that were fragile but historically significant. Czech science survived not only through institutions, but through personal loyalty to disciplines, students, colleagues, and memory (*Connelly, 2000*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Bryant, 2007*).

The Academy's elite character shaped its wartime possibilities and limitations. As a body of recognised scholars, writers, and artists, it possessed symbolic capital that ordinary associations did not have. This prestige could help protect certain activities, preserve publication channels, and sustain the sense that Czech intellectual distinction still existed. Yet the same elite character limited the Academy's ability to respond to the broader destruction of educational life. It could not shelter the mass of students, reopen universities, or offer a full alternative to institutionalised higher education. Its authority was concentrated at the level of mature scholarship, not educational reproduction. The Academy therefore served more as a vessel of memory than as a comprehensive institutional substitute. This role should not be underestimated. In a society where universities had been silenced, the survival of a national learned body carried symbolic importance. Yet it should not be exaggerated into institutional rescue. ČAVU helped preserve the summit of Czech scholarly identity, while the foundations of the scholarly pyramid remained gravely damaged (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*).

Administrative continuity was one of the most understated but important aspects of survival. Institutions continue not only through great intellectual achievements, but through minutes, accounting, correspondence, membership records, property management, personnel files, libraries, inventories, and publication routines. Under occupation, such administrative acts became ways of preventing institutional dissolution. The Academy's files, funds, membership lists, and records helped maintain a legal and historical personality that could be reactivated after the war. The existence of an archival fonds for the Czech Academy of Sciences and Arts is itself evidence of this durable institutional body. It shows that the Academy was not only an idea or symbol, but an organisation whose paperwork preserved continuity across political rupture. Bureaucracy is often treated as dull, but in periods of catastrophe it can become a vessel of memory. A preserved minute book or correspondence file may later prove that an institution survived, how it acted, and what pressures it faced. The Academy's administrative continuity therefore belonged to the broader history of scholarly survival (*Česká akademie věd a umění, 1890–1952*; *Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

Survival also required financial and property management under difficult conditions. Research institutions depend on endowments, grants, budgets, buildings, libraries, and funds, and all of these can become vulnerable during occupation. The Academy had inherited a culture of foundations and patronage, including the Hlávka tradition, and it had used funds for scholarships, publications, prizes, and research support. Wartime conditions reduced the

scope and certainty of such support. Inflation, restrictions, administrative controls, scarcity, and political interference could all affect institutional resources. Yet even limited funds could matter greatly when normal university structures were closed and younger scholars lacked support. The Academy's ability to continue any financial assistance, publication subsidy, or project maintenance helped preserve threads of scholarly life. At the same time, resources had to be handled with caution because public allocation could draw scrutiny. The material basis of continuity was therefore never separate from political constraint. Money, property, and scholarship were linked in the daily practice of institutional survival (*Hlávkova nadace, n.d.*; *Mádlová, 2024*; *Franc & Mádlová, 2013*).

The relationship between survival and accommodation remains one of the most difficult questions in the history of Czech science under the Protectorate. Institutions that survived had to communicate with authorities, obey regulations, submit documents, and sometimes accept humiliating restrictions. This could be interpreted as necessary preservation, but it could also slide into collaboration or moral compromise. The boundary was not always clear to those living through the period, and it is not always easy for historians to reconstruct afterwards. The Academy's wartime history should therefore be approached with analytical caution. It is insufficient to describe it simply as a patriotic refuge, but it is equally insufficient to condemn institutional survival as capitulation. The real history lay in a field of constrained agency. Scholars and administrators made decisions under conditions where every option carried risk. Some decisions protected people and records; others may have preserved institutional form at the cost of silence; some may have reflected fear, opportunism, or ideological adaptation. The value of historical analysis lies in refusing both myth and simplification (*Frommer, 2005*; *Bryant, 2007*; *Heimann, 2009*).

The repressive environment also affected academic ethics. In normal conditions, scholarly ethics concern truthfulness, evidence, citation, criticism, originality, and collegial responsibility. Under occupation, ethical responsibility extended to protection, silence, concealment, refusal, and survival. A scholar might have to decide whether to cite a forbidden colleague, protect a student, hide a manuscript, remove a politically dangerous passage, or publish a technically harmless study while more urgent truths remained unspeakable. The ordinary distinction between scholarship and politics collapsed because even silence could have political meaning. The Academy's continuation of scholarly standards under such conditions had ethical significance. Maintaining accuracy, preserving sources, refusing crude ideological falsification, and protecting Czech scholarly language were all ways of defending intellectual life. Yet the ethical burden was heavy because public truth could not be fully spoken. This created a delayed ethics of scholarship: the task was often to preserve the possibility that truth could be reconstructed later. The Protectorate therefore turned academic integrity into a practice of guarded continuity (*Sayer, 1998*; *Bryant, 2007*; *Mádlová, 2024*).

Exile and domestic survival formed two different responses to the same catastrophe. Scholars who escaped or were already abroad could maintain international contact, publish freely in Allied countries, support Czechoslovak political representation, and preserve the image of Czech science outside occupied Europe. Those who remained inside the Protectorate could protect archives, collections, libraries, students, and local institutional memory. Neither position was complete. Exile offered freedom of speech but often lacked access to domestic materials and institutions. Domestic survival preserved local continuity but operated under censorship and danger. After the war, these two experiences did not always merge easily. Returning exiles, domestic scholars, delayed students, and politically compromised figures all

entered a changed academic landscape. The Academy's history must therefore be placed between internal preservation and external representation. Its own survival inside the Protectorate was only one side of Czech scholarly continuity; the other side was the work of Czech and Czechoslovak scholars abroad. Together they helped prevent the complete disappearance of Czech science from the European intellectual map (*Štrbáňová & Kostlán, 2011*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

The restrictions imposed during the Protectorate also changed the meaning of time in Czech scholarly life. Academic time is normally generational, cumulative, and forward-looking. Research projects unfold over years; students become scholars; editions and dictionaries require decades; institutions celebrate anniversaries; publications build slowly on earlier work. Occupation broke this temporal order. Some years became lost years for students; some projects were delayed; some careers were interrupted permanently; some scholars died before their work could be completed; some archives waited silently for a future audience. Yet not all time was lost. Certain long-term projects continued beneath the surface, and their very slowness helped them survive. The Academy, with its inherited memory and documentary routines, was particularly suited to this slower time. It preserved continuity not by dramatic expansion, but by keeping scholarly duration alive in a period designed to interrupt it. In this sense, the Academy acted as a temporal institution: it connected the pre-war republic with the hoped-for post-war recovery. Its survival meant that Czech scholarly time, though violently distorted, had not been completely severed (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Podaný, 2001*).

The end of the war did not immediately solve the problems created by occupation. Liberation opened the possibility of restoring universities, renewing publications, rebuilding international links, and reorganising research, but the institutional and human damage was too deep for simple restoration. Universities had to reopen to cohorts whose education had been interrupted. Scholarly institutions had to evaluate collaboration, victimhood, exile, loyalty, and professional competence. Archives and libraries had to recover from wartime disruption. Disciplines had to reconnect with international scholarship after years of isolation. The Academy emerged from the Protectorate with continuity preserved, but also with unresolved questions about its future role. Could the interwar model be restored, or had the war revealed the need for stronger, more systematic research organisation? Should older learned forms remain central, or should permanent institutes and state planning be expanded? These questions would shape post-war debates and eventually contribute to the transformation that led towards ČSAV. The Protectorate therefore did not merely interrupt ČAVU's history; it changed the conditions under which that history could continue (*Míšková, 2010*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Dvořáčková, Franc, & kol., 2019*).

The Academy's wartime continuity also influenced its post-war legitimacy. An institution that survived occupation could claim to have carried Czech scholarship through catastrophe. This claim had moral force, but it was also open to scrutiny. What had been preserved? Who had been excluded? Which compromises had been made? Which projects continued, and which were silenced? Which scholars returned, and which did not? These questions mattered because post-war reconstruction was not only technical. It was also moral and political. The Academy had to reinsert itself into a public world that demanded renewal, justice, national reconstruction, and scientific modernisation. Its wartime survival gave it historical depth, but not automatic authority. Authority had to be re-earned in a society transformed by trauma. This would become even more complicated after 1948, when political power again redefined the

conditions of science, this time under communist rule. The Protectorate thus foreshadowed a broader 20th-century problem: how can scholarly institutions preserve integrity when political regimes repeatedly seek to control knowledge? (*Frommer, 2005*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

Thus, restrictions and repression under the Protectorate transformed the survival of Czech science into a complex and morally difficult process of institutional endurance. The closure of Czech universities destroyed the normal generational reproduction of scholarship, while censorship, racial persecution, political arrests, international isolation, material scarcity, and administrative supervision narrowed every field of academic work. The Czech Academy of Sciences and Arts survived, but its survival was not equivalent to freedom. It became a guarded repository of scholarly memory, publication routines, administrative continuity, and national intellectual dignity at a time when open academic autonomy was impossible. Libraries, archives, museums, collections, long-term editorial projects, informal teaching, and personal networks helped preserve the foundations on which post-war reconstruction could later begin. Yet this continuity was partial, damaged, and marked by absence, especially the absence of persecuted Jewish scholars, imprisoned students, exiled researchers, and disrupted generations. The Academy's role was therefore neither simple resistance nor passive accommodation. It was a constrained form of guardianship carried out under political domination, scarcity, fear, and ethical ambiguity. The Protectorate revealed both the vulnerability and resilience of scientific institutions: they can be silenced, narrowed, and compromised, but they can also preserve records, methods, language, and memory until conditions change. For ČAVU, this period became a decisive passage between the confident republican culture of the interwar years and the difficult post-war reorganisation that would eventually lead beyond the older academy model.

3. The Preservation of Scholarly Memory During Political Catastrophe

The preservation of scholarly memory during the Protectorate was not a passive matter of keeping books on shelves or documents in drawers. It was a difficult historical process through which Czech intellectual life tried to prevent occupation from becoming a total rupture in the continuity of knowledge. The German occupation attacked universities, students, scholars, publications, public speech, international exchange, and the social conditions of research. Yet it could not completely destroy the accumulated infrastructures through which scholarly memory had been formed over generations. Libraries, archives, museums, correspondence, collections, dictionaries, bibliographies, academy records, personal papers, unfinished manuscripts, and learned habits became crucial instruments of survival. The Czech Academy of Sciences and Arts occupied a particular place in this landscape because it embodied an older national scholarly tradition and preserved forms of learned authority when ordinary university life had been broken. Its survival did not restore freedom, but it helped protect the memory of Czech science from dispersal. Scholarly memory here should be understood broadly. It included not only written documents, but also methods, disciplines, research schools, institutional routines, linguistic competence, professional ethics, and the expectation that Czech science would again enter public life after the catastrophe. Under the Protectorate, memory became a form of resistance to historical erasure, although usually a quiet and indirect one. It was not always heroic in appearance, because much of it took the form of cataloguing, editing, archiving, storing, conserving, and waiting. Yet these modest

practices were essential because without them the post-war recovery of Czech science would have had to begin from scattered fragments rather than from preserved institutional foundations (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Bryant, 2007*).

Political catastrophe changes the meaning of memory because it turns continuity into a task rather than a background condition. In a stable academic environment, institutions often take memory for granted: libraries grow, archives accumulate, journals appear, students are trained, and anniversaries are celebrated. Under occupation, every one of these processes can be interrupted, censored, confiscated, politicised, or made materially impossible. The Protectorate therefore forced Czech scholarly institutions to become conscious guardians of their own survival. The Academy, universities in suspension, libraries, museums, archives, and specialised scholarly offices had to decide what could still be protected and how. Some materials were preserved through ordinary administrative channels; others survived because individual scholars, librarians, archivists, and museum workers acted with discretion and responsibility. The preservation of memory required practical intelligence as much as moral courage. It required knowing which materials were vulnerable, which files needed protection, which projects could continue without attracting destructive attention, and which forms of documentation might serve future reconstruction. This was especially important because the occupation regime did not need to burn every archive in order to damage scholarly continuity. It could achieve much by closing institutions, dispersing people, interrupting publication, and isolating Czech science from the world. Against this background, the preservation of scholarly memory was a struggle against the slow erosion of intellectual time (*Podaný, 2001*; *Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

The closure of Czech universities made the preservation of memory especially urgent because universities had been the principal institutions of scholarly reproduction. A university transmits knowledge through lectures, seminars, examinations, laboratories, clinics, libraries, doctoral supervision, and informal apprenticeship. When this mechanism was halted, memory had to find other channels. The Academy could not replace the university, but it could help preserve the upper layer of scholarly authority and continuity. Its members carried disciplines in their personal expertise, their papers, their correspondence, their committee work, and their involvement in publications and long-term projects. Some scholars continued research privately or through non-university institutions. Others preserved lecture notes, manuscript drafts, bibliographies, collections of excerpts, and source materials that could later be reactivated. This kind of preservation mattered because scholarly knowledge is not stored only in printed books. It also exists in working files, methodological habits, planned editions, annotations, research questions, and the memory of what had been discussed before the interruption. The Academy's continued existence gave such fragments a potential institutional home. It kept alive the idea that Czech scholarship was temporarily suppressed rather than historically ended (*Connelly, 2000*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Mádlová, 2024*).

The preservation of scholarly memory was inseparable from archives. Archives are often imagined as places where the past rests after it has already happened, but under occupation they became active instruments of cultural survival. The records of the Czech Academy of Sciences and Arts, the older Royal Czech Society of Sciences, university bodies, museums, libraries, scientific societies, and public institutions contained evidence of Czech intellectual continuity. They showed that Czech science had existed before the Protectorate and that it possessed institutional depth. They also preserved the documentary basis for future historical

interpretation. Minutes, membership lists, correspondence, inventories, financial documents, publication records, grant files, and committee papers could later reveal how institutions had worked, who had contributed to them, and how they had endured crisis. The existence of archival fonds is therefore not merely an aid to later historians; it is itself part of the history of survival. Without preserved records, the Academy's wartime activity would be much harder to reconstruct and much easier to mythologise. Archives make continuity verifiable rather than rhetorical. In this sense, archival preservation protected both memory and truth, because it enabled future scholarship to distinguish evidence from legend (*Česká akademie věd a umění, 1890–1952*; *Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

Libraries performed a parallel function, but their significance was different. A library preserves not only institutional records, but the intellectual universe available to scholars. During the Protectorate, access to foreign literature, current journals, and international publications was restricted, yet existing collections remained invaluable. They allowed scholars to continue reading, comparing, excerpting, translating, and preparing future work even when new intellectual exchange had been narrowed. The libraries of ČAVU, the Royal Czech Society of Sciences, universities, museums, and specialised institutions preserved the layered memory of Czech scholarly development. They contained publications from the Enlightenment, the national revival, the Habsburg period, the First Republic, and foreign academic worlds. In a time when the Czech future was politically uncertain, such collections embodied a longer intellectual time that the occupation could not fully control. Library work also required active decisions: catalogues had to be maintained, collections protected, exchanges managed where possible, and materials preserved despite scarcity. Paper shortages and wartime administration made publication and acquisition difficult, but this only increased the importance of inherited collections. Libraries became reservoirs from which post-war scholarship could draw when universities reopened and research resumed. The preservation of books and periodicals was therefore a preservation of intellectual possibility (*Podaný, 2001*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

Museums and collections preserved another form of scholarly memory: memory embodied in objects. Archaeological artefacts, natural history specimens, artworks, ethnographic materials, manuscripts, maps, instruments, photographs, and architectural documentation all carried knowledge that could not be reduced to textual record. Under political catastrophe, such objects were vulnerable because they could be neglected, appropriated, reclassified, ideologically misused, or physically destroyed. Yet they could also survive when public interpretation became impossible. A collection can remain silent for years and still retain its scholarly value. This was particularly important for fields such as archaeology, ethnography, art history, natural history, and history of science. Czech scholarly memory was preserved not only through words, but through things: stones, bones, tools, manuscripts, paintings, musical sources, instruments, and specimens. The Academy's intellectual environment was linked to these collections through its members, publications, awards, and committees. It gave them scholarly meaning even when it did not directly administer them. During the Protectorate, the protection of material evidence became part of the defence of Czech cultural and scientific continuity. After the war, surviving collections could again become sources of interpretation, teaching, and public memory (*Franc, Kostlán, & Míšková, 2010*; *Národní muzeum, n.d.*; *Mádlová, 2024*).

Long-term scholarly projects were especially important because they created continuity across political rupture. Dictionaries, source editions, catalogues, bibliographies, inventories,

archaeological records, linguistic files, and historical corpora often outlive the regimes under which they are begun. They require patience, discipline, and institutional memory, and for precisely this reason they can preserve intellectual life during catastrophe. The Academy's traditions in philology, history, literature, art, and science were well suited to such long-duration work. A dictionary project, for example, is not merely a technical compilation of words. It preserves the historical depth of a language, the documentary basis of usage, and the scholarly labour of many contributors. Under occupation, work on language had a special meaning because Czech itself was one of the central carriers of national continuity. Similar significance attached to source editions, bibliographies, and catalogues. They could continue quietly where open public interpretation was dangerous. Their value often became fully visible only later, when post-war scholars used them as foundations for renewed research. In this sense, the slow labour of documentation was one of the strongest forms of scholarly endurance (*Dvořáčková, 2024*; *Franc, Kostlán, & Míšková, 2010*; *Mádlová, 2024*).

The preservation of the Czech language as a scholarly medium was one of the most important dimensions of memory. The occupation did not erase Czech from everyday life, but it restricted the public institutions through which Czech had functioned as a language of higher education, learned debate, and national representation. The closure of universities was therefore also a linguistic attack, because it removed Czech from the lecture hall, seminar, doctoral defence, and public academic ceremony. The Academy's publications and scholarly routines helped preserve Czech as a language of disciplined knowledge. This mattered because language carries categories, terminology, habits of argument, and cultural memory. If Czech had been reduced only to private or popular use, the long 19th-century effort to make it a language of science would have been gravely weakened. The Academy and associated scholarly bodies helped prevent such reduction by continuing, where possible, Czech-language scholarly work. Even technical philological, historical, or scientific writing could have cultural meaning because it showed that Czech remained capable of precision. The preservation of scholarly Czech therefore linked linguistic continuity with institutional continuity. It kept open the possibility that Czech intellectual life would again speak publicly and freely (*Sayer, 1998*; *Dvořáčková, 2024*; *Franc, Kostlán, & Míšková, 2010*).

At the same time, multilingual competence had to be preserved because Czech scholarly memory was never monolingual. The historical sources of Bohemia and Moravia were written in Latin, German, Czech, Hebrew, Church Slavonic, French, and other languages. Scientific literature had long circulated through German, French, Latin, and increasingly English. Jewish, German, Czech, and broader Central European scholarly traditions were intertwined. Under the Protectorate, this multilingual inheritance was violently distorted by Nazi racial and national hierarchy. German became the language of domination rather than one language among several in a shared scholarly environment. Jewish scholarly mediation was attacked and destroyed. Contacts with many international languages were restricted by war. Yet future Czech scholarship required the preservation of multilingual competence because without it large parts of the documentary past and scientific world would remain inaccessible. The Academy's historical and philological traditions depended on such competence, as did libraries and archives. Preserving scholarly memory therefore meant preserving the ability to read across the languages of the past, even when the political present tried to impose a coercive linguistic hierarchy (*Gordin, 2015*; *Čapková, 2012*; *Franc, Kostlán, & Míšková, 2010*).

The destruction of Jewish intellectual life represented a profound rupture in scholarly memory. Jewish scholars in the Czech lands had participated in Czech, German, Jewish, and

international intellectual cultures, often serving as mediators between linguistic and disciplinary worlds. Their persecution under Nazi rule removed people, archives, libraries, careers, and unwritten futures from the scholarly landscape. Memory was therefore not only preserved during the Protectorate; it was also violently damaged. This is an essential qualification. To speak of continuity without speaking of absence would produce a false image of survival. Many voices were silenced permanently. Many research lines were interrupted by murder, exile, deportation, dispossession, and exclusion. Institutions that survived carried gaps that could not be repaired simply by reopening after the war. The Academy's memory after 1945 had to exist alongside the memory of those who had been forced out of Czech academic life. The preservation of scholarly memory must therefore include remembrance of loss, not only preservation of institutions. A mature history of the Academy must treat absence as part of its archival and moral record (*Čapková, 2012*; *Bryant, 2007*; *Heimann, 2009*).

Personal archives became especially important because institutional records alone cannot capture the full experience of academic catastrophe. Letters, diaries, unpublished manuscripts, lecture notes, research files, photographs, memoirs, marginalia, and private bibliographies often preserve what official institutions cannot say. Under censorship, private writing may carry intellectual and emotional truths that public records conceal. Scholars who could not publish freely might still write for themselves, for trusted colleagues, or for a future audience. Students excluded from universities might preserve notes or reading lists. Exiles might retain correspondence that connected domestic and international scholarly worlds. Families might protect papers of persecuted or deceased scholars. Such personal materials later become crucial for reconstructing the inner history of science under occupation. They reveal fear, hope, compromise, intellectual persistence, and the unfinished nature of scholarly lives. The Academy's institutional memory is therefore inseparable from the personal memories of those who inhabited, supported, or were excluded from it. Scientific heritage is not only institutional; it is biographical (*Štrbáňová & Kostlán, 2011*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

Informal teaching and private scholarly circles were another form of memory preservation. When universities were closed, learning could not continue normally, but it did not disappear altogether. Some professors and scholars maintained contact with students, advised them privately, lent books, discussed research, or helped them prepare for a future return to study. Such activities were risky and uneven, and they cannot be romanticised as a full substitute for universities. Yet they preserved something that no archive alone could preserve: the living relation between teacher and pupil. Disciplines survive through human transmission as much as through documents. A method of reading a medieval charter, conducting a laboratory observation, translating a difficult text, or forming a legal argument is learned through guided practice. Informal teaching kept fragments of this practice alive. The Academy's members, many of whom came from university backgrounds, belonged to this broader world of scholarly mentorship. Their personal authority could help sustain intellectual continuity even when institutional education was suspended. The memory of Czech science therefore survived partly through quiet pedagogical loyalty (*Connelly, 2000*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Bryant, 2007*).

The Academy's administrative records also preserved the memory of scholarly authority. Membership lists, election materials, correspondence, meeting minutes, publication plans, grant records, financial accounts, and committee files showed that the Academy remained an identifiable body even under occupation. Such records may appear routine, but they carried

historical significance. They preserved the institutional grammar of Czech learned life: who belonged, how decisions were made, what projects mattered, which publications were planned, and how resources were distributed. They also made it possible after the war to reconstruct continuity and evaluate change. Administrative memory is often less dramatic than personal heroism, but it is indispensable for institutional survival. Without records, an institution can lose its own past and become vulnerable to later manipulation. The Academy's documentary continuity allowed post-war actors to see what had been preserved, interrupted, or compromised. It also allowed later historians to examine the institution critically. In this sense, bureaucracy became a form of historical evidence and cultural endurance (*Česká akademie věd a umění, 1890–1952*; *Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

The preservation of scholarly memory required a careful balance between visibility and concealment. Some forms of continuity had to remain visible in order to show that Czech scholarship still existed. Publications, meetings, academy records, and public institutional names carried symbolic value. Other forms of continuity had to remain discreet in order to survive. Sensitive manuscripts, politically dangerous correspondence, materials connected with persecuted persons, and private teaching could not always be openly acknowledged. This balance was one of the defining features of academic life under occupation. Too much visibility could invite repression; too much invisibility could lead to dissolution or forgetting. The Academy and related institutions had to navigate this tension constantly. Their survival depended on keeping enough public form to maintain institutional identity and enough discretion to protect vulnerable content and people. The same logic applied to libraries, archives, and museums, where catalogued openness and protective restriction could both be necessary. Memory under dictatorship is therefore neither fully public nor fully hidden. It exists in controlled layers, waiting for conditions under which it can be spoken more openly (*Bryant, 2007*; *Frommer, 2005*; *Mádlová, 2024*).

Exile preserved scholarly memory in a different way. Czech and Czechoslovak scholars abroad could speak, publish, correspond, teach, and represent national culture more freely than those inside the Protectorate. They could maintain links with democratic academic worlds, inform foreign audiences about the destruction of Czechoslovakia, and preserve the idea of Czech science as part of European civilisation. Exile scholarship also protected personal and intellectual continuities that would otherwise have been lost. Yet exile created its own problems of memory. Scholars abroad were separated from domestic archives, local pupils, institutional routines, and the daily life of Czech research. Their memory of Czech science was often internationalised, political, and retrospective. Domestic memory, by contrast, was material, local, constrained, and often silent. After the war, these forms of memory had to meet again, sometimes with difficulty. The Academy's wartime story is therefore incomplete without the memory preserved outside the Protectorate. Czech scholarly continuity survived through both the guarded endurance of domestic institutions and the free but displaced speech of exile (*Štrbáňová & Kostlán, 2011*; *Orzoff, 2009*; *Franc & Mádlová, 2013*).

Scholarly memory was also preserved through professional ethos. Institutions can keep documents, but they also transmit expectations about how scholarship should be done. Accuracy, patience, source criticism, respect for evidence, bibliographical care, peer judgement, linguistic precision, and intellectual responsibility are forms of memory because they connect present work with inherited standards. Under occupation, these standards were threatened by censorship, propaganda, racial ideology, and political fear. Maintaining them

became a moral task. A scholar who prepared an accurate catalogue, refused ideological falsification, preserved a difficult source, or continued careful terminology work was defending more than a specialised field. Such actions defended the idea that scholarship had standards independent of political command. The Academy's learned culture was important because it had long valued distinction, publication, and disciplined judgement. Even when its public authority was reduced, its internal standards could help preserve scholarly identity. This does not mean that every member acted with equal integrity, but the institution carried a memory of what scholarly seriousness meant. That memory would matter greatly after liberation, when science had to recover not only buildings and publications, but also trust in standards (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Sayer, 1998*).

The wartime preservation of memory also had a spatial dimension. Buildings, reading rooms, archive repositories, offices, libraries, and museum storerooms mattered because scholarly memory is housed in places. The occupation disrupted the symbolic geography of Czech science, especially by closing universities and transforming parts of academic space into inaccessible or controlled areas. Yet some spaces remained available for limited scholarly work. An academy office, archive room, library, private study, museum collection, or editorial workplace could become a small zone of continuity. These spaces were not free in the full sense, but they allowed routines to persist. They also preserved the physical identity of institutions. A building can carry memory even when its function is reduced. After political catastrophe, returning to a room, collection, or library can help restore institutional confidence. For ČAVU, spatial continuity mattered because it linked pre-war scholarly life with post-war renewal. The preservation of scholarly places was therefore part of the preservation of scholarly time (*Franc & Mádlová, 2013*; *Podaný, 2001*; *Mádlová, 2024*).

The moral burden of memory became especially acute after the war because preserved records could reveal both endurance and compromise. Archives do not only celebrate survival; they also expose silence, exclusion, bureaucratic adaptation, and difficult decisions. This is why the preservation of scholarly memory is not the same as the preservation of a comforting story. A serious archive allows later generations to ask uncomfortable questions. Which scholars were removed? Which publications were censored? Which institutions complied with occupation regulations? Which members helped colleagues, and which remained silent? Which projects continued because they were harmless, and which were abandoned because they were dangerous? The Academy's wartime memory therefore had to become an object of critical history rather than simple commemoration. This critical function is one of the deepest values of preserved records. They prevent institutional memory from becoming only institutional self-defence. They make it possible to honour survival while also examining its costs (*Frommer, 2005*; *Heimann, 2009*; *Franc & Mádlová, 2013*).

The preservation of memory also shaped post-war reorganisation. When Czech universities reopened and scientific institutions tried to rebuild, they did not begin with a blank institutional map. They inherited academy records, libraries, collections, personal files, unfinished projects, disciplinary traditions, and memories of wartime loss. These inheritances made reconstruction possible, but they also structured debates about what should be restored and what should be transformed. Some scholars hoped to recover the interwar republic's plural academic culture. Others believed that the war had shown the need for stronger research organisation, more permanent institutes, and closer state support. The preserved memory of ČAVU and other institutions therefore became material for competing futures. It could justify restoration of older traditions, but it could also be used to argue for reform. This ambiguity is

important because the path from ČAVU to ČSAV was not produced only by communist ideology after 1948. It was also prepared by earlier questions about how to organise research after war, interruption, and institutional fragility. Memory preserved the past, but it also became part of the struggle over the future (*Míšková, 2010*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Dvořáčková, Franc, & kol., 2019*).

The Academy's survival through catastrophe reinforced its identity as a carrier of national scholarly continuity. This identity had roots in the 19th century, when Czech learned institutions helped prove that Czech culture possessed scientific, literary, and artistic maturity. During the First Republic, the Academy had represented that maturity within sovereign statehood. During the Protectorate, the same identity became more defensive. The Academy no longer demonstrated national achievement in a confident public sphere; it preserved the memory of that achievement under conditions of domination. This shift is crucial. It shows that the same institution can play different roles in different political worlds. In one period, it can be a symbol of ascent; in another, a shelter of continuity. The Protectorate transformed ČAVU from a representative institution of national culture into a guardian of endangered intellectual memory. This did not erase its earlier functions, but it changed their emotional and historical meaning. After 1945, this wartime guardianship became part of the Academy's claim to legitimacy, even though that claim would soon be challenged by new political forces (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Agnew, 2004*).

The preservation of scholarly memory during the Protectorate also demonstrates that scientific heritage includes more than great discoveries. It includes the survival of notebooks, catalogues, bibliographies, correspondence, collections, institutional files, student memories, language materials, and unfinished projects. These forms of heritage may appear modest, but they are indispensable for the continuity of science. A country can lose a few years of publication and still recover if its archives, libraries, methods, and people remain connected. It cannot recover easily if documentary memory, disciplinary competence, and institutional identity are destroyed together. Czech science suffered enormous damage under occupation, but it preserved enough heritage to make renewal possible. ČAVU was one of the institutions through which this preservation occurred. Its role was not to produce spectacular wartime achievements, but to keep alive the conditions under which future achievements could again be produced. This is a different kind of scientific importance, but not a lesser one. In periods of catastrophe, preservation becomes a creative act because it protects the future from the destruction of the past (*Franc, Kostlán, & Míšková, 2010*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The limits of preservation must nevertheless remain visible. Not everything could be saved. Lives were lost, careers were broken, students were displaced, Jewish scholarly worlds were destroyed, international connections were severed, and intellectual freedom was suspended. Some materials disappeared, some projects stopped, some institutional habits weakened, and some compromises left moral scars. Preservation therefore did not mean victory over catastrophe. It meant partial survival inside defeat. This distinction matters because histories of institutions often prefer narratives of resilience, but resilience can become misleading if it obscures irreparable loss. The Academy's continuity was real, but it was continuity across damage. Its post-war renewal carried the burden of those who did not return and of knowledge that had been interrupted. The preservation of scholarly memory must therefore be understood as both achievement and mourning. It preserved enough for reconstruction, but it also

recorded the scale of what had been broken. The dignity of this memory lies precisely in its refusal to confuse survival with wholeness (*Čapková, 2012*; *Bryant, 2007*; *Frommer, 2005*).

Thus, the preservation of scholarly memory during the Protectorate was one of the most important forms of Czech academic survival under political catastrophe. The Czech Academy of Sciences and Arts, together with libraries, archives, museums, collections, long-term research projects, personal papers, informal teaching, and exile networks, helped prevent the occupation from becoming a complete rupture in Czech intellectual history. This preservation was not identical with freedom, and it did not undo the closure of universities, the persecution of Jewish scholars, the interruption of careers, censorship, isolation, or moral compromise. Yet it maintained the documentary, linguistic, institutional, and ethical foundations from which post-war science could begin again. The Academy's role was especially significant because it carried the memory of older Czech learned traditions through a period when public academic autonomy had been almost destroyed. Its survival showed that scholarly institutions are not only producers of new knowledge, but also guardians of inherited knowledge, methods, standards, and cultural identity. At the same time, preserved memory made later critical history possible, because archives and records reveal both endurance and failure. The Protectorate therefore gave scholarly memory a double function: it protected continuity and preserved evidence of catastrophe. For the history of ČAVU, this was a decisive passage from the confidence of the First Republic to the damaged reconstruction of the post-war years. The Academy entered liberation not as an untouched institution, but as a wounded carrier of memory whose preserved traditions would soon be drawn into the far-reaching reorganisation of Czech and Czechoslovak science.

The End of the Czech Academy of Sciences and Arts

1. Post-war Reorganisation of Science

The post-war reorganisation of Czech and Czechoslovak science began in 1945 not as a calm administrative reform, but as an attempt to restore intellectual life after occupation, violence, institutional interruption, and moral injury. The liberation of Czechoslovakia reopened the possibility of academic freedom, but it did not return science to the world of the First Republic in any simple way. Czech universities had been closed for most of the Protectorate, students had lost formative years, Jewish scholars had been murdered or driven into exile, German-language institutions were politically delegitimised, and many research networks had been broken by war. The Czech Academy of Sciences and Arts survived the occupation, yet it entered the post-war period as a wounded institution within a society demanding reconstruction, justice, national renewal, and institutional modernisation. This meant that the Academy could not simply resume its interwar routines as if the catastrophe had been a temporary pause. It had to function in a landscape where the relation between science, state, nation, and political power had changed. The restored Czechoslovak state needed research for public administration, industry, health, education, agriculture, culture, and international legitimacy. It also needed to decide how older institutions such as ČAVU, universities, technical schools,

museums, archives, and specialised institutes should relate to new forms of state-supported research. Post-war reorganisation therefore combined restoration and transformation from the very beginning. It was driven by the desire to recover what had been interrupted, but also by the conviction that modern science required stronger institutional structures than those of the pre-war learned-society model. This tension between restoration and reorganisation defined the final years of the Czech Academy of Sciences and Arts (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Zylinská & Svobodný, 1999*).

The first task after liberation was the restoration of educational and scholarly continuity. Czech universities reopened, students returned, professors resumed teaching, and interrupted academic careers tried to find a new rhythm. Yet reopening did not mean normalisation in the full sense. The university system had to absorb delayed cohorts of students, returning prisoners, former forced labourers, demobilised participants in resistance, exiles, and young people whose education had been disrupted for six years. Faculty life also had to confront personnel losses, political suspicion, material shortages, damaged buildings, missing equipment, and the absence of murdered or exiled colleagues. In this context, the Academy's role was both supportive and limited. It could help restore scholarly dignity, resume publications, recognise achievement, and participate in the intellectual reactivation of Czech public life. However, it could not by itself solve the generational damage caused by the closure of universities. The post-war moment therefore revealed again the functional difference between universities and the Academy. Universities had to rebuild the educational pipeline of science, while ČAVU helped restore the higher symbolic and documentary level of scholarly authority. The two tasks were closely linked, but they were not identical. The renewal of Czech science required both the reopening of lecture halls and the reactivation of learned memory (*Connelly, 2000*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Franc & Mádlová, 2013*).

The reorganisation of science also involved moral and political reckoning. Liberation brought not only joy, but the need to evaluate behaviour under occupation. Questions of collaboration, resistance, loyalty, victimhood, exile, national reliability, and institutional compromise entered universities, academies, cultural organisations, and public administration. This affected science because academic authority depends on trust, and trust had been damaged by occupation. Some scholars had suffered persecution, imprisonment, exclusion, or exile. Others had remained in office under difficult conditions and claimed to have preserved institutions. Some had adapted to occupation administration more than post-war society was willing to tolerate. Still others were accused fairly or unfairly in an atmosphere of national anger and political struggle. The Academy and the universities therefore had to rebuild scholarly life while participating in a broader public process of cleansing and legitimation. This process was not merely juridical; it was also symbolic. The restored state wanted its intellectual institutions to appear purified of collaboration and aligned with national renewal. Yet the moral reality of occupation had often been ambiguous, as institutional survival had required compromise. Post-war reorganisation therefore began under the pressure of both justice and simplification (*Frommer, 2005*; *Bryant, 2007*; *Heimann, 2009*).

The expulsion and removal of the German population from Czechoslovakia after the war transformed the scholarly landscape as well. German-language academic institutions, scholarly communities, libraries, associations, and research traditions that had long formed part of Bohemian and Moravian intellectual life were dismantled, absorbed, dispersed, or politically condemned. The German University in Prague, already deeply compromised in Czech eyes by its association with the occupation order, disappeared from the post-war

academic landscape. This meant that the multilingual scientific culture described in the earlier historical development of the Czech lands entered a radically new phase. Czech scholarly institutions no longer had to compete with strong German-language academic structures within the same territory. At the same time, the disappearance of German academic life also meant the loss of a historical layer of Central European scholarship. The post-war Czech scientific system became more nationally Czech in institutional language and identity, but it also became less multilingual in the older Bohemian sense. This transformation was not only a result of academic reform; it was part of the wider political and demographic revolution of post-war Czechoslovakia. ČAVU's national mission therefore gained a different environment. The Czech Academy no longer stood within the same Czech-German institutional competition that had shaped its earlier history, but it now operated in a society where national homogenisation and political radicalisation were reshaping the meaning of culture and science (*Agnew, 2004*; *King, 2002*; *Frommer, 2005*).

The post-war state expected science to serve reconstruction more directly than before. The First Republic had valued science as a symbol of democratic culture and national maturity, but the post-war situation added urgent practical demands. Industry had to be rebuilt, agriculture reorganised, public health strengthened, education restored, infrastructure repaired, archives protected, and cultural losses assessed. The state also faced the challenge of integrating Slovakia more fully into national academic life and rebuilding Czechoslovakia's position in Europe. These tasks increased the importance of expert knowledge. Scientists, engineers, physicians, economists, historians, linguists, jurists, and technical specialists were expected to contribute to national recovery. The Academy's older model of learned recognition remained valuable, but it increasingly appeared insufficient for the scale of post-war needs. A prestigious academy of elected members could symbolise scholarly continuity, but modern reconstruction required institutes, laboratories, planning bodies, research teams, long-term funding, and coordination between science and state policy. This did not immediately abolish ČAVU, but it weakened the assumption that a traditional learned academy could remain the central form of national scientific organisation. Post-war reconstruction pushed Czech science toward institutional expansion and administrative coordination (*Míšková, 2010*; *Zylinská & Svobodný, 1999*; *Dvořáčková, Franc, & kol., 2019*).

The question of non-university research became especially important in the years after 1945. Universities had to resume teaching, but not all modern research could be organised within faculties. Some forms of research required permanent institutes, technical facilities, collective teams, archives, fieldwork organisations, laboratories, and long-term documentation projects. The First Republic had already produced specialised bodies such as the Masaryk Academy of Labour, the Slavonic Institute, the Oriental Institute, and the Archaeological Institute, but the post-war state increasingly saw such institutions as part of a wider research infrastructure. ČAVU stood at a crossroads. It had historical prestige, publication traditions, funds, memberships, and scholarly authority. However, it was not designed as a centralised network of research institutes. Its structure belonged to the learned academy tradition rather than the emerging model of planned, institute-based research. Post-war reorganisation therefore raised a fundamental question: should Czech science preserve its plural system of academies, universities, learned societies, institutes, and foundations, or should it move toward a more integrated model? This question would become sharper after 1948, but it was already visible in the immediate post-war years. The end of ČAVU cannot be understood without recognising that

its institutional form was becoming historically vulnerable before its legal dissolution (*Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Míšková, 2010*; *Mádlová, 2024*).

The reopening of Charles University and other universities restored the principal educational foundation of Czech science, but it also intensified debates over the proper relation between universities and research institutions. After six years of closure, universities had immense symbolic authority as restored national institutions. At the same time, their immediate burden was heavy: they had to teach overcrowded cohorts, re-establish faculties, manage personnel changes, and recover from material damage. Advanced research could not depend solely on universities under such pressure. This made the case for non-university research stronger. The Academy could support research through recognition and publication, but specialised institutes could provide continuity for fields that required concentrated work beyond teaching cycles. The post-war relationship between universities and academy-type research therefore became more complex than in the First Republic. Cooperation remained necessary, but the balance of functions was shifting. The university was still the place of formation, but the emerging research system increasingly demanded institutional spaces devoted primarily to research. This was one of the intellectual and administrative roots of the later Czechoslovak Academy of Sciences. ČAVU's final years were shaped by this unresolved university–research-institute problem (*Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*).

The political environment of post-war Czechoslovakia made these institutional questions more charged. The restored republic was not simply a return to the liberal democracy of the 1920s. Its politics were shaped by the trauma of Munich, the experience of occupation, the prestige of the Soviet Union as liberator, the radicalisation of social expectations, the programme of nationalisation, and the growing strength of the Communist Party. The Košice Government Programme created a framework for a transformed republic in which state intervention, national purification, and social restructuring had much greater legitimacy than before the war. Science could not remain outside this atmosphere. Public institutions were expected to participate in national renewal, social reform, and state-directed reconstruction. The older liberal pluralism of the First Republic appeared to many as insufficient, compromised, or historically exhausted. This affected the Academy because ČAVU was an institution born from 19th-century patronage and national culture, not from socialist planning or post-war state centralisation. Its prestige remained real, but the ideological climate was moving toward new expectations of scientific organisation. The Academy's post-war position was therefore exposed to pressures from both modernisation and politicisation (*Kárník, 2002*; *Heimann, 2009*; *Frommer, 2005*).

The Academy's own traditions could still contribute meaningfully to post-war science. Its publication culture, classes, memberships, grants, awards, and scholarly committees preserved standards of excellence. Its connection to the Hlávka tradition and to older Czech learned culture gave it legitimacy rooted in civil society, philanthropy, and national intellectual self-organisation. Its members included leading scholars, writers, artists, and scientists whose authority did not depend simply on state appointment. This mattered at a time when Czech society needed symbols of continuity after occupation. ČAVU could remind the public that Czech science had a history longer than the war and deeper than contemporary political struggles. It could also help restart scholarly production by continuing editorial projects, supporting research, and recognising achievement. Yet its strengths were also signs of its historical age. A culture of learned distinction and civic patronage did not easily fit the emerging

language of planned research, mass education, social transformation, and state-controlled scientific policy. The Academy could still function, but it increasingly looked like a venerable institution inside a rapidly changing system. The post-war years therefore intensified the distance between its inherited identity and the organisational future being prepared around it (*Franc & Mádlová, 2013*; *Hlávkova nadace, n.d.*; *Mádlová, 2024*).

The restoration of publication was one of the most important signs of scholarly recovery. During the occupation, censorship, paper shortages, and isolation had constrained Czech academic publishing. After 1945, scholars wanted to resume journals, monographs, proceedings, editions, bibliographies, and disciplinary communication. Publications had practical and symbolic value. Practically, they allowed research results delayed by war to enter circulation. Symbolically, they announced that Czech science had survived and could speak again in its own name. The Academy's publishing tradition therefore became one of its most useful assets. However, publication in the post-war period also reflected new constraints. Material shortages continued, paper supplies remained limited, and the emerging political climate affected themes, language, and institutional priorities. Scholarly publishing did not return simply to interwar liberal conditions. It was part of a public sphere increasingly shaped by ideological competition and state expectations. The Academy's publications thus stood between recovery and transition. They preserved continuity with older scholarly forms while entering a world in which the politics of knowledge was becoming more intrusive (*Podaný, 2001*; *Franc & Mádlová, 2013*; *Zylinská & Svobodný, 1999*).

The restoration of international contacts was equally necessary, but it was difficult and uneven. During the First Republic, Czech science had built networks through foreign memberships, congresses, publication exchange, and research travel. The war had disrupted these links, and post-war Europe was divided by destruction, occupation zones, emerging Cold War tensions, and shifting diplomatic alignments. Czech scholars sought to reconnect with foreign colleagues, obtain current literature, resume travel, and re-enter international organisations. Yet the geopolitical environment was no longer that of the 1920s. The Soviet Union had gained enormous political and symbolic weight in Czechoslovakia, while contacts with Western academic institutions increasingly became politically sensitive as the decade progressed. The Academy's international role therefore became more complicated. It could no longer simply continue the interwar pattern of open European scientific exchange. It had to operate in a field where international science was being reoriented by post-war alliances and ideological divisions. The years immediately after 1945 still contained possibilities of plural reconnection, but those possibilities narrowed as political conflict intensified. ČAVU's foreign links were thus restored only partially and under changing conditions (*Orzoff, 2009*; *Gordin, 2015*; *Dvořáčková, Franc, & kol., 2019*).

The post-war reorganisation of science also involved the status of Slovak scholarship within Czechoslovakia. The First Republic had often been criticised for Czech dominance and uneven development between the Czech lands and Slovakia. After the war, the question of Slovak institutions, language, research, and cultural autonomy became part of the broader restructuring of the state. Science had to serve not only Czech reconstruction, but also the development of a more balanced Czechoslovak academic framework. This had implications for older Czech institutions such as ČAVU. A Czech Academy of Sciences and Arts could not fully embody the scientific aspirations of a renewed Czechoslovak state that included Slovakia in a more politically conscious way. The later socialist model of ČSAV would present itself as Czechoslovak rather than purely Czech, although in practice the Czech-Slovak institutional

relationship remained complex. In the immediate post-war years, however, the issue already existed: how could a state-wide scientific system be organised if its most prestigious historical academy was Czech in origin, language, and identity? The answer was not yet fully formed, but the question placed ČAVU within a wider federal or Czechoslovak horizon. This too contributed to the eventual move beyond the older academy model (*Dvořáčková, Franc, & kol., 2019*; *Míšková, 2010*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*).

The post-war period also reshaped the social composition and expectations of academic life. The First Republic's scholarly elites had often been formed through relatively narrow educational and social pathways. After 1945, and especially as communist influence grew, there was stronger pressure to democratise access to higher education and research in social and political terms. This was not only an egalitarian aspiration; it was also a political instrument. Calls for the opening of universities and research to workers, peasants, and politically reliable groups could challenge older academic hierarchies. Such pressures affected the Academy because its membership structure embodied an elite model of distinction. Election to ČAVU marked exceptional achievement within a learned culture that valued reputation, publication, and established authority. The post-war social language of science increasingly emphasised usefulness, accessibility, planning, and ideological commitment. This did not immediately destroy the Academy's authority, but it made its aristocratic or patrician style of prestige appear increasingly out of step with the new political atmosphere. The Academy's future was therefore challenged not only by administrative reform, but by a changing social imaginary of who science was for and who had the right to speak in its name (*Connelly, 2000*; *Heimann, 2009*; *Mádlová, 2024*).

The relationship between science and industry also became more central after the war. Czechoslovakia had inherited strong industrial capacities, and reconstruction required technical knowledge, engineering, chemistry, metallurgy, energy research, transport expertise, and applied scientific organisation. The Masaryk Academy of Labour and technical universities had already represented applied research traditions before the war, but post-war reconstruction made such work more urgent. A learned academy of sciences and arts could not easily meet these industrial and technical demands by itself. It could recognise technical achievement and support scientific publication, but applied research required laboratories, institutional teams, and coordination with state economic priorities. This strengthened the argument for research institutes and for closer planning of science. The future ČSAV would later absorb or reorganise several research capacities in a way that reflected this more centralised understanding. In the immediate post-war years, however, the trend was already visible. Science was increasingly judged not only by learned prestige, but by its ability to contribute to rebuilding and transforming society. ČAVU's broad cultural mission remained noble, but the state's demand for applied capacity was growing stronger (*Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*; *Nový, 1982*).

The humanities and cultural sciences were also reorganised by post-war conditions. The occupation had made history, language, literature, archaeology, law, and art history into fields of endangered memory. After liberation, these fields became central to national recovery. Scholars needed to document occupation, honour resistance, recover suppressed traditions, reassess Czech-German relations, examine collaboration, preserve Jewish memory, restore archives, and interpret the meaning of the republic's destruction and renewal. The Academy's humanistic traditions were therefore highly relevant. However, the humanities also became politically sensitive in new ways. The post-war state and political parties sought narratives of

national suffering, anti-fascist struggle, Slavic solidarity, social transformation, and historical justice. Scholarship could easily be drawn into these narratives. ČAVU's older source-critical and philological culture could serve as a defence against simplification, but the political environment increasingly rewarded interpretations compatible with the new order. The post-war reorganisation of humanistic science therefore involved both restoration of memory and the beginning of new ideological pressures. This transition would become much sharper after 1948, but its foundations were already visible in the first post-war years (*Sayer, 1998*; *Frommer, 2005*; *Franc, Kostlán, & Míšková, 2010*).

The reorganisation of research also depended on archives and documentation. War had created an urgent need to collect records of occupation, resistance, persecution, collaboration, destruction, and institutional damage. At the same time, older scientific institutions needed to preserve their own records in order to establish continuity and legitimacy. The Academy's archival fonds and the records of other learned bodies therefore became important for both historical research and institutional self-understanding. Documentation was not neutral. What was preserved, classified, published, or ignored shaped the way post-war society understood itself. Archives could serve justice, scholarship, commemoration, and political legitimation at the same time. The Academy's documentary culture gave it a role in this process because it had long valued records, membership lists, publication series, and institutional memory. Yet the post-war state increasingly sought to coordinate archives and research within public policy. The preservation of memory, which had been a defensive act under occupation, now became part of a broader institutional reorganisation. Czech science had to move from saving memory to governing memory (*Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*; *Frommer, 2005*).

Personnel reconstruction after 1945 was one of the most difficult tasks. Universities and research institutions had to deal with returning exiles, rehabilitated scholars, delayed students, compromised staff, vacant positions, and the irreversible loss of murdered colleagues. The Academy also faced questions about membership, recognition, and continuity. Who could be treated as a legitimate representative of Czech science after the occupation? How should those who had suffered be honoured? How should those who had compromised be judged? How should younger scholars whose careers had been interrupted be supported? These were not only moral questions, but structural ones. A research system cannot function without people trained across generations, and the war had damaged that generational order. Post-war reorganisation therefore required accelerated training, exceptional appointments, rehabilitation, and sometimes political vetting. The process was necessarily uneven. Some careers resumed; others never recovered; some new opportunities opened; some exclusions continued in different forms. ČAVU's learned culture, based on established reputations, had difficulty adapting quickly to this disrupted personnel landscape. The Academy's final years were thus marked by the tension between inherited scholarly hierarchy and the urgent need to rebuild human scientific capacity (*Štrbáňová & Kostlán, 2011*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Mádlová, 2024*).

The post-war desire for planning also reflected international trends. Across Europe after 1945, science was increasingly seen as essential to national recovery, economic strength, military security, public health, and technological modernisation. The war had demonstrated the strategic power of organised research, from radar and medicine to industrial production and nuclear physics. Even democratic states expanded their research planning, funding systems, and science policy institutions. Czechoslovakia was part of this wider transformation, although

its path would be shaped by Soviet influence and communist power. The older model of academy as a learned society appeared increasingly insufficient in this new environment. Modern science seemed to require coordination, large-scale projects, institutes, laboratories, and state funding. ČAVU's broad learned authority could not easily become a modern research-planning apparatus. This does not mean that it was obsolete in intellectual terms. It means that the institutional ecology around it had changed. The post-war world expected scientific institutions to organise research capacities, not only honour scholarly achievement. This expectation pushed Czech science toward forms that would eventually marginalise ČAVU (*Mauch, 1994*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The influence of the Soviet model became increasingly important in post-war debates, though it did not fully dominate immediately in 1945. The Soviet Union had enormous prestige after the defeat of Nazi Germany, and its institutional model of a central academy of sciences had strong appeal to communist and pro-Soviet actors. In that model, an academy was not merely a society of elected scholars, but a powerful state-supported organisation of research institutes. It concentrated scientific work, connected research to state planning, and gave science a clear place within socialist modernisation. For Czech science, this model was both attractive and dangerous. It promised resources, coordination, and institutional strength. It also implied political control, ideological conformity, and a reduction of plural academic autonomy. In the immediate post-war years, the old ČAVU model and the emerging Soviet-inspired model coexisted as possible futures. The conflict between them was not only organisational; it was civilisational. It concerned whether science would continue as a plural field of universities, academies, societies, and foundations, or become part of a centralised state project. This question would be resolved only after the communist seizure of power, but its roots lay in the post-war reorganisation period (*Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*; *Kaplan, 1993*).

The Academy's identity as an institution of sciences and arts also became more problematic in the post-war context. In the 19th century, the unity of science, literature, and art had expressed Czech national cultural maturity. During the First Republic, this broad conception still fitted the republic's cultural ambitions. After 1945, however, scientific organisation increasingly moved toward functional differentiation. Natural sciences, technical research, social sciences, humanities, and arts were being pulled into different institutional logics. Technical and natural sciences were linked to reconstruction and planning; humanities to national memory and ideology; arts to cultural policy; social sciences to political transformation and state interpretation. The old ČAVU unity of sciences and arts therefore became harder to maintain as a central organisational principle. It still had symbolic value, but modern research policy tended to separate research from artistic recognition. This was one of the reasons why the later ČSAV would not simply continue ČAVU's broad model. The transition from ČAVU to ČSAV was also a transition from a cultural academy of sciences and arts to a state academy of scientific research. The post-war years made that shift increasingly thinkable (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

The political role of Zdeněk Nejedlý and other communist intellectuals became important in shaping the future of science and culture. Nejedlý represented a particular fusion of scholarship, cultural politics, Marxist interpretation, and state authority. His influence after the war signalled that the boundaries between intellectual life and political power were being redrawn. Under such conditions, older institutions like ČAVU could be respected for their historical role but also criticised as insufficiently aligned with the new social order. Communist

cultural policy did not reject scholarship as such; it sought to redefine scholarship according to ideological and state objectives. This made the post-war reorganisation of science part of a broader struggle over cultural hegemony. The Academy's fate was therefore connected with the fate of universities, publishing houses, museums, and cultural associations. The question was not simply how to fund research, but who would define the meaning of science in the new republic. As communist power grew, the answer increasingly favoured centralisation, ideological supervision, and state planning. ČAVU's older autonomy and learned character became increasingly vulnerable (*Connelly, 2000*; *Heimann, 2009*; *Dvořáčková, Franc, & kol., 2019*).

The years between 1945 and 1948 should therefore be understood as a transitional field rather than a stable phase. Older institutions resumed activity, but new political forces were already reshaping their environment. Universities reopened, but their future autonomy was uncertain. The Academy continued, but its model was increasingly questioned. International contacts revived, but geopolitical division was beginning to narrow them. Research institutes expanded or reorganised, but their relation to state planning was not yet fully settled. Scholars returned from exile or imprisonment, but their careers entered a politicised environment. Public culture celebrated liberation, but also moved toward new ideological alignments. This transitional character is essential for understanding the end of the Czech Academy of Sciences and Arts. Its decline after 1948 was not a sudden accident imposed on a completely stable institution. It followed a period in which the entire scientific system was already being rethought. The Academy survived the war, but the post-war order was moving toward forms of science that would not leave much room for its traditional identity (*Zylinská & Svobodný, 1999*; *Míšková, 2010*; *Mádlová, 2024*).

The post-war reorganisation also changed the emotional meaning of institutional continuity. During occupation, continuity had meant survival under threat. After liberation, continuity had to be justified in relation to reconstruction. An institution could not claim value merely because it had endured; it had to show how it would serve the future. ČAVU possessed a powerful historical memory, but the future seemed to demand new structures. This placed the Academy in a difficult position. If it emphasised tradition too strongly, it risked appearing outdated. If it adapted too far to state planning and political expectations, it risked losing its distinctive identity. Its final years were therefore shaped by a problem common to many old institutions after catastrophe: how to transform without dissolving oneself. The answer was not found in time. The political developments after 1948 would move faster than the Academy's capacity for self-reform. The post-war reorganisation of science thus became the beginning of the Academy's institutional end, even before that end was legally completed (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

The post-war moment nevertheless should not be read only as a prelude to communist centralisation. It was also a genuine attempt to repair Czech scientific life after one of the worst catastrophes in its history. Scholars returned to work, students entered universities, publications resumed, libraries reopened, archives were used, research projects continued, and institutions tried to recover their dignity. ČAVU contributed to this recovery by preserving learned memory, recognising scholarly achievement, and maintaining continuity with pre-war Czech science. Its role was real, even if historically temporary. Without such continuity, the later transformation of Czech science would have lacked important personnel, records, traditions, and scholarly standards. Even institutions that are later dissolved can shape the future by transmitting materials, people, and habits into successor structures. The Academy's

final post-war years should therefore be treated with respect, not only as decline. They were years in which the institution helped bridge wartime survival and post-war reconstruction. The tragedy lies in the fact that this bridge led not to renewed liberal academic pluralism, but to a new centralised system that would absorb and supersede it (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

Thus, the post-war reorganisation of Czech and Czechoslovak science after 1945 was a complex process of restoration, purification, reconstruction, and institutional redesign. It reopened universities, revived publications, restored scholarly communication, and allowed the Czech Academy of Sciences and Arts to resume its role as a carrier of learned memory. Yet it also exposed the limits of the older academy model in a world increasingly shaped by state planning, specialised institutes, technical reconstruction, social transformation, and political radicalisation. ČAVU survived the occupation, but survival did not guarantee long-term institutional centrality. The restored republic needed science that could educate, rebuild, modernise, advise, produce, remember, and represent the state internationally. This broad demand encouraged stronger coordination between universities, research institutes, state bodies, and academy-type organisations. At the same time, the growing influence of communist politics and the Soviet model of science began to redefine research as part of a centralised state project. The post-war years therefore placed ČAVU between honour and obsolescence: it was respected as a guardian of Czech scholarly continuity, but increasingly seen as inadequate for the new institutional order. Its end was not caused by a lack of historical importance. On the contrary, it ended because the meaning of scientific organisation had changed around it. The post-war reorganisation of science was thus the first stage in the transition from the Czech Academy of Sciences and Arts to the Czechoslovak Academy of Sciences, from learned national-cultural authority to state-organised research.

2. The Decline of Older Academic Structures after 1948

The communist seizure of power in February 1948 changed the fate of the Czech Academy of Sciences and Arts more decisively than the general post-war reorganisation of science had done. Between 1945 and 1948, the Academy still existed within a transitional field in which restoration, reform, modernisation, and political pressure coexisted. After February 1948, that field narrowed sharply. The older plural order of Czech scholarly life—universities, academies, learned societies, foundations, professional associations, museums, archives, and semi-autonomous research institutes—was increasingly subordinated to a state-socialist conception of science. ČAVU did not disappear immediately, but its institutional future was largely determined by the new political logic. It belonged to a world of civic patronage, learned distinction, national culture, elected authority, and scholarly autonomy, while the new regime demanded ideological reliability, central planning, social transformation, and closer subordination of research to state priorities. This was not simply a conflict between old and new administrative forms. It was a conflict between two concepts of scholarship. One concept understood the academy as a guardian of learned continuity, national culture, and intellectual prestige. The other increasingly understood science as a planned productive force within a socialist state. The decline of older academic structures after 1948 therefore marked the end of a historical model that had connected Czech science with 19th-century national emancipation and interwar republican pluralism. (*Connelly, 2000*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The transformation after 1948 did not begin by abolishing every older institution at once. More often, the regime changed the conditions under which institutions could operate until their older identity became unsustainable. This is important because institutional decline is rarely only a legal event. It is also a gradual loss of autonomy, relevance, resources, symbolic legitimacy, and control over one's own future. ČAVU still possessed members, publications, committees, funds, traditions, and prestige, but the political environment increasingly deprived these elements of their earlier meaning. Election to a learned academy mattered less when political loyalty became a decisive criterion of public authority. A foundation-based culture of support mattered less when the state claimed the right to plan and direct research. Broad humanistic and artistic prestige mattered less when the regime separated science, ideology, culture, and production according to new priorities. The Academy's decline therefore took place before its formal dissolution. It occurred as the older grammar of scholarly life was replaced by a new grammar of socialist science. The institution remained visible, but the world that had made it central was disappearing around it (*Dvořáčková, Franc, & kol., 2019*; *Míšková, 2010*; *Heimann, 2009*).

The February coup transformed the relation between science and the state. In the First Republic, statehood had strengthened Czech science by providing a public framework for universities, academies, libraries, archives, museums, and international representation. After 1948, the state no longer functioned as a democratic patron or coordinator of scholarly institutions. It became the ideological organiser of public life. This distinction is crucial. State support for science can expand research without destroying autonomy if it respects institutional self-government, disciplinary standards, and intellectual pluralism. The communist state, however, increasingly treated autonomy as a political risk. Scientific institutions were expected to align with the goals of socialist construction and Marxist-Leninist ideology. The sciences were not all controlled in the same way, and some natural and technical fields retained relative spaces of professional work, but the general direction was clear. Research was to be organised, evaluated, and legitimised through political categories. In that environment, ČAVU's older authority as a self-conscious learned body became suspect. It represented an inherited hierarchy of distinction that had not been created by the new regime and could not easily be made to serve it without transformation (*Connelly, 2000*; *Kaplan, 1993*; *Dvořáčková, Franc, & kol., 2019*).

One of the most important aspects of the decline was the delegitimation of older elites. ČAVU had been built on the authority of distinguished scholars, writers, artists, and scientists whose prestige came from publications, artistic achievement, teaching, public service, and membership in learned circles. This elite model had always been selective, and it had its own exclusions and conservatisms. Yet it was grounded in scholarly reputation rather than direct political appointment. After 1948, such prestige became vulnerable. The regime distrusted elites formed under the First Republic, especially those associated with liberal democracy, Masarykian humanism, bourgeois culture, independent foundations, foreign contacts, or non-Marxist disciplines. Older scholars could still be used, honoured, or tolerated when useful, but their authority increasingly depended on political acceptability. The very word "bourgeois" became a weapon against inherited academic status. This did not mean that all older scholars were immediately removed or silenced. Some adapted, some cooperated, some withdrew, some resisted quietly, and some were marginalised. Nevertheless, the social basis of the old academy weakened because the new regime wanted a different academic elite, one selected

not only by scholarly achievement but by ideological and political reliability (*Connelly, 2000*; *Frommer, 2005*; *Heimann, 2009*).

The humanities and social sciences were especially exposed to ideological pressure. Historical scholarship, philosophy, sociology, law, economics, literary studies, art history, and cultural studies could not be treated as politically neutral fields by a regime committed to Marxist-Leninist transformation. Their concepts, narratives, and methods were expected to change. The earlier Academy had supported Czech language, history, literature, art, and national culture within a broad learned framework. After 1948, these same fields were drawn into a new ideological order that demanded class interpretation, anti-bourgeois critique, Soviet orientation, and the rewriting of national history according to socialist categories. This was a profound change in the meaning of scholarship. A historian was no longer expected only to establish sources and interpret the past critically; he or she was increasingly expected to situate history within the logic of class struggle and progressive development. A literary scholar could not simply study national literature as cultural memory; literature had to be interpreted in relation to social forces and ideological functions. ČAVU's older humanistic culture, grounded in philology, source criticism, national revival scholarship, and learned pluralism, therefore became structurally vulnerable. It could survive only by being absorbed, redirected, or superseded by new institutions and methods (*Sayer, 1998*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The natural and technical sciences experienced a different pattern of decline and transformation. They were less directly vulnerable to ideological reinterpretation than history, law, philosophy, or sociology, but they were increasingly linked to planning, industrialisation, military needs, and Soviet models of research organisation. The regime valued mathematics, physics, chemistry, engineering, medicine, biology, geology, agriculture, and technical fields because they could serve economic development and state power. Yet this practical value did not preserve older autonomy. It encouraged the creation of planned research structures, institutes, laboratories, and specialised teams under state direction. ČAVU, as a learned academy of elected members and broad cultural prestige, did not fit easily into this model. Its ability to recognise scientific achievement remained real, but recognition alone was not enough in a system that wanted to organise production-oriented research capacities. The natural sciences therefore did not decline in the same sense as older humanistic autonomy; in some areas they expanded. However, they expanded through forms that made the old academy model less central. The future belonged to institutes, plans, budgets, and state scientific policy rather than to a traditional learned society of honour and publication (*Nový, 1982*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The Soviet model of the academy became increasingly influential after 1948. In this model, an academy of sciences was not primarily a prestigious association of scholars and artists. It was a centralised state institution organising research institutes, coordinating scientific work, and linking knowledge with economic and ideological goals. The Soviet academy system offered the communist leadership a powerful alternative to the older Czech pattern of plural scholarly institutions. It promised concentration of resources, clear hierarchy, political oversight, and the symbolic prestige of science serving socialist progress. For reformers and party officials, this model appeared modern, energetic, and capable of overcoming the fragmentation of pre-war and immediate post-war science. For defenders of older autonomy, it threatened the learned society tradition, university independence, foundation culture, and the broad unity of sciences and arts. The appeal of the Soviet model was not only ideological; it also responded

to real problems of modern research organisation. Yet its adoption in Czechoslovakia meant that older institutions would not be reformed on their own terms. They would be evaluated according to a model that already implied their supersession (*Kaplan, 1993*; *Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*).

This change was connected with the growing political role of Zdeněk Nejedlý and other communist intellectuals who linked scholarship, cultural policy, and state power. Nejedlý embodied a type of intellectual authority very different from the older academy ideal. He was a scholar and cultural figure, but also a political actor whose influence helped redefine the relationship between history, culture, education, and ideology. Under his influence and that of the communist cultural apparatus more broadly, the institutions of science and culture were expected to participate in socialist reconstruction. This placed ČAVU in a difficult position. Its members and traditions could be honoured selectively as part of national history, but the Academy as an autonomous structure did not represent the desired future. The regime could appropriate its heritage while preparing its institutional replacement. This is one of the characteristic mechanisms of revolutionary institutional change: the past is not always rejected outright, but it is reclassified. ČAVU could be presented as an important predecessor, while its actual organisational form was judged obsolete. The Academy's symbolic capital could thus be transferred into the legitimacy of a new structure that would not preserve its autonomy (*Československá akademie věd, 1953*; *Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*).

The decline of older academic structures after 1948 was also connected with changes in university life. The universities had reopened after the war with immense symbolic authority, but after the communist takeover they too were subjected to political reorganisation, personnel purges, ideological pressure, and new expectations about social composition. The relationship between universities and research institutions changed accordingly. Under the First Republic, Charles University and ČAVU had coexisted in a plural academic ecology, with overlapping personnel and complementary functions. After 1948, both universities and academy-type institutions were drawn into a state-directed system. Universities remained responsible for education, but advanced research was increasingly imagined as belonging to specialised institutes under central coordination. This shifted the balance away from the older university–academy partnership. The new order did not simply continue the interwar division between formation and recognition. It introduced a more hierarchical separation between teaching institutions and centrally organised research. This separation would become more visible after the establishment of ČSAV, but its foundations were laid in the years when older structures were being weakened. The decline of ČAVU was therefore inseparable from the wider Sovietisation of higher education and research (*Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Connelly, 2000*; *Míšková, 2010*).

Personnel policy was one of the most powerful instruments through which older academic structures declined. After 1948, scholars could be promoted, retained, marginalised, dismissed, or excluded according to political criteria as well as academic qualifications. This affected universities, research institutes, professional societies, publishing houses, and academies. The process was uneven across disciplines and institutions, but its general effect was to weaken the older corporate self-government of scholarly communities. The authority to define competence increasingly moved from scholarly bodies to political and administrative structures. This was devastating for an institution like ČAVU, whose legitimacy rested on election, peer recognition, and the prestige of established achievement. If membership and

leadership no longer operated as the central mechanisms of scholarly authority, the Academy's distinctive form lost power. The regime did not need to discredit every academician individually. It only needed to make the old mechanisms of recognition less decisive than political reliability and state planning. Once that happened, the learned academy became historically vulnerable even before its formal absorption into a new system (*Frommer, 2005*; *Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*).

The decline also involved the weakening of independent foundations and older forms of patronage. ČAVU had been deeply connected with Josef Hlávka's civic vision and with a tradition in which private wealth, foundations, and learned self-organisation supported national culture. This tradition had been central to the Academy's identity from its foundation. After 1948, however, private and semi-private forms of cultural authority were increasingly incompatible with socialist state control. Foundations could be restricted, redirected, nationalised, or deprived of their earlier social meaning. The state claimed responsibility for funding science, but also claimed the right to define priorities. This changed the moral economy of research. Under the older model, a foundation could support scholarship as an expression of civic responsibility and cultural philanthropy. Under the new model, funding became part of state planning and ideological policy. ČAVU's financial and symbolic roots in civic patronage therefore became less relevant to the official future of science. The decline of older academic structures was thus also the decline of a broader civil-society model of scholarly support (*Hlávkova nadace, n.d.*; *Mádlová, 2024*; *Franc & Mádlová, 2013*).

The Academy's inclusion of the arts became another sign of its distance from the new research model. ČAVU had been founded as an academy of sciences and arts, reflecting the 19th-century Czech conviction that national intellectual maturity required science, literature, and artistic culture together. This broad conception had served the national revival, the late Habsburg Czech movement, and the First Republic. After 1948, however, the organisation of science increasingly separated research from artistic and cultural recognition. Art and literature were themselves subjected to socialist cultural policy, but not within the same institutional logic as laboratory science or technical research. The Soviet-style academy model privileged sciences and research institutes; arts were to be organised through other unions, ministries, publishing systems, and cultural bodies. ČAVU's integrated model therefore appeared old-fashioned and institutionally inconvenient. Its broadness, once a strength, became a liability in a system that wanted functional differentiation and ideological control. The decline of ČAVU was consequently not only the decline of a learned society, but also the decline of a particular Czech idea of the unity of science, literature, and art within one national academy (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

Professional societies and older learned associations also lost relative importance after 1948. In the First Republic, scholarly life had been plural, with many disciplinary organisations, journals, societies, editorial boards, museums, archives, and university circles participating in the production of knowledge. This pluralism was not always efficient, and it could be socially narrow, but it allowed intellectual life to develop through multiple channels. The communist regime preferred coordinated and supervised structures. Independent associations, especially those with older elite traditions or foreign links, were potentially problematic. They could preserve alternative forms of authority, memory, or disciplinary self-government. Even when they were not immediately dissolved, their autonomy and public importance could be reduced. The creation of centralised research institutions and state-controlled professional organisations meant that older societies were increasingly displaced from the core of scientific

life. ČAVU's decline therefore formed part of a larger process in which the entire associational culture of Czech scholarship was reorganised. The old republic of learned societies gave way to a state-managed landscape of institutes, councils, committees, and politically supervised organisations (*Míšková, 2010*; *Zylinská & Svobodný, 1999*; *Dvořáčková, Franc, & kol., 2019*).

The archival and documentary culture of older institutions was not destroyed, but it was reclassified. Records, libraries, collections, membership lists, correspondence, publications, and unfinished projects could be transferred, absorbed, reorganised, or preserved under new administrative structures. This created a peculiar combination of institutional death and material survival. ČAVU as an organisational form declined, but many of its documentary and scholarly assets continued to matter. The future ČSAV would inherit personnel, collections, projects, offices, and memories from older bodies. This means that decline should not be confused with disappearance. Older academic structures lost autonomy and identity, but they also supplied the building materials for the new system. The transfer of memory was therefore both preservation and appropriation. It preserved scientific capital, but under a framework that changed its meaning. A dictionary project, archive file, library collection, or research tradition that had belonged to an older learned academy could be continued within a socialist academy, but it no longer carried the same institutional logic. Continuity survived inside rupture (*Česká akademie věd a umění, 1890–1952*; *Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

This duality of rupture and continuity is essential for understanding the period after 1948. It would be inaccurate to describe the communist transformation as simple destruction of Czech science. Many scientific fields continued; some gained resources; new institutes were created; research expanded in areas valued by the state. It would be equally inaccurate to describe the transformation as natural modernisation without loss. The price of expansion was political subordination, ideological pressure, personnel exclusion, and the dismantling of older plural structures. ČAVU's decline stands precisely at this intersection. The Academy represented a historically important but increasingly vulnerable form of national scholarly authority. Its replacement by the ČSAV model would bring stronger research infrastructure, but also a centralised and politically controlled system. The historian must therefore avoid both nostalgia and institutional triumphalism. The old Academy was not simply a golden age of freedom; it had limitations, hierarchies, and conservative tendencies. The new academy was not simply an instrument of repression; it produced real science. Yet the transition between them was marked by coercion and by the narrowing of autonomous scholarly life (*Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The fate of individual scholars during this transition reflected the broader institutional decline. Some members of the older academic establishment found ways to continue working under the new order. Others were pushed aside, deprived of positions, silenced, or forced into retirement. Younger scholars with political loyalty could advance more quickly than they might have under older hierarchies. Exiles and scholars with Western connections were often viewed with suspicion. Those associated with the First Republic's democratic culture could become politically vulnerable. At the same time, some older specialists were too valuable to be discarded immediately, especially in technical, natural-scientific, medical, or highly specialised humanistic fields. This produced a complex personnel landscape rather than a simple replacement of one generation by another. The old academy world declined partly because its people were redistributed into new roles, marginalised, or politically reinterpreted. Individual continuity did not necessarily preserve institutional continuity. A scholar who had

belonged to ČAVU could continue in a new institute, but the meaning of his or her work changed within a different system of authority (*Connelly, 2000*; *Štrbáňová & Kostlán, 2011*; *Dvořáčková, Franc, & kol., 2019*).

The ideological reorientation of research affected the language of institutional legitimacy. Before 1948, ČAVU could justify itself through national culture, scholarly excellence, public service, artistic distinction, and historical continuity. After 1948, such language increasingly had to be supplemented or replaced by references to socialist construction, the working people, planned development, class interpretation, Soviet friendship, and the social function of science. This was more than rhetoric. Institutional language shapes what institutions can imagine themselves to be. If an academy speaks primarily of learned distinction, it protects a certain model of authority. If it speaks primarily of service to socialist production and ideological struggle, it protects another. ČAVU's inherited language did not disappear at once, but it lost official power. New terminology entered reports, public speeches, educational reforms, and scientific planning. The older vocabulary of civic scholarship and national cultural maturity began to sound politically insufficient. Decline therefore occurred at the level of words as well as statutes. The Academy's conceptual world was being replaced before its legal existence ended (*Heimann, 2009*; *Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*).

The international dimension of science also changed after 1948. ČAVU had historically linked Czech scholarship with European academies, learned societies, foreign members, publication exchanges, and international congresses. Under the new regime, foreign relations were increasingly reorganised according to Cold War alignments. Soviet and socialist-bloc connections gained priority, while Western contacts became more politically sensitive. This did not mean that all Western scientific communication ceased immediately, but the atmosphere changed. Scholars with strong Western ties could be viewed suspiciously, and international travel or correspondence became subject to political control. This damaged one of the older Academy's central functions: to place Czech science in a broad European and universal scholarly context. The new system also valued internationalism, but it defined it through socialist internationalism and Soviet leadership. The older cosmopolitan learned culture of ČAVU, grounded in multilingual European correspondence and foreign academic recognition, no longer fit the official geopolitical orientation. The decline of older academic structures therefore included the narrowing and redefinition of international scientific exchange (*Gordin, 2015*; *Kaplan, 1993*; *Dvořáčková, Franc, & kol., 2019*).

The decline after 1948 also reflected a changing attitude towards the past. ČAVU had itself been an institution of memory, preserving Czech scholarly, literary, artistic, and national traditions. The communist regime did not reject the Czech past wholesale, but it sought to reinterpret it through a selective ideological framework. Certain figures and traditions could be celebrated as progressive, democratic, popular, or proto-socialist. Others could be dismissed as bourgeois, nationalist in the wrong way, clerical, formalist, cosmopolitan, or reactionary. This affected the Academy because its own history belonged to the 19th-century national movement and First Republic culture, both of which could be appropriated selectively but not accepted in their full complexity. Josef Hlávka's patronage, the Academy's artistic mission, its elite membership, and its foundation culture were difficult to integrate into socialist institutional ideology without reinterpretation. The older Academy thus became part of a past to be honoured, corrected, and overcome. Its memory was useful, but its model was not. That distinction prepared the way for its incorporation into a new genealogy culminating in ČSAV (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

The process of decline was accelerated by the demand for central coordination of research. Post-war reconstruction had already raised the question of how to organise science more effectively. After 1948, this question was answered increasingly through centralisation. Research was to be planned, financed, evaluated, and directed in accordance with state priorities. This required bodies capable of managing institutes, coordinating disciplines, and producing research aligned with economic and ideological goals. ČAVU, with its classes, memberships, awards, publications, and broad cultural mission, was not designed for such a role. It could not easily become the central executive apparatus of socialist research without ceasing to be itself. The creation of a new academy model therefore appeared more practical than the reform of the old one. Older academic structures declined because the system required a different organisational technology. The learned academy was an institution of recognition and memory; the socialist academy was to be an institution of research production and coordination. This functional shift was decisive (*Míšková, 2010*; *Nový, 1982*; *Dvořáčková, Franc, & kol., 2019*).

The older distinction between academy, university, and research institute was also redrawn. ČAVU had existed alongside Charles University, technical universities, museums, archives, and specialised institutes. Its authority was horizontal and symbolic, linking different fields through prestige and national learned identity. The post-1948 model increasingly preferred vertical organisation. Research institutes were to be placed within a coordinated hierarchy, and their relation to universities was to be defined through state policy. This altered the meaning of academy-based research. The academy was no longer primarily a fellowship or learned society above the disciplines; it was becoming a managerial centre for research organisations. This shift would be completed with the establishment of ČSAV, but its logic was already clear. It made older structures seem fragmented, ceremonial, and inefficient. Yet what was lost in this shift was the plural texture of scholarly life. Universities, learned societies, foundations, and independent institutions had provided multiple centres of authority. The new order promised coordination but reduced plurality (*Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Míšková, 2010*; *Connelly, 2000*).

The decline of ČAVU was not only a Czech matter, but part of a wider East-Central European transformation. After 1945, and especially after communist regimes consolidated power, universities and academies across the region were reorganised according to Soviet-inspired principles. East German, Polish, Hungarian, Bulgarian, Romanian, and Czechoslovak experiences differed in detail, but they shared a broad pattern: higher education and research were subordinated to socialist state-building, older elites were purged or re-educated, Marxist-Leninist ideology entered curricula and research, and academies or research institutes were restructured. Czechoslovakia's transformation therefore belongs to a regional history of the Sovietisation of knowledge. This context helps explain why ČAVU's decline was not merely a local administrative decision. It reflected a geopolitical reordering of science after the Second World War. The older Czech academy tradition had developed through European learned societies, Habsburg and republican institutions, and national culture. After 1948, it was forced into a new Eastern bloc institutional framework. The decline of older structures was therefore also a shift in civilisational orientation (*Connelly, 2000*; *Kaplan, 1993*; *Dvořáčková, Franc, & kol., 2019*).

At the same time, the regime's critique of older institutions was not entirely without practical basis. ČAVU did have limitations. It was elite, slow-moving, ceremonially oriented, socially narrow, and not designed to manage modern large-scale research. It had difficulty

representing all of Czechoslovakia, especially Slovakia, because its historical identity was Czech. Its unity of sciences and arts, while culturally meaningful, did not correspond easily to specialised 20th-century research administration. Its dependence on inherited prestige made it less flexible than newer institute-based structures. These weaknesses made it vulnerable to criticism even apart from communist ideology. However, the solution imposed after 1948 did not merely modernise the Academy while preserving autonomy. It replaced an imperfect plural institution with a centralised system shaped by political control. This distinction is essential. The old Academy needed reform, but the reform that occurred was inseparable from coercive ideological transformation. Its decline was therefore both historically understandable and politically imposed (*Mádlová, 2024*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The years after 1948 also changed the emotional place of ČAVU in Czech scientific memory. An institution that had once symbolised national intellectual maturity increasingly became a predecessor rather than an active centre. Its history was not erased, but it was pushed into the past. The future was being assigned to ČSAV before ČAVU had fully disappeared. This produced a strange temporal overlap. The old Academy still existed, but its successor logic was already being formed. Its members and projects continued in some respects, but the institutional imagination had moved elsewhere. Such moments are historically delicate because they are periods in which institutions live after their future has been taken away. The Academy's final years were therefore marked by a kind of anticipatory obsolescence. It still carried memory, but no longer defined the direction of science. It still possessed prestige, but no longer commanded the structures of renewal. Its decline was the gradual conversion of a living institution into historical inheritance (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Česká akademie věd a umění, 1890–1952*).

This conversion had consequences for how Czech science understood continuity. The new regime wanted to present ČSAV not as a complete rupture with Czech learned history, but as a higher and more modern stage of it. That required older institutions such as ČAVU and the Royal Czech Society of Sciences to be incorporated into a genealogy of progress. Their existence could be acknowledged as preparation, but their institutional form had to be superseded. This narrative allowed the new academy to inherit prestige while rejecting autonomy. It transformed ČAVU into a historical predecessor whose value lay in what it contributed to the socialist future. Such narratives are powerful because they make institutional rupture appear as fulfilment. Yet the historian must be more precise. ČSAV did inherit real scientific capital from ČAVU and other older bodies, but it did so through a political transformation that changed the meaning of academy life. Continuity was therefore mediated by power. The old Academy was not simply continued; it was absorbed, reinterpreted, and ended (*Dvořáčková, Franc, & kol., 2019*; *Franc & Mádlová, 2013*; *Mádlová, 2024*).

The decline of older academic structures also influenced the relationship between science and society. ČAVU had represented a model in which science and culture were tied to national self-organisation, civic patronage, public prestige, and learned honour. After 1948, science was increasingly represented as a social force belonging to the working people and directed by the socialist state. This changed the public image of the scholar. The academician as independent bearer of national learned authority gave way to the scientist as participant in socialist construction. The shift was not complete in everyday reality, because many researchers continued to value disciplinary standards, international recognition, and professional autonomy. Yet official language increasingly defined science through usefulness to state goals. The public authority of older academicians became less important than the institutional

authority of planned research. This transformation altered the civic meaning of scholarship. Science remained prestigious, but its prestige was now bound more closely to state ideology and development narratives. The decline of ČAVU therefore marked a change in the social contract between scholars, institutions, and the public (*Connelly, 2000*; *Heimann, 2009*; *Dvořáčková, Franc, & kol., 2019*).

For Czech academic memory, the period after 1948 is especially important because it demonstrates that institutional continuity can be preserved through forms that also damage autonomy. Older structures declined, but their personnel, archives, collections, projects, and disciplines did not vanish. They entered the new academy system in altered form. Some research traditions benefited from better funding and institutional stability. Others suffered ideological distortion, personnel exclusion, or loss of plural contexts. This mixed legacy is central to the later history of the Czech Academy of Sciences. The modern Academy after 1993 would inherit much from ČSAV, and ČSAV had inherited much from ČAVU and earlier institutions. But each inheritance was marked by political transformation. The decline of ČAVU after 1948 therefore cannot be treated as a closed episode. It shaped the genealogy of Czech academy science for the rest of the 20th century. It created the conditions under which continuity and rupture became inseparable in Czech scientific history (*Franc & Mádlová, 2013*; *Dvořáčková, Franc, & kol., 2019*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*).

Thus, the decline of older academic structures after 1948 was not merely the administrative weakening of the Czech Academy of Sciences and Arts before its formal end. It was a deeper transformation of Czech scholarly life from a plural, civic, learned, and nationally grounded model into a centralised, state-socialist, and Soviet-influenced research order. ČAVU declined because its inherited structures — elected membership, foundation-based support, unity of sciences and arts, scholarly prestige, and relative autonomy — no longer matched the political and organisational logic of the communist regime. The new system demanded planned research, ideological reliability, social transformation, and institutional hierarchy. Yet the decline was not simple disappearance. Older institutions supplied people, archives, collections, projects, traditions, and symbolic capital to the new academy model. The result was a historically complex transition in which scientific continuity survived inside political rupture. ČAVU's final weakening therefore should be read neither as mere obsolescence nor as pure destruction. It was the end of one form of Czech academic modernity and the beginning of another, more powerful in research infrastructure but more vulnerable to political control. The Academy's older world did not vanish without trace; it was absorbed into the structures that replaced it. This absorption made the establishment of ČSAV possible, but it also ensured that the memory of ČAVU would remain a necessary reference point for understanding both the achievements and contradictions of Czech academy science in the 20th century.

3. The Transition from ČAVU to the Model of ČSAV

The transition from the Czech Academy of Sciences and Arts to the Czechoslovak Academy of Sciences was not merely the replacement of one institutional name by another. It was the end of an older learned-academic model and the beginning of a new system of state-organised research. ČAVU had embodied a tradition that linked science, literature, art, national culture, civic patronage, publication activity, elected authority, and scholarly prestige. ČSAV, by contrast, was designed as a central institution of socialist science, modelled in important respects on the Soviet academy system and intended to organise research institutes within a

planned state order. This transition therefore changed the meaning of the word “academy” itself. In the older Czech tradition, an academy had been a body that recognised, supported, published, and symbolically represented learned and artistic achievement. In the new model, an academy was to be an institutional centre of research production, coordination, administration, and ideological alignment. It was not simply a fellowship of distinguished scholars, but a system of institutes, presidia, plans, appointments, budgets, and research tasks. The legal and organisational end of ČAVU in 1952 therefore closed a chapter that had begun with Josef Hlávka’s late 19th-century vision of Czech intellectual maturity. At the same time, it opened a new chapter in which academy-based science became more powerful in infrastructure but more exposed to political control (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

The foundation of ČSAV in 1952 represented the culmination of several processes that had been developing since the end of the Second World War. The post-war reorganisation of science had already raised questions about the adequacy of older learned societies, academies, and foundations for modern research. The communist seizure of power in 1948 then gave these questions a new ideological and administrative answer. Scientific institutions were to be centralised, coordinated, and integrated into the goals of socialist construction. Older structures were not simply judged by their scholarly record, but by their suitability for the new political order. ČAVU could point to a distinguished history, a rich publication tradition, a wide field of scientific and artistic authority, and a symbolic role in Czech national culture. Yet precisely these features made it difficult to integrate into the emerging socialist model without changing its nature. It was too closely connected with civic patronage, national revival culture, First Republic intellectual elitism, and plural scholarly autonomy. The new regime needed not a reformed ČAVU, but a different academy type. The transition to ČSAV therefore expressed both the modernisation of research organisation and the political subordination of scholarship to a new state ideology (*Connelly, 2000*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The Soviet model was decisive because it offered the communist leadership a ready-made institutional grammar for organising science. In that model, the academy was not mainly a prestigious learned society, but the highest state-supported centre of research. It possessed institutes, employed researchers, coordinated programmes, and connected knowledge to economic and ideological priorities. This model seemed attractive because it promised to overcome fragmentation, improve planning, concentrate resources, and give science a clear place within the socialist state. It also fitted the political logic of post-1948 Czechoslovakia, where independent institutions, foundations, and autonomous associations were increasingly regarded with suspicion. The adoption of this model did not mean that Czech scholarly traditions vanished overnight. Many older projects, collections, personnel groups, disciplinary competences, and publication routines were transferred into the new system. Yet their institutional meaning changed. What had once belonged to a plural learned culture now became part of a centralised research apparatus. This is why the transition from ČAVU to ČSAV must be interpreted as both continuity and rupture. It preserved important scientific capital, but it placed that capital under a fundamentally different form of authority (*Kaplan, 1993*; *Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*).

The legal establishment of ČSAV in 1952 marked the formal end of the older academy order. The Czech Academy of Sciences and Arts and the Royal Czech Society of Sciences belonged to a genealogy of learned institutions that reached back to the Enlightenment and the national revival. ČSAV claimed this genealogy, but did not preserve the older organisational form. It

absorbed selected functions and legacies while superseding the institutions that had carried them. This was a typical pattern of socialist institutional transformation: the new body presented itself as the historical successor of earlier progressive efforts, but also as their higher and more scientifically advanced realisation. The older academy could be honoured as a predecessor while being deprived of independent existence. Such a narrative made rupture appear as fulfilment. It suggested that Czech learned society and national academy traditions naturally culminated in socialist research organisation. Historically, the situation was more complex. ČSAV did inherit real scholarly traditions, but it inherited them through a political act that ended the autonomy of the previous academy model. The transition therefore cannot be described as organic evolution alone; it was institutional transformation under ideological pressure (*Česká akademie věd a umění, 1890–1952*; *Franc & Mádlová, 2013*; *Dvořáčková, Franc, & kol., 2019*).

The change from ČAVU to ČSAV also altered the relationship between academy and research. ČAVU had supported research through grants, awards, publications, committees, classes, and scholarly recognition. It had created smaller research units and maintained long-term projects, especially in fields such as language, history, and documentary scholarship. Yet it was not primarily an employer of large research institutes in the later sense. ČSAV was different from the beginning. Its identity rested on the concentration of research institutes and on the idea that academy-based science should be a major organisational sector within the state. This changed the everyday meaning of academic work. The academician was no longer only a bearer of honour and authority; the academy researcher became an employee within a structured institutional system. Research was no longer supported only through recognition or patronage, but organised through workplaces, plans, leadership bodies, and state funding. This was a profound transformation in the sociology of Czech science. It turned the academy from a symbolic summit of scholarly life into one of the principal infrastructures of research production (*Míšková, 2010*; *Nový, 1982*; *Dvořáčková, Franc, & kol., 2019*).

The transformation also redrew the boundary between university and academy science. In the older Czech system, universities trained scholars, while ČAVU recognised mature achievement and supported research. The two spheres overlapped through personnel, publications, committees, and prestige, but they remained institutionally distinct. After the creation of ČSAV, the academy became a much stronger research actor, while universities were increasingly pushed towards the educational side of the system, even though university research certainly did not disappear. This separation was characteristic of the Sovietised model of science. Advanced research was concentrated in academy institutes, while universities were often treated primarily as teaching institutions and as sites for training specialists. The result was a new balance between formation and research. Charles University and other universities continued to play essential roles, but their relation to central research capacity changed. The academy was no longer simply the learned crown of a university-based scholarly culture. It became a parallel research system with its own institutes, leadership, personnel structures, and priorities. This reconfiguration would shape Czechoslovak science for decades (*Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*).

The new model also changed the internal hierarchy of disciplines. ČAVU had joined sciences, letters, and arts in one broad national-cultural institution. This reflected the 19th-century Czech belief that a mature nation needed scientific, literary, artistic, linguistic, and historical authority together. ČSAV, by contrast, was primarily an academy of sciences in the modern

research sense. Humanities and social sciences remained present, but they were placed within a different ideological and administrative framework. The arts were no longer part of the academy's central identity in the way they had been in ČAVU. This marked a significant narrowing of the older concept of culture. The unity of science and art gave way to the separation of research from artistic recognition and cultural policy. Such differentiation was partly a result of modern specialisation, but under socialism it also reflected a political desire to organise culture, education, science, and artistic production through separate controlled channels. The transition therefore ended not only ČAVU as an institution, but also the specific Czech academy idea that had linked science, literature, and art as one national intellectual body (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

The personnel transition was one of the most delicate aspects of the change. The new academy could not build itself without inherited expertise. Many scholars trained before 1948 possessed indispensable competence, especially in specialised fields where knowledge could not be quickly replaced by ideological loyalty. At the same time, the regime wanted to reshape the social and political profile of academic life. Older academicians, professors, editors, librarians, and institute workers were therefore evaluated not only by scholarly merit, but by political reliability, social background, and willingness to work within the new order. Some were incorporated into ČSAV or related institutions; others were marginalised, retired, silenced, or displaced. Younger scholars loyal to the regime could advance more rapidly, although professional competence still mattered in many disciplines. This produced a mixed personnel landscape. Continuity was preserved because older scholars and projects entered the new system. Rupture was produced because the principles of selection and authority changed. The Academy's future was built from inherited human capital, but that human capital was reorganised under political criteria (*Connelly, 2000*; *Štrbáňová & Kostlán, 2011*; *Dvořáčková, Franc, & kol., 2019*).

The transition also affected research institutes that had developed before 1952. Some institutes and offices had roots in the First Republic or immediate post-war years, while others emerged from older academy projects, university circles, state bodies, museums, archives, or specialised research needs. ČSAV incorporated and reorganised many such capacities into a centralised academy framework. This incorporation was one of the main reasons why the new academy could become powerful quickly. It did not create research from nothing. It absorbed existing laboratories, collections, offices, libraries, personnel groups, editorial projects, and disciplinary communities. This fact is essential for avoiding a simplistic narrative. ČSAV was a new political and institutional model, but it rested on accumulated Czech and Czechoslovak scientific capital. The old academy, universities, technical institutions, museums, and specialised institutes all contributed to it. The new system's strength came partly from this inheritance. Yet inheritance under centralisation also meant loss of independent institutional identity for many older bodies (*Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*; *Franc & Mádlová, 2013*).

The transfer of libraries, archives, and documentary infrastructures was equally important. Academy-based science depends on records, publications, catalogues, correspondence, collections, and bibliographical systems. ČAVU and older learned institutions had produced a vast documentary legacy. ČSAV needed that legacy because research continuity cannot be decreed by law alone. A new institution may have political authority, but it cannot function scientifically without inherited sources, libraries, archives, instruments, and expert files. The incorporation of documentary resources therefore helped transform the old academy's

memory into the new academy's working infrastructure. At the same time, the meaning of these materials changed. Records that had once represented the self-government of learned societies now became archival holdings of a superseded order. Publications that had once expressed Czech national scholarly maturity were reclassified as predecessors to socialist scientific development. Libraries that had served plural academic exchange became part of a planned research environment. Documentary continuity survived, but the institutional narrative around it changed sharply (*Podaný, 2001*; *Masarykův ústav a Archiv AV ČR, n.d.*; *Franc & Mádlová, 2013*).

The symbolic date of 1952 must therefore be read as both an ending and an appropriation of memory. ČAVU formally belonged to the period 1891–1952, but its legacy did not stop at the moment of dissolution. It entered the new academy system in the form of personnel, projects, archives, collections, publications, disciplinary standards, and symbolic genealogy. ČSAV needed predecessors because no scientific institution can claim legitimacy only through a political act. It had to present itself as the culmination of Czech and Czechoslovak scientific development. This required a narrative linking the Royal Czech Society of Sciences, ČAVU, post-war research institutes, and the new socialist academy. Yet the continuity was selective. The new academy inherited scientific capital, not the old academy's pluralism, foundation culture, artistic unity, or relative autonomy. It accepted the prestige of the past while rejecting the institutional independence that had produced much of that prestige. This selective inheritance is one of the central paradoxes of the transition (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*; *Dvořáčková, Franc, & kol., 2019*).

The creation of ČSAV also changed the relationship between science and national identity. ČAVU had been a Czech national institution, born from the long struggle to prove the scientific, literary, and artistic maturity of Czech culture. ČSAV was formally Czechoslovak and socialist. It was expected to represent the whole state, not only the Czech national scholarly tradition. This shift mattered because the old Czech academy model could not fully satisfy the political needs of a Czechoslovak socialist republic. The new academy had to include the Slovak dimension, even though the institutional relationship between Czech and Slovak science remained complex and would continue to evolve. The Czechoslovak name also helped distance the new institution from the narrow Czech civic-national framework of ČAVU. At the same time, the strongest institutional and personnel base of the new academy lay in the Czech lands, especially Prague and other established Czech research centres. The transition therefore did not eliminate Czech dominance, but it placed it inside a new state and ideological vocabulary. ČSAV was a Czechoslovak institution built on many Czech inheritances (*Dvořáčková, Franc, & kol., 2019*; *Míšková, 2010*; *Franc & Mádlová, 2013*).

The role of Slovakia in this transition deserves attention because it reveals the limits of a purely Czech narrative. Slovak science had its own institutional history, including the Slovak Academy of Sciences and Arts established during the wartime Slovak state and later reorganised in the post-war and socialist context. The creation of ČSAV was therefore part of a broader Czechoslovak settlement of scientific authority. It had to address the relationship between Prague-based central institutions and Slovak scientific development. This relationship would remain structurally sensitive because centralisation could strengthen state-wide coordination but also reproduce asymmetries. From the viewpoint of ČAVU, however, the main point is clear: the new academy model was not simply the Czech Academy continued under another name. It was a state-wide socialist research institution with a different political horizon. The transition from ČAVU to ČSAV therefore involved not only scientific reorganisation, but also the

redefinition of the national and federal meanings of academic authority. Czech learned history became one component of a larger Czechoslovak socialist institutional narrative (*Dvořáčková, Franc, & kol., 2019*; *Barvíková, 2000*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*).

The ideological language of the new academy was markedly different from that of ČAVU. The older academy had spoken the language of science, art, national culture, learned merit, publication, foundations, and intellectual maturity. ČSAV spoke increasingly in the language of socialist construction, planned development, Marxist-Leninist worldview, usefulness to society, Soviet friendship, and the social function of science. This was not merely rhetorical decoration. Institutional language frames what kinds of research are valued, what forms of authority are legitimate, and what relationship scholars imagine between themselves and the state. In the ČSAV model, science was to be linked to the building of socialism and to the needs of the national economy. Even fundamental research was expected to find a place within a planned system. This did not mean that every scientist accepted ideological language sincerely, or that all research was reduced to propaganda. Many researchers continued to pursue serious scientific work within the new institutional framework. Nevertheless, the official vocabulary of science changed, and this change marked the end of ČAVU's older learned ethos (*Connelly, 2000*; *Kaplan, 1993*; *Dvořáčková, Franc, & kol., 2019*).

The humanities and social sciences were deeply affected by this ideological redefinition. ČAVU had supported historical, linguistic, literary, philosophical, artistic, and cultural scholarship within a broad national learned tradition. ČSAV inherited many of these fields, but placed them under stronger ideological expectations. Marxist-Leninist interpretation, class analysis, Soviet models, and the critique of "bourgeois science" reshaped the humanities and social sciences more directly than most natural sciences. Historical research was expected to emphasise progressive traditions and class struggle. Philosophy was reorganised around Marxism-Leninism. Sociology, law, economics, and related fields were affected by political suspicion and disciplinary restructuring. Philology, archaeology, and history could continue serious work, but they operated within a narrower interpretative environment. This does not mean that all scholarship became worthless. Many valuable projects survived or developed inside the new system. Yet the autonomy of interpretation was reduced. The transition from ČAVU to ČSAV therefore changed the moral and methodological conditions of humanistic scholarship (*Sayer, 1998*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The natural sciences gained new institutional opportunities, but they too were affected by the new order. The academy institute model provided stable workplaces, research teams, long-term projects, and access to state resources. For fields such as chemistry, physics, mathematics, biology, geology, and technical sciences, this could create real capacity. Some of the later achievements of Czechoslovak science would have been difficult without institute-based research. However, growth came with administrative hierarchy and political oversight. Research priorities could be shaped by plans, state needs, and ideological expectations about the role of science in socialist development. International contacts were also reorganised through the geopolitical orientation of the Eastern bloc. Scientists therefore gained infrastructure but lost some freedom. This ambivalence is central to the history of ČSAV. It was not merely an oppressive shell; it became a real research institution. Yet it was built through the liquidation of older academic autonomy and operated within a political system that limited intellectual openness (*Nový, 1982*; *Barvíková, 2000*; *Dvořáčková, Franc, & kol., 2019*).

Publishing changed as well. ČAVU had been especially important for its publication activity, which had long served as a public record of Czech scholarly and artistic achievement. ČSAV developed publishing functions of its own, including journals, monographs, series, bulletins, and specialised publications. This preserved the importance of the printed scientific record, but under a different institutional and ideological regime. Academic publishing now formed part of a state-supported scientific system, with stronger links to planned research and official priorities. Some continuities were clear: disciplines still needed journals, editions, bibliographies, reports, and monographs. Yet the conditions of publication changed because censorship, ideological evaluation, and institutional control shaped what could appear and how it could be framed. The transition therefore preserved the academy as a publishing force while changing the freedom and language of publication. The older publication culture of ČAVU became one source of the new academy's documentary strength, but its civic and plural character was reduced. The printed record continued, but it no longer carried the same institutional meaning (*Československá akademie věd, 1965–1992*; *Podaný, 2001*; *Dvořáčková, Franc, & kol., 2019*).

The transformation of membership was another key difference between the two models. In ČAVU, membership was central to institutional identity. The Academy existed as a learned body of elected scholars, artists, writers, and distinguished intellectuals. Membership recognised individual achievement and gave the Academy its authority. In ČSAV, membership still mattered, but it existed alongside a large research-institute structure. The institution was no longer defined only by academicians and corresponding members; it was also defined by its workplaces, employees, research plans, and administrative bodies. This changed the social meaning of being an academician. Honour remained, but it no longer exhausted the meaning of the Academy. The academy became both a learned body and an employer-organiser of research. This dual nature was characteristic of Soviet-style academies. It allowed the new institution to be more powerful in research terms, but it also made it more bureaucratic and more closely tied to the state. The learned society element survived only as one part of a larger apparatus (*ALLEA, 2008*; *Dvořáčková, Franc, & kol., 2019*; *Franc & Mádlová, 2013*).

The first leadership of ČSAV also carried symbolic meaning. Zdeněk Nejedlý's role connected the new academy with communist cultural policy, historical interpretation, and state authority. His presidency signalled that the academy was to be not only a scientific organisation, but also a politically meaningful institution within socialist Czechoslovakia. The new academy's ceremonial and ideological self-presentation helped legitimise the transformation as a progressive development of national science. At the same time, Nejedlý's position showed how closely intellectual prestige and political authority were now intertwined. This was different from the older academy world, where leading figures could certainly have political views and public influence, but where the institution itself was not designed as an organ of ruling-party cultural policy. The new leadership model reflected the broader post-1948 fusion of scholarship, ideology, and state administration. It also helped define which parts of older Czech culture would be celebrated and which would be criticised. The transition from ČAVU to ČSAV therefore involved a transfer of symbolic authority to a leadership structure aligned with the new regime (*Československá akademie věd, 1953*; *Connelly, 2000*; *Dvořáčková, Franc, & kol., 2019*).

The fate of specialised offices and long-term projects shows the practical complexity of the transition. Some projects that had roots in older academy or learned-society culture continued under the new system because they were scientifically valuable and institutionally useful.

Lexicographical work, historical source projects, archaeological research, mathematical institutes, biological and chemical laboratories, and documentary collections could all be reallocated within the new academy structure. Continuation did not mean that nothing had changed. The same project could be housed differently, funded differently, supervised differently, and interpreted differently. Yet the continuity of projects helped preserve expertise and prevented the complete loss of earlier scholarly investments. This is why the transition cannot be reduced to liquidation. It was also a redistribution of research capacities into a new institutional container. Older Czech science entered ČSAV not as an intact organism, but as a set of organs transplanted into a different body. Some adapted and developed; others lost their earlier context or independence (*Dvořáčková, 2024*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

The transition also affected the relationship between science and public memory. ČAVU had functioned as a guardian of Czech national scholarly memory, especially through its association with language, literature, history, art, and the national revival. ČSAV inherited responsibility for memory-related fields, but within a socialist interpretative order. This produced a double movement. On the one hand, archives, editions, historical research, philology, and archaeology continued, and some received stronger institutional support. On the other hand, the interpretation of national memory became politically structured. Certain traditions were emphasised as progressive or popular, while others were marginalised as bourgeois, nationalist, clerical, or cosmopolitan. The older Academy's memory was therefore not simply preserved; it was reorganised. The past became part of a new story in which socialist science appeared as the fulfilment of earlier national aspirations. This was a powerful legitimising narrative, but it simplified the plural and sometimes contradictory history of Czech scholarship. The modern historian must recover that plurality behind the official continuity (*Franc, Kostlán, & Míšková, 2010*; *Sayer, 1998*; *Franc & Mádlová, 2013*).

The dissolution of ČAVU also changed the place of civic patronage in Czech science. Josef Hlávka's foundation and the older culture of philanthropic support had played a foundational role in creating the Academy. That model assumed that civil society, private wealth, cultural responsibility, and learned self-organisation could build institutions of national importance. Under the socialist regime, this logic was displaced by state ownership, planning, and public funding. The state became the main patron, but also the main controller. This shift had ambiguous consequences. State funding could support large research infrastructures impossible for private foundations alone. Yet it also weakened independent sources of scholarly authority. The Academy no longer stood as a monument to civic initiative in the same way ČAVU had done. It became part of a state system. The replacement of civic patronage by socialist state support was therefore one of the deepest social changes in the transition from ČAVU to ČSAV (*Hlávkova nadace, n.d.*; *Mádlová, 2024*; *Dvořáčková, Franc, & kol., 2019*).

The transition also created a new institutional memory that would later shape the Czech Academy of Sciences after 1993. The modern Czech Academy does not descend from ČAVU alone, nor from ČSAV alone. It inherits a layered genealogy: Enlightenment learned society, national academy of sciences and arts, socialist research academy, and post-socialist public research institution. The transition of 1952 is central because it created the institute-based research system that would survive, in transformed form, beyond socialism. Many present-day academy institutes trace part of their institutional ancestry to the ČSAV framework, even when their deeper scholarly roots reach back further. The modern Academy's research strength owes much to the institute model created in the early 1950s. At the same time, its democratic

legitimacy after 1989 required critical distance from the ideological and political conditions under which ČSAV had been formed. The transition from ČAVU to ČSAV therefore became one of the key historical layers that the contemporary Academy must carry and reinterpret (*Akademie věd České republiky, n.d.*; *ALLEA, 2008*; *Franc & Mádlová, 2013*).

The final disappearance of ČAVU should therefore not be treated as a marginal administrative detail at the end of a chapter. It was the closing of a historical form that had made Czech science visible before political sovereignty, during the First Republic, and through occupation. ČAVU had helped define Czech scholarly identity when language, culture, and science needed institutional recognition. Its end signalled that the central problem of Czech science had changed. The question was no longer whether the Czech nation possessed science, literature, and art worthy of an academy. That had already been answered by the institution's six decades of work. The new question was how science would be organised in a socialist state seeking industrial, ideological, and geopolitical transformation. ČAVU was not built to answer that question. ČSAV was. The transition therefore marked the passage from national-cultural academy to state research academy. It changed the scale, structure, and political meaning of academy-based science in Czechoslovakia (*Mádlová, 2024*; *Míšková, 2010*; *Dvořáčková, Franc, & kol., 2019*).

This transition also clarifies why the history of ČAVU must not be written only as a prelude to ČSAV. ČAVU was not important merely because it preceded the socialist academy. It had its own historical logic: the institutionalisation of Czech scholarly and artistic maturity, the support of language and culture, the recognition of excellence, the development of publications and grants, and the creation of a learned public. ČSAV did not simply improve this model; it replaced it with a different one. The new model solved some problems of modern research organisation but created new problems of autonomy and ideological control. A balanced history must therefore give ČAVU its independent dignity while also explaining why it could not survive the institutional politics of the early 1950s. Its end was historically understandable, but not historically neutral. It represented both adaptation to 20th-century research needs and the political liquidation of a plural academy tradition. The meaning of the transition lies precisely in that ambiguity (*Franc & Mádlová, 2013*; *Mádlová, 2024*; *Connelly, 2000*).

The transition from ČAVU to ČSAV also provides the conceptual bridge to the next part of the book. The story that follows is not simply a continuation of the old Academy under another name. It is the history of a different institution, operating under different political conditions, with different structures of research, authority, and state control. Yet the new institution cannot be understood without the older one. ČSAV inherited personnel, projects, documentary memory, and the accumulated prestige of Czech learned life. It also inherited unresolved tensions: between national mission and universal science, between university and academy research, between autonomy and state service, between humanities and natural sciences, and between continuity and reform. Under socialism, these tensions would take new forms. Some scientific fields would achieve genuine results, while others would suffer ideological distortion. The academy would become both a centre of research achievement and a site of political contradiction. The end of ČAVU therefore does not close the history of Czech academy science; it transforms its central problem. The question becomes how science could produce knowledge inside a centralised and politically controlled institutional order (*Dvořáčková, Franc, & kol., 2019*; *Jareš, Franc, Svobodný, Kunštát, & Cajthaml, 2018*; *Míšková, Barvíková, & Šmidák, 1998*).

Thus, the transition from ČAVU to the model of ČSAV was a decisive institutional rupture that nevertheless preserved important forms of scholarly continuity. The Czech Academy of Sciences and Arts ended as an autonomous national academy of sciences, letters, and arts, rooted in civic patronage, learned prestige, and Czech cultural emancipation. The Czechoslovak Academy of Sciences emerged as a centralised state research institution, shaped by the Soviet model, socialist planning, institute-based organisation, and ideological supervision. This transformation gave Czechoslovak science stronger research infrastructure and a more systematic institutional framework, but it also subordinated academic life more directly to political power. ČSAV inherited people, collections, projects, archives, publications, and disciplinary competence from ČAVU and other older institutions, but it reclassified them within a new order of authority. The transition therefore cannot be judged only as progress or only as loss. It was both the modernisation of research organisation and the end of a plural learned tradition. ČAVU's historical role did not disappear with its dissolution; it became part of the deeper memory of Czech academy science. Yet the form of academy life after 1952 was fundamentally different. The chapter that began with Josef Hlávka's vision of a Czech academy of science, literature, and art ends with the absorption of that vision into a state-socialist research system. This conclusion prepares the history of ČSAV as a history of centralisation, achievement, and contradiction.

References:

Agnew, H. (2004). *The Czechs and the lands of the Bohemian Crown*. Hoover Institution Press.

Akademie věd České republiky. (n.d.). *Awards of the CAS*.CAS.

Akademie věd České republiky. (n.d.). *Formy podpory* [Forms of support]. CAS.

Akademie věd České republiky. (n.d.). *Historie* [History]. CAS.

ALLEA. (2008). *The Academy of Sciences of the Czech Republic*. ALLEA.

Barvíková, H. (Ed.). (2000). *Věda v Československu v letech 1953–1963: Sborník z konference, Praha, 23.–24. listopadu 1999* [Science in Czechoslovakia in 1953–1963: Proceedings of the conference, Prague, 23–24 November 1999]. Arenga.

Brčák, M. (2026). Vlasta Mádlová, *Stálé vojsko vědecké. Česká akademie věd a umění 1891–1952* [A permanent army of science: The Czech Academy of Sciences and Arts, 1891–1952]. *Historie — Otázky — Problémy, 66*(1), 306–308.

Bryant, C. (2007). *Prague in black: Nazi rule and Czech nationalism*. Harvard University Press.

Burke, P. (2000). *A social history of knowledge: From Gutenberg to Diderot*. Polity Press.

Čapková, K. (2012). *Czechs, Germans, Jews? National identity and the Jews of Bohemia*. Berghahn Books.

Česká akademie císaře Františka Josefa pro vědy, slovesnost a umění. (1891–1918). *Rozpravy České akademie císaře Františka Josefa pro vědy, slovesnost a umění* [Proceedings of the Czech Academy of Emperor Franz Joseph for Sciences, Literature and Arts].

Česká akademie věd a umění. (1890–1952). *Česká akademie věd a umění, 1890–1952: Inventář fondu* [The Czech Academy of Sciences and Arts, 1890–1952: Inventory of the fonds].

České vysoké učení technické v Praze. (n.d.). *History*. Czech Technical University in Prague.

Československá akademie věd. (1953). *Zdeňku Nejedlému Československá akademie věd: Sborník prací k sedmdesátým pátým narozeninám* [The Czechoslovak Academy of Sciences to Zdeněk Nejedlý: Collection of studies for his seventy-fifth birthday]. Československá akademie věd.

Československá akademie věd. (1965–1992). *Věstník Československé akademie věd* [Bulletin of the Czechoslovak Academy of Sciences]. Academia.

Charles University. (n.d.). *History of Charles University*. Charles University.

Connelly, J. (2000). *Captive university: The Sovietization of East German, Czech, and Polish higher education, 1945–1956*. University of North Carolina Press.

Digitální knihovna AV ČR. (n.d.). *Královská česká společnost nauk* [Royal Czech Society of Sciences].

Dvořáčková, V. (2024). *The origins of Czech academic lexicography: From foreign-language textual comments to institutional language scholarship*. *Studi Slavistici*.

Dvořáčková, V., Franc, M., & et al. (2019). *Dějiny Československé akademie věd I: 1952–1962* [History of the Czechoslovak Academy of Sciences I: 1952–1962]. Academia.

Franc, M., & Mádlová, V. (2013). *Dějiny Akademie věd ČR v obrazech* [History of the Czech Academy of Sciences in pictures]. Academia.

Franc, M., Kostlán, A., & Míšková, A. (Eds.). (2010). *Bohemia docta: K historickým kořenům vědy v českých zemích* [Bohemia docta: The historical roots of science and scholarship in the Czech lands]. Academia.

Frommer, B. (2005). *National cleansing: Retribution against Nazi collaborators in postwar Czechoslovakia*. Cambridge University Press.

Gebhart, J., & Kuklík, J. (2006). *Druhá republika 1938–1939: Svár demokracie a totality v politickém, společenském a kulturním životě* [The Second Republic, 1938–1939: The conflict between democracy and totality in political, social and cultural life]. Paseka.

Gordin, M. D. (2015). *Scientific Babel: How science was done before and after global English*. University of Chicago Press.

Hájková, D., & Horák, P. (Eds.). (2018). *Republika československá 1918–1939* [The Czechoslovak Republic, 1918–1939]. Nakladatelství Lidové noviny.

Heimann, M. (2009). *Czechoslovakia: The state that failed*. Yale University Press.

Hlávkova nadace. (n.d.). *Josef, Marie a Zdeňka Hlávkových nadání* [The Josef, Marie and Zdeňka Hlávka Foundation].

InterAcademy Partnership. (n.d.). *Czech Academy of Sciences*.

Jareš, J., Franc, M., & kol. (2018). *Mezi konkurencí a spoluprací: Univerzita Karlova a Československá akademie věd 1945–1969* [Between competition and cooperation: Charles University and the Czechoslovak Academy of Sciences, 1945–1969]. Karolinum.

Jareš, J., Franc, M., Svobodný, P., Kunštát, M., & Cajthaml, P. (2018). *Mezi konkurencí a spoluprací: Univerzita Karlova a Československá akademie věd 1945–1969* [Between competition and cooperation: Charles University and the Czechoslovak Academy of Sciences, 1945–1969]. Karolinum.

Kaplan, K. (1993). *Sovětští poradci v Československu 1949–1956* [Soviet advisers in Czechoslovakia, 1949–1956]. Ústav pro soudobé dějiny AV ČR.

Kárník, Z. (2000). *České země v éře První republiky (1918–1938). Díl první: Vznik, budování a zlatá léta republiky (1918–1929)* [The Czech lands in the era of the First Republic (1918–1938). Volume I: Formation, building and the golden years of the Republic (1918–1929)]. Libri.

Kárník, Z. (2002). *České země v éře První republiky (1918–1938). Díl třetí: O přežití a o život (1936–1938)* [The Czech lands in the era of the First Republic, 1918–1938. Volume III: On survival and life, 1936–1938]. Libri.

King, J. (2002). *Budweisers into Czechs and Germans: A local history of Bohemian politics, 1848–1948*. Princeton University Press.

Macura, V. (1995). *Znamení zrodu: České národní obrození jako kulturní typ* [The sign of birth: The Czech National Revival as a cultural type]. H & H.

Mádlová, V. (2024). *Stálé vojsko vědecké: Česká akademie věd a umění 1891–1952* [A permanent army of science: The Czech Academy of Sciences and Arts, 1891–1952]. Academia.

Masaryk University. (n.d.). *History of Masaryk University*. Masaryk University.

Masarykův ústav a Archiv AV ČR. (n.d.). *Fondy Československé akademie věd (ČSAV) a Akademie věd ČR (AV ČR)* [Fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences].

Masarykův ústav a Archiv AV ČR. (n.d.). *Fondy starších vědeckých institucí, ústavů a spolků* [Fonds of older scientific institutions, institutes and societies]. https://www.mua.cas.cz/cs/fondy-starsich-vedeckych-spolecnosti

Mauch, J. E. (1994). *The transformation of research in the Czech Republic*. ERIC.

McClellan, J. E. (1985). *Science reorganized: Scientific societies in the 18th century*. Columbia University Press.

Míšková, A. (2010). Vývoj mimouniverzitní vědy v Československu a ČSAV po roce 1945 [The development of non-university science in Czechoslovakia and the CSAS after 1945]. In M. Franc, A. Kostlán, & A. Míšková (Eds.), *Bohemia docta: K historickým kořenům vědy v českých zemích* [Bohemia docta: On the historical roots of science in the Czech lands]. Academia.

Míšková, A., Barvíková, H., & Šmidák, M. (1998). *Československá akademie věd 1969–1972: Restaurace komunistické moci ve vědě* [The Czechoslovak Academy of Sciences 1969–1972: Restoration of communist power in science]. Ústav pro soudobé dějiny AV ČR.

Národní muzeum. (n.d.). *History of the National Museum*. National Museum. https://www.nm.cz/en/about-us/history

Nový, L. (Ed.). (1982). *Věda v Československu 1945–1960: Pracovní zasedání 22.–23. 10. 1980* [Science in Czechoslovakia 1945–1960: Working meeting, 22–23 October 1980]. Ústav československých a světových dějin ČSAV.

Orzoff, A. (2009). *Battle for the castle: The myth of Czechoslovakia in Europe, 1914–1948*. Oxford University Press.

Podaný, V. (2001). *Knihovny ČAVU a KČSN od roku 1918 do vzniku ČSAV* [Libraries of the Czech Academy of Sciences and Arts and the Royal Czech Society of Sciences from 1918 to the establishment of the Czechoslovak Academy of Sciences]. Strakonice.

Pokorná, M. (2010). *Královská česká společnost nauk* [The Royal Czech Society of Sciences]. In M. Franc, A. Kostlán, & A. Míšková (Eds.), *Bohemia docta: K historickým kořenům vědy v českých zemích* [Bohemia docta: The historical roots of science and scholarship in the Czech lands]. Academia.

Radio Prague International. (2021, February 14). *190 years since birth of architect and philanthropist Josef Hlávka*.

Sayer, D. (1998). *The coasts of Bohemia: A Czech history*. Princeton University Press.

Strategie AV21. (2017). *Strategy AV21: Top research in the public interest*. Czech Academy of Sciences.

Šlechtová, A., & Levora, J. (2004). *Členové České akademie věd a umění 1890–1952* [Members of the Czech Academy of Sciences and Arts, 1890–1952]. Academia.

Štrbáňová, S., & Kostlán, A. (Eds.). (2011). *Sto českých vědců v exilu: Encyklopedie významných vědců z řad pracovníků Československé akademie věd v emigraci* [One hundred Czech scholars in exile: Dictionary of foremost Czech émigré scholars from the Czechoslovak Academy of Sciences]. Academia.

Ústav dějin umění AV ČR. (2015). *A Sense of Art: Prizes Given by the Czech Academy of Sciences and Arts, 1891–1952*.

Zylinská, B., & Svobodný, P. (Eds.). (1999). *Věda v Československu v letech 1945–1953: Sborník z konference* [Science in Czechoslovakia in 1945–1953: Conference proceedings]. Karolinum.

Part Two.

The Czechoslovak Academy of Sciences: Centralisation, Achievement, and Contradiction, 1952–1989

Chapter Three

The Creation of the Czechoslovak Academy of Sciences, 1945–1962

Post-War Science and the Search for a New Institutional Model

1. Czech and Czechoslovak Science after 1945

The end of the Second World War did not return Czech and Czechoslovak science to the institutional world that had existed before Munich, occupation, and wartime destruction. It reopened that world only partly, and even this reopening occurred under conditions of political uncertainty, administrative improvisation, and moral reckoning. The universities had to recover after years in which Czech higher education in the Protectorate had been violently interrupted, while many scholarly careers had been broken by imprisonment, forced labour, exile, collaboration, or death. Scientific societies and academies also returned to public life, but they did so in a country whose political imagination had changed profoundly. The restored Czechoslovak Republic was no longer simply trying to revive the liberal-democratic order of the First Republic; it was also trying to absorb the experience of occupation, resistance, Soviet liberation, social radicalisation, and the growing conviction that science must serve reconstruction. In this sense, Czech and Czechoslovak science after 1945 was not merely restored; it was placed under pressure to justify itself anew. The authority of scholarship, which had previously been connected with national culture, professional expertise, and university tradition, now had to be translated into the language of planning, production, public usefulness, and social transformation. The immediate post-war years therefore became a laboratory of institutional transition rather than a simple prelude to the foundation of the Czechoslovak Academy of Sciences. The later creation of ČSAV did not arise from nothing in 1952; it emerged from seven years of discussions, experiments, negotiations, and political interventions concerning the organisation of research in the post-war state (*Macková, 2017*).

In 1945, the first task was practical recovery. Laboratories had to be reopened, collections inspected, libraries reorganised, university buildings returned to academic use, and professional networks reconstructed after years of interruption. This recovery was uneven because different disciplines had experienced the war in different ways. Some fields, especially those linked to national language, history, literature, and cultural identity, carried the symbolic weight of national restoration. Others, particularly physics, chemistry, medicine, engineering, agriculture, and mathematics, were increasingly valued for their potential role in economic reconstruction and technological modernisation. The result was a dual post-war agenda. On one side stood the inherited humanistic and national mission of Czech scholarship, deeply rooted in the long 19th century and in the First Republic. On the other side stood a new demand for organised, state-supported, strategically useful research. This duality would define the whole foundational period of the future Academy. Czech science after 1945 had to be both a guardian of national continuity and an instrument of state-directed

modernisation. That tension was not accidental; it was the central problem from which the new institutional model would later be formed.

The restoration of Czechoslovakia itself gave the scientific question a federal and national dimension, even before formal federalisation became a constitutional issue in later decades. Czech and Slovak scientific institutions had developed under different historical conditions, and the post-war state had to decide how to balance Prague's long-established academic centrality with Slovak institutional development. The Slovak Academy of Sciences had been created during the wartime Slovak state and then re-established after the war, while Czech institutions possessed older and denser scholarly traditions. The problem was not simply whether the state should have one academy or several academies; it was whether Czechoslovak science could be organised as a common state project without reproducing an asymmetry between Czech and Slovak intellectual centres. Prague naturally remained dominant because of Charles University, the Czech Technical University, the Czech Academy of Sciences and Arts, the Royal Czech Society of Sciences, and a dense network of museums, libraries, archives, laboratories, and professional societies. Yet the post-war political language of equality and reconstruction made it impossible to ignore Slovak scientific development. The later position of the Slovak Academy within the Czechoslovak Academy of Sciences would reflect this tension between centralisation and national plurality. The official history of the Czech Academy of Sciences notes that the Slovak Academy was formally connected with the Czechoslovak Academy in the later socialist period, but the roots of this relationship lay already in the post-war search for a Czechoslovak model of science (*Akademie věd České republiky, n.d.*).

The Czech Academy of Sciences and Arts remained an important inherited institution during the immediate post-war years. Its symbolic capital was considerable, for it connected modern Czech science with the philanthropic and national-cultural legacy of Josef Hlávka and with the pre-war prestige of Czech scholarly life. Yet after 1945 it could no longer function merely as a learned society in the old sense. The official historical overview of the present Czech Academy of Sciences records that Zdeněk Nejedlý became the last president of the Czech Academy of Sciences and Arts in 1945 and held this role until 1952, precisely the period in which older learned forms were being transformed into a new research infrastructure (*Akademie věd České republiky, n.d.*). This detail is more than a biographical fact. It indicates that continuity and rupture were intertwined at the highest institutional level. Nejedlý embodied both the older Czech scholarly world and the new political-cultural order that would lead towards a socialist academy. Under his presidency, the Academy did not simply preserve ceremonial traditions; parts of its structure began to move towards specialised research institutes. This gradual institutionalisation of research departments was one of the bridges between the older academy of recognition and the later academy of planned research.

Several specialised institutes founded or developed in the years after 1945 show how the transformation began before the formal establishment of ČSAV. The Czech Language Institute was founded in 1946, the Nuclear Physics Institute emerged between 1946 and 1950, the Mathematical Research Institute appeared in 1947, and the Institute for Czech Literature developed in 1947–1948 (*Akademie věd České republiky, n.d.*). This list is especially revealing because it contains both national-humanistic and modern scientific fields. Language and literature represented cultural continuity, the codification of Czech identity, and the symbolic renewal of national scholarship after occupation. Nuclear physics and mathematics, by contrast, represented the new scale of post-war science, in which laboratories, teams,

equipment, and long-term state support became indispensable. These institutional developments show that the future academy was not merely imposed as a Soviet-style shell upon a passive landscape. It also absorbed real post-war needs that had already become visible inside Czech scholarship itself. The problem was that these needs were subsequently channelled into a political framework that increasingly subordinated research to ideological and administrative control. The same institutes that demonstrated the vitality of post-war scholarship also became building blocks of a centralised academic system.

The universities occupied a complicated position in this emerging order. Their reopening after the war restored an essential component of Czech public life, but it also exposed the fragility of the older university-centred model of science. Universities were responsible for teaching, professional formation, research, and cultural authority, yet the post-war state increasingly expected research to be organised in larger, more specialised, and more directly manageable institutions. This was partly a general European trend, since the expansion of modern science required institutes, laboratories, technical infrastructure, and long-term funding beyond the traditional professorial chair. In Czechoslovakia, however, the trend was intensified by political pressures after 1948. John Connelly's comparative study of the Sovietisation of East German, Czech, and Polish higher education shows that the Czech lands became one of the most important cases for observing how communist regimes transformed universities according to political, ideological, and social criteria (*Connelly, 2000*). The university was no longer treated as a self-governing corporation of scholars but as a strategic institution for producing cadres. This did not eliminate scholarship, but it changed the conditions under which scholarship could be pursued. Research, teaching, political education, and social selection were increasingly drawn into one administrative field.

The social composition of higher education became a central post-war issue. The democratic promise of the restored republic and the later communist rhetoric of class transformation both challenged the old social profile of academic life. Access to universities and scientific careers was no longer to be understood simply as a matter of gymnasium preparation, family culture, and professional inheritance. The new political language demanded the inclusion of workers, peasants, women, and socially disadvantaged groups, although in practice such inclusion was often linked to party loyalty and ideological screening. This development had an ambivalent meaning for science. On the one hand, it challenged genuine elitist barriers and expanded the social imagination of education. On the other hand, it introduced political criteria into academic selection and promotion. The scientist was increasingly expected to be not only competent but also socially and ideologically reliable. This expectation would later become crucial for the formation of academic elites in ČSAV. The Academy's first generation was therefore not simply a continuation of the pre-war scholarly elite; it was shaped by the political reclassification of expertise after 1945.

The Communist takeover of February 1948 marked a decisive turning point, but it did not erase the complexity of the previous three years. Between 1945 and 1948, Czechoslovak public life still contained plural political forces, older democratic habits, and significant professional autonomy. Yet the Communist Party was already gaining influence in cultural and educational policy, and figures such as Zdeněk Nejedlý played an important role in translating Marxist, national, and pan-Slavic rhetoric into the language of Czech historical continuity. Scholarship was increasingly framed as a social force that had to overcome bourgeois individualism, nationalist narrowness, and alleged remnants of the First Republic's class order. After February 1948, this language became a governing programme rather than one political current

among others. The reorganisation of science could now be pursued through ministries, party organs, commissions, personnel policy, and institutional legislation. The future Academy would emerge not only from scholarly debates about efficiency but also from the new regime's wish to make science administratively visible and politically governable. This is why the post-war history of Czech science cannot be separated from the history of state power. Institutional reform became one of the principal methods by which political authority entered the intellectual field.

At the same time, it would be misleading to reduce the whole period to repression alone. Many scientists, engineers, physicians, linguists, historians, and mathematicians genuinely believed that the old institutional framework was insufficient for the tasks of the post-war world. The war had demonstrated the importance of organised research in weapons, medicine, communications, industry, agriculture, demography, and public administration. The United States, the Soviet Union, Britain, France, and other major states had all drawn lessons from wartime science, even if they institutionalised those lessons differently. Czechoslovak scholars were aware that small-state science could not rely solely on individual professorial initiative. It needed concentration of resources, collective research teams, specialised institutes, international contacts, and stable funding. These aspirations were compatible, at least in principle, with a strengthened academy. The tragedy of the period lay in the fact that legitimate modernising needs were increasingly fused with ideological monopoly. A centralised research system could solve some organisational problems while creating new intellectual constraints. The foundational period of ČSAV was therefore born from both modernisation and coercion.

The humanities were affected in a particularly sensitive way because they stood at the intersection of scholarship, national memory, and ideology. History, literary studies, philosophy, linguistics, ethnography, and art history had been central to Czech national self-understanding since the 19th century. After 1945, these disciplines were needed for cultural reconstruction, but they were also vulnerable to ideological redirection. The official image of Czech history was increasingly reorganised around progressive, popular, anti-feudal, anti-German, Slavic, and eventually Marxist-Leninist narratives. Nejedlý's influence was important precisely because he presented communism not as a foreign doctrine but as the heir of Czech democratic and national traditions. This rhetorical strategy allowed the new regime to appropriate older patriotic scholarship while condemning rival interpretations as bourgeois, cosmopolitan, clerical, nationalist, or reactionary. For historians and literary scholars, the pressure was not only external censorship. It involved a deeper demand to reinterpret the national past through categories approved by the new political order. The post-war renewal of Czech humanities therefore contained an unresolved contradiction. It protected certain national-cultural institutions while narrowing the range of legitimate historical explanation.

The natural and technical sciences experienced a different but equally consequential transformation. Their political value increased because they were associated with industrialisation, energy, defence, health, agriculture, and international prestige. Nuclear physics, mathematics, chemistry, and engineering became especially important as symbols of modernity and as instruments of state development. The formation of the Nuclear Physics Institute between 1946 and 1950 illustrates the early recognition that modern research required dedicated institutional capacity (*Akademie věd České republiky, n.d.*). Yet the natural sciences were not free from ideology. Biology, genetics, psychology, sociology, and some areas of medicine could be directly affected by Soviet doctrinal campaigns, while physics and

mathematics were more protected by their technical indispensability and international standards. Even in the more protected disciplines, however, research planning, travel restrictions, publication policy, and personnel decisions shaped intellectual life. The post-war state wanted results, but it also wanted political loyalty. The scientist became a producer of knowledge within a planned social order. This new role would later become one of the defining features of the Czechoslovak Academy of Sciences.

The question of international orientation was also transformed after 1945. Czech science had long been multilingual and European, with German, French, British, Russian, and later American connections. Before the war, many Czech scholars had moved naturally between Prague, Vienna, Berlin, Paris, London, and other European centres. After 1945, the German connection was morally and politically compromised by occupation, although German-language scholarship itself could not simply be erased from scientific memory. The Soviet Union, by contrast, acquired new symbolic authority as the liberating power and as the supposed model of socialist modernity. This did not immediately mean that all Western contacts disappeared, but the direction of prestige began to change. After 1948, Soviet science was increasingly presented as the normative model for organisation, ideology, and planning. The future Academy would be imagined partly through this Soviet lens. Still, the persistence of older European standards meant that Czechoslovak science never became a simple copy of Soviet science. It remained a field of adaptation, negotiation, selective imitation, and sometimes quiet resistance.

The learned societies of the older era faced an especially difficult transition. Their traditional authority rested on membership, publication, scholarly recognition, and cultural prestige rather than on large laboratories or direct state planning. After 1945, they could still claim historical legitimacy, but they appeared increasingly inadequate to a regime that wanted centralised administration and measurable institutional output. The Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts were therefore not merely abolished in a mechanical act; they were gradually reinterpreted as predecessors whose historical capital could be absorbed into a new socialist institution. A study of the Royal Bohemian Society of Learning notes that the 1952 law presented the new Czechoslovak Academy of Sciences as being created through the reconstruction of earlier Czech scholarly societies (*Pokorná, 2006*). This formulation was politically useful because it allowed the regime to claim continuity while changing the substance of institutional life. The new Academy could present itself as the heir of the Enlightenment learned tradition and the national academy tradition, even as it reorganised scholarship according to socialist centralism. This was one of the characteristic techniques of the period. Rupture was legitimised by the language of inheritance.

The administrative preparation of the new academy was prolonged because the problem was genuinely complex. It involved ministries, party institutions, universities, academies, research institutes, professional societies, Slovak scientific bodies, and individual scholars with different expectations. Macková's work emphasises that the foundation of the Czechoslovak Academy of Sciences was preceded by seven years of deliberations about how to organise research institutions in the post-war era (*Macková, 2017*). These deliberations reveal that institutional design was not simply dictated in one moment from Moscow or from the party centre. There were competing visions of whether research should remain close to universities, be concentrated in state institutes, be coordinated by a learned academy, or be fully reorganised according to the Soviet model. The final outcome favoured centralisation, but the path towards it passed through debates, compromises, and the absorption of pre-existing

institutions. This matters because it helps explain why ČSAV inherited such a heterogeneous structure. It was at once a learned corporation, a network of research institutes, a state-planning instrument, and a symbolic national institution. Its internal tensions were already present in the circumstances of its birth.

The economic reconstruction of Czechoslovakia strongly influenced scientific priorities. The country emerged from the war with significant industrial capacity, especially in the Czech lands, but also with damaged infrastructure, demographic disruption, borderland upheaval, nationalisation, and the consequences of expulsion and resettlement. Science was expected to contribute to reconstruction not as a distant cultural good but as a practical resource. Technical expertise, agricultural research, public health, geology, chemistry, transport, and industrial standardisation all acquired strategic importance. The post-war state increasingly viewed knowledge as part of production. This view was not uniquely communist, but in Czechoslovakia it became embedded in the transition towards a planned economy. The scientist's work was connected with national plans, industrial branches, and state investment priorities. Even basic research had to defend itself through claims about future utility or ideological value. The future Academy would inherit this expectation that scientific excellence and economic usefulness should be institutionally connected.

The political vocabulary of the time often presented science as democratic, progressive, and socially responsible. These words had different meanings in different mouths. For many post-war intellectuals, democratisation meant widening education, rebuilding public culture, and preventing the return of elitist or authoritarian structures. For communist policymakers, democratisation increasingly meant class restructuring, party control, and the subordination of institutions to socialist construction. This ambiguity allowed reforms to advance with broad rhetorical support even when their practical consequences narrowed autonomy. The university professor, the academy member, and the institute researcher could all be portrayed as servants of the people rather than guardians of corporate privilege. The question was who had the authority to define "the people" and their scientific needs. After 1948, the answer became increasingly clear: the party-state claimed that authority. This changed the meaning of scientific responsibility. It turned responsibility from a professional and ethical concept into an administrative and ideological obligation.

The post-war transformation also affected the moral status of scholars. The occupation had raised painful questions about collaboration, resistance, silence, exile, and survival. Some academics returned with the prestige of suffering or resistance; others were compromised by wartime accommodation or by association with German institutions. Personnel policy therefore involved both moral purification and political selection. In principle, a democratic state had reason to remove collaborators and restore victims. In practice, the boundary between moral reckoning and political purge became increasingly unstable. After 1948, political loyalty could outweigh scholarly merit, while accusations of bourgeois nationalism, cosmopolitanism, or reactionary thought could damage academic careers. This atmosphere shaped the recruitment of the post-war scientific elite. It also encouraged caution, conformity, and strategic adaptation among those who wished to continue research. The later Academy was built not only from institutions but also from biographies marked by war, political choice, and professional vulnerability.

The case of Zdeněk Nejedlý illustrates the fusion of scholarship, politics, and symbolic authority in the post-war period. He was not merely an administrator placed over science from

outside; he was a historian, musicologist, professor, public intellectual, and politician whose authority came from several fields at once. His presidency of the Czech Academy of Sciences and Arts after 1945 gave him a bridge to the older academic world, while his communist politics made him a central actor in the new order. Secondary literature on Czech communist intellectuals stresses that Nejedlý framed communists as heirs of great Czech national traditions, thereby connecting Marxist politics with a patriotic historical narrative (*Mervart, 2017*). In scientific policy this mattered because it gave ideological transformation a national-cultural grammar. The new order did not present itself simply as a foreign import; it claimed to complete the progressive line of Czech history. This claim was powerful, but also deeply selective. It preserved certain historical symbols while subordinating them to a new political teleology.

The preparation of ČSAV must therefore be understood as part of a wider redefinition of expertise. In the First Republic, expertise had been linked to democratic administration, professional associations, universities, and the modernising state. After 1945, and especially after 1948, expertise was increasingly recoded as a resource of socialist planning. The expert was useful, but only if integrated into the political economy of the new regime. This did not mean that all experts became propagandists. Many continued to do serious research, train students, publish important work, and maintain international standards wherever possible. Yet the institutional environment changed the incentives and risks surrounding expertise. A successful research programme needed not only scientific plausibility but also institutional protection, political acceptability, and administrative alignment. This was one reason why a central academy could appear attractive. It offered resources and status, but at the price of closer incorporation into the state.

The period after 1945 also changed the scale of scientific ambition. Czechoslovakia was a medium-sized European state, but it possessed strong industrial traditions, high educational standards, and a dense cultural infrastructure. Its scientific community could not compete with superpowers in all fields, yet it could build strong national schools, specialised institutes, and internationally respected research programmes. The future Academy was imagined as a mechanism for concentrating this potential. It would prevent fragmentation, coordinate priorities, support basic research, and elevate national science in the socialist world. The problem was that concentration could easily become bureaucratisation. Coordination could become control, and strategic priority could become ideological exclusion. This ambivalence was already visible in the post-war years. The same argument that justified better support for research also justified the centralisation of authority over research.

One should also note the generational dimension. Older scholars who had been formed in the Habsburg period or the First Republic brought with them traditions of European academic autonomy, philological rigour, laboratory discipline, and civic scholarship. Younger scholars entered academic life in a world shaped by war, socialism, Soviet prestige, and new forms of career selection. Between these generations there could be cooperation, but also deep misunderstanding. The older generation often possessed authority and expertise, while the younger generation could possess ideological legitimacy and institutional opportunity. The new Academy would have to combine these forces because it could not function without established scientists, yet it could not politically rely only on them. This produced a layered elite structure. Some pre-war authorities were retained for their prestige and competence, while politically reliable younger cadres were promoted into new roles. The result was neither total replacement nor simple continuity. It was a managed recomposition of the scientific elite.

The post-war development of specific institutes shows how concrete research needs interacted with institutional politics. The Institute for Czech Literature, whose formation process began in the late 1940s, emerged from a scholarly need to organise literary-historical research, bibliography, archives, and editorial work on a national scale. Its institutional timeline records key steps in 1946 and 1947, including the creation of a founding commission and approval of its statute (*Ústav pro českou literaturu AV ČR, n.d.*). Such institutes were not simply administrative inventions. They responded to real scholarly problems: the need to collect sources, prepare critical editions, organise research teams, and build durable disciplinary infrastructure. Yet once placed within the emerging academy system, these institutes also became subject to ideological supervision. In literary studies, this meant that questions of canon, realism, national tradition, class interpretation, and socialist culture became institutionally sensitive. The same institute could therefore be both a centre of serious scholarship and a site of political discipline. This dual character was typical of the foundational period.

Mathematics offers a contrasting example of disciplinary continuity and institutional adaptation. Czech mathematics had strong pre-war traditions, professional societies, and university centres, but post-war research increasingly required institute-based organisation. Historical accounts of the Mathematical Institute describe its connection with the Union of Czechoslovak Mathematicians and Physicists and its later incorporation into the Academy framework after the establishment of ČSAV by law in 1952 and its operation from the beginning of 1953 (*Křížek, 2002*). Mathematics was less ideologically exposed than history or literary studies, but it was not institutionally isolated. Its development depended on libraries, journals, international exchange, teaching, and the recruitment of young researchers. The Academy could provide a stable research environment, especially for specialised work not easily contained within university teaching structures. At the same time, the separation of research institutes from universities risked weakening the organic link between advanced research and student formation. This problem would become increasingly important in the relationship between the Academy and Charles University. Its roots, however, were already present in the post-war reorganisation of science.

The state's attitude towards basic research was therefore complex. Official rhetoric often privileged practical usefulness, but the creation of institutes in mathematics, language, literature, and nuclear physics shows that the state also recognised the symbolic and long-term value of fundamental disciplines. The contradiction lay in how that value was justified. Basic research could be defended as a source of future technological progress, as a component of national prestige, as a necessary foundation for higher education, or as a field in which socialist countries had to demonstrate superiority. These justifications sometimes protected research from crude utilitarianism. Yet they also placed science within a competitive ideological frame. Czechoslovak science was expected to show that socialism could organise knowledge more rationally than capitalism. This expectation created pressure to produce visible institutional success. The Academy, when founded, would become one of the principal showcases of that success. Its origins were therefore inseparable from the politics of representation.

The cultural memory of the First Republic complicated the new order. The interwar period had left a powerful image of democratic education, civic scholarship, and European orientation. Many post-war scholars had been formed by that world and could not simply abandon its standards. Even communist intellectuals often sought to reinterpret rather than erase the First

Republic, distinguishing between its democratic promise and its alleged bourgeois limitations. Scientific institutions thus became arenas in which the memory of Masarykian democracy, national revival, resistance, socialism, and Soviet modernity were selectively combined. This combination was unstable. The regime needed continuity because continuity legitimised the new Academy as the culmination of Czech scientific development. But it also needed rupture because rupture justified personnel changes, ideological supervision, and institutional centralisation. The history of science after 1945 is therefore a history of controlled inheritance. The old world was not simply destroyed; it was edited, reclassified, and incorporated.

By the early 1950s, the direction of travel had become unmistakable. The state would not merely support science from outside; it would reorganise science from within. Learned societies would lose their former autonomy, universities would be politically transformed, and specialised institutes would be gathered into a central academy structure. The Czechoslovak Academy of Sciences was established under Act No. 52/1952, replacing or absorbing older non-university scientific institutions and learned societies into a new central research institution (*Akademie věd České republiky, n.d.*). The precise chronology is important: the law was adopted in 1952, while the Academy began operating as the new central institution from the beginning of 1953 in many institutional accounts. This chronology shows that 1952 was not merely an administrative date but the formal closure of the post-war search for a model. The search had begun with restoration, repair, and discussion. It ended with a socialist academy designed to combine scholarly prestige, research institutes, state planning, and ideological leadership. The new institution was therefore both an answer and a problem. It answered the demand for organisation, but it also institutionalised political control.

Czech and Czechoslovak science after 1945 should consequently be read through the language of transition rather than simple decline or simple progress. There was real reconstruction, real institutional creativity, and real expansion of research capacity. There was also political narrowing, ideological pressure, and the erosion of older forms of autonomy. The future ČSAV inherited both sides of this history. It was not merely the product of Sovietisation, although Sovietisation decisively shaped its final form. It was also the product of older Czech academic traditions, post-war modernising needs, the growth of specialised research, the federal Czech-Slovak question, and the political ambitions of the communist state. This is why the foundation of the Academy cannot be understood only as a bureaucratic act in 1952. It must be understood as the institutional condensation of the whole post-war transformation of science. The years between 1945 and 1952 formed the intellectual, administrative, and political terrain on which the Academy became possible.

Thus, Czech and Czechoslovak science after 1945 stood at a crossroads where restoration, modernisation, national memory, socialist planning, and ideological discipline converged. The reopening of universities and the renewal of scholarly life gave the impression of return, but the deeper movement was towards a new institutional order. Older academies and learned societies supplied legitimacy, personnel, traditions, and symbolic continuity, while emerging institutes supplied the practical architecture of modern research. The political transformation after 1948 redirected this process into a centralised model that would culminate in the Czechoslovak Academy of Sciences. Yet the Academy's creation cannot be reduced to political imposition alone, because it also answered real needs for coordination, infrastructure, funding, and disciplinary consolidation. Its foundational ambiguity lay precisely here: it was simultaneously a modern research institution, an heir to Czech learned traditions, a Czechoslovak state project, and an instrument of socialist governance. This ambiguity would

shape its early leadership, its relations with universities, its disciplinary hierarchy, and its achievements throughout the first decade of its existence.

2. The Transformation of Universities, Institutes, and Learned Societies

The transformation of Czech and Czechoslovak science after 1945 unfolded not only through the reopening of universities and the recovery of scholarly work, but through a deeper reclassification of the institutional forms in which knowledge was produced, represented, financed, and controlled. The pre-war landscape had been plural and layered: universities carried the authority of teaching and professorial research; learned societies represented scholarly distinction, publication, and symbolic continuity; state institutes performed specialised research tasks; professional associations connected scientists across fields; and technical, medical, agricultural, linguistic, archaeological, historical, and area-studies bodies served both scholarship and public administration. This plural order had never been without tension, because the relationship between universities, academies, state offices, and voluntary scholarly associations had always required negotiation. Yet after 1945 the question became more urgent, because post-war reconstruction demanded a more concentrated and predictable research apparatus. The old model could no longer rely on private patronage, ceremonial prestige, scattered committees, and professorial initiative alone. The war had revealed the strategic value of organised scientific capacity, and the post-war state increasingly viewed knowledge as a resource of national recovery. The Communist seizure of power in 1948 then shifted the same problem into a different register: organisation became centralisation, coordination became political supervision, and reform became Sovietisation. The period from 1945 to 1952 was therefore not a simple passage from “old” to “new”, but a dense process in which many older institutions were first revived, then reorganised, then absorbed into a new state-academic structure. The later ČSAV was built from this mixed material: university traditions, learned-society prestige, state-institute expertise, ministerial planning, ideological oversight, and the practical desire for paid research posts. This is why the transformation of universities, institutes, and learned societies must be treated as the institutional core of the Academy’s creation, rather than as a secondary administrative background.

The universities were the most visible symbols of national recovery in 1945, especially because Czech higher education had been violently closed during the Nazi occupation. Charles University, the Czech Technical University, Masaryk University in Brno, Palacký University in Olomouc after its post-war renewal, and other higher schools represented not only teaching institutions but also moral sites of national survival. The reopening of higher education after the war therefore carried a strong symbolic charge. It suggested that the scholarly nation, silenced in 1939, could speak again. Yet this restoration did not mean that universities simply resumed their earlier position in the scientific system. They returned into a state that expected them to train professionals for reconstruction, to absorb new social groups, to repair the intellectual losses caused by war, and to align themselves with a rapidly changing political order. Charles University itself notes that it could resume activity only after the end of the Second World War and that the German University in Prague ceased to exist with the collapse of the Nazi German Reich (*Charles University, n.d.*). The disappearance of the German university changed the Prague academic landscape profoundly, because it ended the older dual Czech-German university structure that had existed since the late 19th century. Czech

higher education thus became more nationally unified, but also more exposed to state and party intervention. The moral victory of reopening was accompanied by a structural vulnerability. Universities had prestige, but prestige alone could not protect them from the new political technologies of control.

The first post-war years still allowed a measure of intellectual pluralism, and many academics hoped that university autonomy could be restored after occupation. This hope was not naïve, because the Czech university tradition had long associated scholarship with self-government, faculty authority, and the Humboldtian idea of research-based teaching. The problem was that the same tradition was already under criticism before the communist monopoly of power. Reform debates from the 1930s to the 1950s had raised the question of whether universities were too corporative, too closed, too socially selective, and too slow to respond to the needs of modern society. A Charles University dissertation on the reform of Czech higher education stresses precisely this long prehistory: it follows discussions about the future of higher education from the 1930s to the 1950s and shows how universities faced the tension between institutional freedoms and demands for public service (*Beneš, 2016*). This matters because the communist reform did not invent every criticism of the old university model. It appropriated existing modernising arguments and placed them within a one-party framework. The demand that universities serve society could have led to democratic expansion, stronger research infrastructure, and better public financing. Instead, after 1948, it became a justification for removing self-government and subordinating teaching and research to state-defined ideological tasks. The university's transformation therefore had two faces. It answered real questions about modernisation, but it did so through authoritarian institutional means.

The Higher Education Act of 1950 marked the decisive legal break in this transformation. It was not merely another educational regulation, but a restructuring of the university as an institution. Research on the Sovietisation of tertiary education in Slovakia describes this act as the first unifying factor in Czech and Slovak communist policy on tertiary education and notes that the new framework subordinated universities completely to the state, deprived them of academic self-government, and gave the government the power to abolish, merge, divide, name, and locate universities and faculties (*Šutajová, 2023*). The same analysis emphasises that the reform introduced Soviet models into internal university organisation and contributed to the separation of scientific and educational activities, a phenomenon especially marked in Czechoslovakia (*Šutajová, 2023*). This legal change was crucial for the future Academy, because it weakened the older university-centred model of research at the very moment when specialised non-university institutes were being strengthened. Universities remained important, but they were no longer treated as the natural home of advanced research. Their primary function was increasingly defined as training, ideological education, professional preparation, and the production of cadres for socialist society. Scientific work did not disappear from universities, but its institutional centre of gravity began to move. The creation of ČSAV would later formalise this shift by making the Academy the principal non-university research complex of the state. In that sense, the transformation of the university was one half of the Academy's birth.

The internal life of universities was also transformed through personnel screening, student selection, faculty reorganisation, and ideological instruction. The rhetoric used for these interventions was often "democratisation", but the practical meaning of democratisation was highly political. It meant broadening access for favoured social groups, reducing the influence of older academic elites, and identifying students and teachers deemed socially or politically

unreliable. In Slovakia, the so-called democratisation actions included exclusions of students, and the process was connected with action committees, investigations, and political intimidation (*Šutajová, 2023*). In the Czech lands the pattern differed in detail, but the general logic was similar: universities were to be cleansed, reoriented, and made politically useful. John Connelly's comparative study of East German, Czech, and Polish higher education remains central because it shows that Sovietisation was not a uniform mechanical import, but a process adapted by local communist parties and local academic cultures (*Connelly, 2000*). In Czechoslovakia, the process was particularly effective because the regime combined legal reform with social selection and institutional restructuring. Faculties, seminars, departments, student organisations, and academic appointments were drawn into the political field. The old academic hierarchy was not simply replaced overnight, because competent professors and researchers were still needed. Yet their authority was placed under new conditions. Academic survival increasingly required tactical adaptation to the language of Marxism-Leninism, planning, class origin, and political loyalty.

This transformation of universities had direct consequences for the future division of labour between teaching and research. In the older university ideal, teaching and research were inseparable, at least at the level of principle. Professors taught through research, students entered disciplines through seminars, and the university chair served as both pedagogical and scholarly centre. The post-war and early socialist model moved in another direction. It created or strengthened specialised research institutes outside universities and assigned them growing responsibility for systematic research programmes. This shift had a rational modernising component: 20th-century science required laboratories, libraries, collections, long-term projects, technical staff, and institutional continuity beyond the capacity of individual chairs. Yet the political context changed the meaning of this shift. A research institute could be more easily financed, planned, inspected, and directed than a university faculty with inherited self-governing traditions. The academy institute became a more manageable unit of scientific production. The university remained indispensable for education, but the Academy increasingly claimed the status of the organised research centre of the socialist state. This separation would later generate both cooperation and rivalry between ČSAV and Charles University, because the Academy needed university-trained talent while universities needed access to research infrastructure and prestige.

The learned societies underwent a different but equally significant transformation. Before 1948, institutions such as the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts represented the older learned tradition. Their authority derived from election, publication, scholarly reputation, historical continuity, and public representation of science. The Czech Academy of Sciences and Arts, according to the official historical overview of the present Academy, was a selective learned society whose role consisted in representing Czechoslovak science at home and abroad, publishing scholarly work, and redistributing scholarships and grants from state and private funds (*Akademie věd České republiky, n.d.*). This was a very different institutional logic from that of the later ČSAV. A learned society did not necessarily employ large numbers of full-time researchers, run extensive laboratory networks, or manage state research plans. It honoured, published, supported, represented, and connected scholars. Its weakness after 1945 lay precisely in the fact that symbolic authority no longer seemed sufficient. A state committed to reconstruction and planning wanted research capacity, not only representation. The learned society therefore had to be either

transformed into an academy of institutes or displaced by one. In the Czech case, both happened at once.

The Czech Academy of Sciences and Arts was especially important because it provided the most visible bridge between continuity and rupture. In 1945, Zdeněk Nejedlý became its last president and remained in that position until 1952, the year of the new Academy's foundation (*Akademie věd České republiky, n.d.*). This presidency symbolised the ambiguous nature of the transition. Nejedlý belonged to the world of scholarship and culture, but he was also one of the most influential communist intellectuals and cultural politicians of the period. Under his presidency, the Academy did not remain a purely ceremonial body. Its specialised departments began to develop into research institutes, including the Czech Language Institute in 1946, the Nuclear Physics Institute between 1946 and 1950, the Mathematical Research Institute in 1947, and the Institute for Czech Literature in 1947–1948 (*Akademie věd České republiky, n.d.*). These developments reveal that the old Academy was already changing from within before the formal creation of ČSAV. Its committees and departments began to acquire the character of permanent research institutions. This was not yet full Soviet-style centralisation, but it was an important step towards it. The learned society was becoming an institutional nursery for future academy institutes.

The transformation of learned societies also involved the absorption of their representational functions. The Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts had embodied a freely elected scholarly representation, even if their social and disciplinary composition had often reflected older elite structures. The present Czech Academy's page on scientific societies explicitly states that the Czech scientific community lost its freely elected scientific representation in 1952, when those older bodies were replaced by the newly established Czechoslovak Academy of Sciences, which had a distinctly political mission (*Akademie věd České republiky, n.d.*). This statement is important because it clarifies the qualitative difference between incorporation and succession. The new Academy claimed to inherit the functions of older learned societies, but it did not reproduce their mode of self-representation. Membership in ČSAV was not simply a continuation of free scholarly election under old rules. Many members of the earlier societies became academicians or corresponding members, so personal continuity existed. But institutional autonomy was broken. Representation was now filtered through the state and party. The Academy thus combined scholarly prestige with political mandate, a combination that made it powerful but also compromised its independence from the beginning.

State institutes formed the third major pillar of the transformation. They were neither universities nor classical learned societies, and this made them especially important for the future Academy. Many had been created after the foundation of Czechoslovakia in 1918 to perform specialised research tasks connected with national culture, public administration, international representation, economic development, archaeology, history, language, and area studies. Macková lists among the relevant post-war non-university institutions the Czech Academy of Sciences and Arts, the Royal Bohemian Society of Sciences, the Czechoslovak National Research Council, the Masaryk Labour Academy, and ministry-administered institutes such as the State Institute of Archaeology, the State Institute of Folk Music, the Institute of History and Editing, the Institute of Slavonic Studies, and the Oriental Institute (*Jůnová Macková, 2017*). These institutions mattered because they already possessed staff, libraries, collections, archival materials, publication programmes, international links, and specialised scholarly identities. The future ČSAV did not need to invent an entire research

system ex nihilo. It could incorporate, reorganise, and rename existing bodies. Yet incorporation also meant a loss of independent budgeting, independent research planning, and older connections with ministries, universities, business circles, and learned committees. The state institutes were therefore both beneficiaries and victims of the new order. They gained stable posts and Academy funding, but they lost the flexible institutional ecology in which they had originally developed.

The Oriental Institute offers an especially vivid example of this transformation. In the interwar period it had not been only a narrow philological research body. It connected scholarship, language instruction, international knowledge, economic information, and practical relations with regions beyond Europe. Macková notes that both the Oriental Institute and the Institute of Slavonic Studies had business sections engaged in commercial, marketing, and intercultural communication research and that they maintained connections with ministries and export companies (*Jůnová Macková, 2017*). This means that the interwar institute embodied a broad concept of area knowledge, one that linked scholarship with diplomacy, trade, language, and public expertise. After the war, the Oriental Institute tried to rebuild itself as a research and teaching institute, but the centralisation proposals of 1946–1947 raised immediate concerns. According to Macková, the institute's representatives feared that the proposed academy structure would be gigantic, clumsy, short of personnel, and poorly suited to the institute's specific character (*Jůnová Macková, 2017*). After February 1948, however, the balance changed. Revolutionary action committees altered executive structures, and by the early 1950s the institute had moved towards full-time research staffing under the future Academy framework. Its older business function was lost, while its scholarly staff expanded. The transformation therefore narrowed some functions while strengthening others.

The Institute of Slavonic Studies followed a comparable but not identical trajectory. Its interwar and early post-war work combined language, literature, historical, geopolitical, and cultural research on Slavic regions. It had its own scholarly traditions and international networks, but it was also exposed to the ideological importance that Slavic studies acquired after the war. In the new political climate, Slavic scholarship could easily be drawn into Soviet-oriented cultural policy. Macková shows that the institute received centralisation propositions in late 1946 and discussed its future relationship to the Academy during 1947 (*Jůnová Macková, 2017*). At first, a looser relationship to the Academy seemed possible. By 1952, however, the institute's affiliation to the new Academy was treated as a fact, and its reorganisation was assessed through models influenced by Soviet institutional structures. Macková records that Václav Husa proposed a system of language, history, and literary studies following the model of the Slavonic Studies Institute of the Soviet Academy of Sciences (*Jůnová Macková, 2017*). Here the logic of transformation is visible with particular clarity. A pre-existing Czech and Czechoslovak scholarly body was not simply destroyed; it was reinterpreted through a Soviet institutional template. Its field remained, but its framework changed.

The State Institute of Archaeology and the State Historical Publishing Institute illustrate another dimension of the same process. These institutions were deeply connected with national historical culture and with the production, preservation, and interpretation of sources. The Institute of History of the present Czech Academy notes that it builds on the tradition of the Czechoslovak State Historical Publishing Institute founded in 1921, whose primary mission was to publish sources on Czech and European history, and that this institute was integrated into the Czechoslovak Academy of Sciences in 1952 (*Historický ústav AV ČR, n.d.*). This case shows how the Academy absorbed long-term editorial and documentary projects that could

not easily be sustained by individual university chairs. Source publication required continuity, staff, archives, philological competence, and stable financing. Integration into the Academy could therefore provide real institutional advantages. Yet in the early socialist context it also subjected historical scholarship to ideological criteria. The production of sources might remain technically rigorous, but the framing of historical interpretation became politically sensitive. Thus the Academy inherited the infrastructure of historical scholarship while transforming its governance and intellectual environment. The same process would affect archaeology, ethnography, folklore studies, literary history, and linguistics, each in a different disciplinary register.

The emergence of central research institutes in the natural sciences reflected a still broader reorientation of scientific organisation. The official historical overview of the Czech Academy states that seven central research institutes, focused on biology, chemistry, physics, geology, mathematics, astronomy, and polarography, were gradually built as part of the Scientific Research Centre founded in 1949 (*Akademie věd České republiky, n.d.*). Macková similarly describes a "Centre for scientific research" envisaged by the State Planning Office and established in 1949, with centralised institutes in biology, chemistry, physics, geology, mathematics, astronomy, and polarography (*Jůnová Macková, 2017*). These institutes signalled a decisive change in scale. Natural science was no longer imagined primarily as the work of university professors with laboratories attached to faculties. It became a planned institutional sector, expected to serve industrialisation, technological modernisation, public needs, and international prestige. The inclusion of polarography was particularly meaningful because Jaroslav Heyrovský's work represented one of the strongest Czech claims to international scientific originality. Mathematics, physics, chemistry, and geology also required collective infrastructure and long-term support. The scientific institute became the basic unit of this new research order. When ČSAV was created, it inherited not only older humanities institutes but also this emerging system of centralised natural-science research.

The mathematical institutions show how professional continuity and political transformation could coexist. The Mathematical Institute of the Czech Academy of Sciences and Arts had been established in 1947, was reorganised in 1950 as the Central Mathematical Institute, and was then incorporated into the Academy after the foundation of ČSAV in 1952, with incorporation taking place in 1953 (*O'Connor & Robertson, n.d.*). This sequence reveals a layered evolution rather than a single founding moment. First came disciplinary consolidation within the older Academy; then came centralisation into a state research institute; finally came absorption into the new Czechoslovak Academy of Sciences. Mathematics was not as ideologically exposed as history, ethnography, or literary studies, because its internal standards were more resistant to political rewriting. Yet it was still shaped by institutional planning, publication policy, international orientation, and the relationship between university teaching and academy research. The establishment of journals such as the Czechoslovak Mathematical Journal in the early 1950s also points to the importance of publication infrastructure in the new academy system. The Academy could support disciplinary continuity by providing stable institutional form. But it also relocated mathematical research from the older university-society ecology into a state-governed research hierarchy. This relocation would have long-term consequences for Czech mathematics.

The Institute for Czech Literature and the Czech Language Institute show how national-cultural scholarship was converted into institute-based research. Language and literature had always been central to Czech learned life because they touched the deepest layers of national identity.

In the 19th century, philology, lexicography, literary history, and textual scholarship helped construct the cultural legitimacy of the modern Czech nation. After 1945, these fields acquired renewed importance because the Nazi occupation had attacked Czech cultural autonomy. Yet after 1948, the same fields were also ideologically vulnerable. The Czech Language Institute, founded in 1946 out of earlier lexicographical work, represented continuity with long-term scholarly efforts to codify and study Czech. The Institute for Czech Literature, formed in 1947–1948, similarly institutionalised literary history, bibliography, archives, canon formation, and editorial work. Official Academy history lists both among the specialised departments that became scientific institutes during Nejedlý's presidency (*Akademie věd České republiky, n.d.*). These institutes gave national scholarship professional stability, but they also placed it within a system where cultural interpretation was expected to accord with socialist principles. The transformation of linguistic and literary studies therefore had a dual meaning: preservation of national scholarly infrastructure and political reframing of national culture.

The Masaryk Academy of Labour occupied a special position because it represented the interwar connection between technical expertise, applied knowledge, and state-building. Founded in 1920, it was designed to organise technical labour operations in Czechoslovakia, and the official Academy history identifies it as one of the important scientific institutions of the interwar period (*Akademie věd České republiky, n.d.*). Its very name linked Masarykian statehood with labour, technology, and modernisation. After 1948, however, this legacy could not be incorporated without reinterpretation. The word "labour" suited socialist rhetoric, but the Masarykian democratic and civic frame did not. Technical expertise was highly valued by the socialist state, yet the institutional memory of the First Republic had to be selectively edited. This is one of the broader patterns of the period. Useful institutions were not necessarily rejected because of their origins; rather, their histories were rewritten, their personnel filtered, and their functions redistributed. The Academy system could absorb applied and technical traditions while detaching them from older political meanings. In this way, the transformation of institutes was also a transformation of institutional memory. The new order preserved many capacities but changed the narrative under which they were allowed to exist.

The Czechoslovak National Research Council also demonstrates how international representation of science was reorganised. In the interwar period, such bodies connected Czechoslovak scholarship with international scientific organisations and European academic networks. The official Academy history notes that robust international relationships of Czech research institutions culminated in affiliation with the International Union of Academies and the International Research Council (*Akademie věd České republiky, n.d.*). After 1945, international orientation became politically sensitive. Western contacts did not vanish immediately, but after 1948 Soviet and socialist-bloc connections acquired official priority. The Czechoslovak-Soviet Institute, established in 1950 and later included in the Academy, functioned as an ideological and mediating body linking Czechoslovak science with Soviet institutions and research interests (*Jůnová Macková, 2017*). This was more than normal international cooperation. It institutionalised Soviet orientation as a structural component of scientific life. The older plural internationalism of Czech science was replaced by a hierarchical internationalism centred on Moscow. Yet many disciplines continued to need Western literature, methods, instruments, and recognition, creating a persistent tension between official orientation and scientific necessity.

The financial transformation of research institutions was one of the most decisive changes of the period. Older learned societies and institutes often relied on a mixture of state subsidies,

donations, foundation income, membership structures, publication revenue, and personal networks. After the war, this economy became increasingly fragile. Private patronage and philanthropic support could not function as before, especially in a state moving towards nationalisation and planned finance. Macková notes that from 1946 to 1951 new research institutes were formed and former representative institutions were reorganised into state-financed institutes with paid researchers, and that these bodies were intended to become part of the new centralised Academy (*Jůnová Macková, 2017*). This development helps explain why the Academy could attract younger researchers. It offered salaries, posts, libraries, teams, budgets, and the promise of professional research careers. For scholars without secure university chairs, this was a major opportunity. The price was dependence on central plans and Academy administration. The transformation of finance thus changed the social structure of scholarship. It made full-time research more possible, but also made research more dependent on the state.

The conversion of institutes into paid research workplaces changed the meaning of scientific work itself. In the old learned-society model, scholarship often coexisted with teaching, public service, museum work, archival work, ministry work, or private intellectual activity. The new model increasingly imagined the researcher as a full-time employee of an institute, integrated into a plan, evaluated through tasks, attached to a scientific board, and supported by technical or administrative staff. This was a genuine professionalisation of research. It could produce stronger teams, better continuity, and larger projects. But it also introduced bureaucratic rhythms into intellectual life. Research plans had to be approved, staffing had to be negotiated, budgets had to be justified, and ideological expectations had to be observed. Macková's case studies show that institutes entering the Academy often accepted centralisation as a matter of fact because affiliation offered subsidised research and full-time jobs, especially attractive to younger scholars (*Jůnová Macková, 2017*). The older generation, often established at universities, did not always need these opportunities in the same way. This generational divide helped the centralisation process. The Academy did not only impose itself from above; it also offered career openings from below.

The transformation of property and collections was equally important. Scientific institutions are not only legal entities or scholarly communities; they are also repositories of books, instruments, archives, specimens, documents, field notes, maps, manuscripts, photographs, and specialised collections. When institutes entered the Academy, these assets moved with them or were redistributed. Macková notes that the assets of former independent state institutes were absorbed into Academy assets, mainly through a dedicated liquidation board, and that the Academy took possession especially of libraries and collections (*Jůnová Macková, 2017*). This detail has broader significance. Control of collections meant control of research infrastructure. A library or archive could determine what kinds of projects were possible, who had access to materials, and how disciplinary memory was preserved. Centralisation therefore altered not only administration but also the material basis of scholarship. It gathered resources under Academy authority and weakened the independent institutional identities to which those resources had previously belonged. At the same time, it may have protected some collections from neglect or underfunding. The new Academy was therefore both a centralising power and a custodian of accumulated scholarly capital.

The absorption of institutes did not occur in a uniform or purely coercive way. Different institutions responded differently, depending on their finances, personnel, disciplinary culture, political exposure, and prospects within the new system. Some resisted or criticised early

centralisation proposals. Others accepted affiliation silently once the political situation had changed. Macková's analysis emphasises that by 1952–1953 affiliation was not truly voluntary and welcome, but it was also not actively opposed by most of the affected institutions (*Jůnová Macková, 2017*). This formulation captures the atmosphere of constrained pragmatism. Scholars understood that the direction of change had been decided, but they still tried to protect their fields, staff, libraries, and research agendas inside the new framework. Negotiation did not mean freedom; it meant adaptation within narrowing limits. Some institutes may have hoped that Academy affiliation would bring stability and expansion. Others may have feared the loss of identity but lacked the means to resist. The resulting institutional order was therefore neither simply imposed nor freely chosen. It was produced through pressure, opportunity, silence, and tactical accommodation.

The Slovak dimension adds another layer to this transformation. Slovak scientific institutions had their own history and were not simply extensions of Prague institutions. The Slovak Academy of Sciences and Arts had wartime origins and retained institutional significance after 1945, despite the problematic political context of its foundation. Research on Slovak tertiary education notes that this body retained autonomy as a scientific institution until 1952, when it was replaced by the Slovak Academy of Sciences (*Šutajová, 2023*). In the broader Czechoslovak framework, the relationship between Czech and Slovak scientific development was therefore delicate. Prague had older and stronger institutions, but Slovak scientific life could not be reduced to a provincial appendix. The new Czechoslovak Academy had to claim state-wide authority while acknowledging Slovak institutional specificity. Later arrangements would make the Slovak Academy an autonomous part of the overarching academy structure, but the roots of this relationship lay in the immediate post-war and early socialist reorganisation of science. The transformation of universities and institutes was therefore also a transformation of Czechoslovak statehood. Scientific centralisation had to manage both disciplinary and national pluralism.

The ideological transformation of institutes was especially visible in fields connected with society, culture, and history. Ethnography is a strong example because it dealt with national culture, rural life, folklore, class transformation, and the representation of "the people". Macková records that an Ethnographic Institute was proposed as part of the Academy, with offices in Prague and Brno, and that its research aims were connected with analysing national culture in the past and present, especially where the current transformation of society and order was manifested (*Jůnová Macková, 2017*). This language reveals how a scholarly field could be reoriented towards socialist social observation. Ethnography no longer meant only the collection of traditional customs, songs, costumes, and rural forms. It became a discipline expected to interpret the changing socialist nation. This did not eliminate scholarly value, because ethnographic documentation remained important. But it changed the field's official questions, categories, and priorities. Similar ideological reframing affected sociology, philosophy, history, literary studies, pedagogy, and parts of psychology and biology. The Academy's institute structure gave these disciplines stability while also making them vulnerable to doctrinal supervision.

The natural sciences were not immune to ideology, but their transformation was often mediated through different pressures. Physics, chemistry, mathematics, geology, and astronomy were valued for their practical and prestige functions. Their international validity depended on standards that could not be wholly rewritten by local ideology. Yet their institutions were still drawn into state planning, Soviet orientation, and personnel control.

Biology was more exposed to ideological campaigns, especially where Soviet doctrines such as Lysenkoism affected acceptable research positions. The Faculty of Science at Charles University records that after the Communist Party took power in 1948, the Soviet model of education and science was implemented and ideological currents such as Lysenkoism were forced into the academic sphere (*Faculty of Science, Charles University, n.d.*). This illustrates how university science and Academy science shared the same political environment. The institute model did not free natural science from ideology. It provided resources and organisation, but it also placed research within a framework of approved priorities. The degree of constraint varied by field, but no discipline was institutionally untouched. Scientific quality and political pressure coexisted uneasily throughout the foundational period.

The transformation of universities, institutes, and learned societies also altered the public meaning of science. Under the older plural model, science appeared in several public forms: university lectures, academy sessions, society publications, museum exhibitions, public lectures, professional journals, state reports, and cultural debates. After centralisation, the Academy increasingly became the public face of organised research. This made science more visible as a state project. It also reduced the symbolic independence of the scientific public sphere. Scientific societies, once autonomous or semi-autonomous spaces of professional association, lost much of their representational role. Universities, once the natural public centres of learned authority, were increasingly treated as educational institutions under state direction. Institutes, once varied in function and affiliation, were reclassified as parts of a planned research network. The public could still encounter science through publications, lectures, museums, and education, but the institutional voice of science became more centralised. This was one reason why the Academy's creation had such symbolic importance. It did not only reorganise researchers; it reorganised how science appeared before the state and society.

The personnel consequences of this transformation were profound. Older academic elites did not disappear, but their status changed. Some were incorporated into the new Academy as academicians, corresponding members, directors, or scientific board members. Others were marginalised, retired, pressured, dismissed, or politically silenced. Younger researchers often gained opportunities through newly created posts, especially in institutes that expanded after Academy affiliation. Macková's examples show that institutes such as the Oriental Institute and the Institute of Slavonic Studies experienced staff growth and new research positions around the moment of incorporation (*Jůnová Macková, 2017*). This created a new professional stratum of academy researchers, different from the older professoriate. Their careers depended less on university chairs and more on institute employment, research plans, and Academy hierarchy. This was a decisive social change in Czech and Czechoslovak science. It created a research profession that could be more stable and specialised, but also more dependent on state structures. The Academy was therefore not only an institution; it was a new career system.

The transformation of institutional governance was equally significant. In universities, self-government was weakened or abolished by legal and administrative reforms. In institutes, older committees, boards, and elected bodies were replaced or subordinated to directors, scientific councils, party structures, and Academy planning organs. In learned societies, free election and corporate representation gave way to membership within a politically defined academy. The official Academy history states that in 1952 the older entities and research facilities were integrated into the newly founded Czechoslovak Academy of Sciences, with

research facilities previously under the Ministry of Education, Sciences and Arts transferred into it, including archaeology, historical publishing, Oriental studies, and Slavonic studies (*Akademie věd České republiky, n.d.*). This transfer changed lines of accountability. Institutes that had previously negotiated with ministries or governed themselves through committees now belonged to a central academic-administrative hierarchy. Governance moved from dispersed negotiation to planned subordination. This does not mean that every decision was dictated directly from the party centre. But it does mean that institutional autonomy became structurally limited. The Academy became the channel through which state power entered scientific organisation.

By the time ČSAV was founded in November 1952, the essential transformation had already taken place in practice. The legal act formalised a process that had been underway for years. Universities had been subordinated to the state and reoriented towards socialist education. Learned societies had been deprived of their older representational autonomy. State institutes had been reorganised into paid research workplaces and prepared for incorporation. Central research institutes in key natural-science fields had been established under the Scientific Research Centre. The Academy therefore emerged as a synthetic institution, combining a learned society, a network of institutes, an administrative hierarchy, and an ideological instrument. It did not simply replace the old order; it gathered fragments of that order and arranged them according to a new political logic. This is why the foundation of ČSAV should not be understood as a single institutional beginning. It was the culmination of a transformation that had already changed the meaning of university research, learned membership, state scientific work, and professional scholarship. The new Academy inherited both the strengths and the wounds of this process.

Thus, the transformation of universities, institutes, and learned societies between 1945 and 1952 created the institutional foundation on which the Czechoslovak Academy of Sciences could be built. Universities were reopened and restored, but then subordinated to state control and increasingly separated from the main structures of organised research. Learned societies preserved historical prestige and personal continuity, but lost their freely elected representational role. State institutes gained financial stability, full-time research posts, and access to larger organisational frameworks, but surrendered independence in budgeting, governance, and research planning. The Academy that emerged from this process was therefore neither a simple Soviet import nor a natural continuation of the Czech learned tradition. It was a hybrid institution produced by post-war reconstruction, communist centralisation, disciplinary professionalisation, Soviet models, and the practical needs of modern research. Its strength lay in concentration, resources, and institutional permanence; its weakness lay in ideological dependence and the narrowing of academic autonomy. The transformation did not end Czech science, but it changed the conditions under which Czech and Czechoslovak science could exist. From this point onward, scientific work would increasingly be organised through the Academy-state relationship, and this relationship would shape both the achievements and the limitations of the foundational period.

3. Political Power and the Redefinition of Scientific Priorities

The redefinition of scientific priorities in Czechoslovakia after 1945 cannot be understood as a simple replacement of free science by political command, although political command became increasingly decisive after February 1948. The process was more complex, because

the post-war state inherited real problems that required institutional answers: damaged universities, interrupted research careers, insufficient laboratory infrastructure, fragmented institutes, weakened learned societies, and an urgent need to connect knowledge with reconstruction. At the same time, the language used to solve these problems changed rapidly. Before the war, scientific priority had usually been justified through scholarly excellence, national culture, international prestige, professional need, or the internal development of disciplines. After the war, and especially after the communist consolidation of power, priority increasingly meant usefulness for the planned economy, ideological compatibility, social transformation, and the construction of socialism. This shift did not eliminate intellectual seriousness, but it changed the grammar in which seriousness had to be defended. A field, institute, or research programme had to show not only that it was scientifically valid, but also that it corresponded to the needs of the people, the state, production, culture, or socialist progress. The old question, "Is this work true, original, and important?" was joined, and sometimes displaced, by a new question: "What function does this work perform for the new social order?" The history of the future ČSAV begins precisely inside this changed question. Scientific priority ceased to be a purely scholarly judgement and became a political-administrative category. The Academy founded in 1952 would later institutionalise this redefinition by becoming the highest scientific institution of the republic and a central actor in the coordination of basic research and economically significant scientific tasks (*Zákon č. 52/1952 Sb., 1952*).

In the immediate post-war years, political power entered science through the rhetoric of reconstruction. This rhetoric was not artificial, because Czechoslovakia genuinely needed technical, medical, agricultural, demographic, industrial, and cultural recovery. The war had destroyed lives, displaced populations, interrupted schooling, and damaged institutions. The borderlands had been transformed by expulsion and resettlement, industry had to be restored, public health had to be stabilised, and the state had to rebuild administrative capacity. In such a context, it was natural that science should be asked to serve public needs more directly than before. The problem was that "public need" became progressively monopolised by the party-state. The same appeal to usefulness that could have supported democratic reconstruction was redirected towards socialist planning and ideological conformity. Scientific fields were not abolished because they were useful; rather, they were ranked, funded, reorganised, or constrained according to a political interpretation of usefulness. Natural sciences, technical disciplines, agricultural research, and medicine could claim obvious practical relevance. Humanities and social sciences had to reinterpret themselves through the approved language of national tradition, class analysis, people's democracy, Marxism-Leninism, and socialist culture. Political power therefore did not only censor science from outside. It reshaped the very hierarchy by which some forms of knowledge appeared urgent, progressive, and worthy of state investment.

The turning point of February 1948 gave this redefinition a new institutional force. Before the communist takeover, post-war science still existed within a plural political environment, even if communist influence in education and culture was already strong. After February 1948, the Communist Party could translate its cultural and scientific preferences into legislation, personnel policy, budgetary decisions, organisational restructuring, and public doctrine. The universities were subjected to political screening and legal transformation, while non-university research bodies were gradually drawn into a centralised system. In higher education, the 1950 reform was especially important because it subordinated universities to the state,

weakened academic self-government, and introduced Soviet-inspired forms of organisation and ideological supervision (*Šutajová, 2023*). This mattered for scientific priorities because universities had previously been one of the principal sites where disciplinary priorities emerged through teaching, seminars, professorial authority, and scholarly debate. Once the university was redefined as a state instrument for training socialist cadres, its role in determining research priorities was reduced. Research increasingly moved towards specialised institutes, which could be planned, inspected, financed, and directed more easily than traditional faculties. The future Academy was therefore not simply added to the older university system. It was created partly because political power wanted a different centre of gravity for research.

The Communist Party's understanding of science rested on a combination of modernising ambition and ideological certainty. It did not reject science as such; on the contrary, it repeatedly celebrated science as a force of progress, industrial development, and social emancipation. Yet it rejected the idea that science could remain politically neutral, socially autonomous, or governed only by internal disciplinary criteria. In the Stalinist language of the period, science was expected to have a class character, to serve the working people, and to assist in the building of socialism. This was not merely a slogan. It had practical consequences for appointments, grants, institute missions, teaching programmes, publication plans, and international cooperation. A physicist, chemist, engineer, or mathematician might experience the pressure differently from a historian, philosopher, sociologist, or literary scholar, but no field was entirely outside the political field. The state's demand was not that every scientific paper become propaganda. It was that the institutional direction of science should be compatible with the political direction of society. This distinction is essential. The regime could tolerate technical expertise and even high-level theoretical work when it served state prestige or productive capacity, but it increasingly distrusted independent intellectual authority. Scientific autonomy was therefore narrowed not only by censorship, but by the redefinition of legitimate purpose.

The legal formulation of the Czechoslovak Academy of Sciences made this redefinition explicit. Act No. 52/1952 established ČSAV as the highest scientific institution of the Czechoslovak Republic, bringing together the most important scientific workers of the state and following from the reconstruction of older learned bodies such as the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts (*Zákon č. 52/1952 Sb., 1952*). The same law stated that the Academy served, through all its activities, the development of science and technology and thereby the building of socialism and the welfare of the people (*Zákon č. 52/1952 Sb., 1952*). This formulation is revealing because it placed science, technology, socialism, and public welfare into one official chain. Scientific work was valuable not only because it enlarged knowledge, but because it contributed to a politically defined social project. The law also gave the Academy tasks in research work, coordination of basic research and economically important scientific tasks, cooperation in applying research results to practice, and advisory service to the government in fundamental scientific questions (*Zákon č. 52/1952 Sb., 1952*). Thus the Academy was not designed as a detached scholarly corporation. It was a research, coordination, advisory, and political institution. Its foundation fixed in law the new relationship between scientific priority and state purpose.

This legal language did not appear suddenly in 1952. It was the culmination of a post-war trajectory in which older scientific institutions had already been reorganised according to new expectations. The Czech Academy of Sciences and Arts, formerly a selective learned society representing Czechoslovak science at home and abroad, had gradually developed specialised

departments that began to take on the character of research institutes (*Akademie věd České republiky, n.d.*). The official history of the present Czech Academy notes that institutes such as the Czech Language Institute, the Nuclear Physics Institute, the Mathematical Research Institute, and the Institute for Czech Literature developed in the period after 1945 and before the foundation of ČSAV (*Akademie věd České republiky, n.d.*). These examples show that the redefinition of priorities moved along two tracks. On one track, science was becoming more professional, institute-based, and resource-dependent. On the other, the political regime was increasingly determining which forms of institutionalisation were acceptable and desirable. Language and literature could be supported because they served national-cultural reconstruction, but they also had to be ideologically reframed. Nuclear physics and mathematics could be strengthened because they represented modernity and state prestige, but they too were integrated into a planned research order. Scientific priority was therefore not simply imposed against all scholarly logic. It emerged from the fusion of genuine disciplinary development with political selection.

The state's approach to older learned societies reveals the same logic. The Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts had long represented scholarly authority through election, publication, reputation, and historical continuity. In the new political environment, however, such authority seemed insufficient and potentially suspect. The official Academy material on scientific societies states that the Czech scientific community lost its freely elected scientific representation in 1952, when the older learned bodies were replaced by the Czechoslovak Academy of Sciences with a distinctly political mission (*Akademie věd České republiky, n.d.*). This loss was central to the redefinition of scientific priorities. Under the older model, priorities could be shaped by disciplinary communities, learned debate, patronage, public culture, and international standards. Under the new model, the state claimed the right to coordinate and rank scientific work through a central institution. The Academy thus inherited prestige from the old learned societies while changing the basis on which prestige was allocated. Election remained, but elections and appointments were embedded in a political order. Scholarly distinction no longer stood alone. It had to be compatible with the regime's understanding of progressive science.

The state institutes that entered the Academy were also reinterpreted through the new political grammar. Many of these institutes had been independent or semi-independent research bodies receiving regular state subsidies, with their scientific focus and budgets approved by the state even before the communist period (*Jůnová Macková, 2017*). This continuity is important because state involvement in research was not invented in 1948. The First Republic had already understood that certain types of research required public support and institutional stability. What changed after 1948 was the meaning of state approval. In the interwar and early post-war context, state approval could coexist with relatively plural scientific aims, ministerial diversity, professional self-definition, and international openness. In the Stalinist context, approval became part of a more comprehensive system of political direction. Institutes dealing with archaeology, history, Slavonic studies, Oriental studies, ethnography, labour, and technical expertise were not merely funded; they were repositioned within a hierarchy of socialist priorities. Macková's analysis shows that the incorporation of state institutes into ČSAV was not a simple administrative transfer, but part of a broader effort to create a centralised scientific structure from existing institutions (*Jůnová Macková, 2017*). The old institute became a component of the new Academy because its knowledge could be useful, but only under new rules of legitimacy.

Planning was the central mechanism through which political power redefined scientific priority. Planning did not mean only economic planning in the narrow sense; it meant a general style of governance. Scientific work was to be organised into tasks, themes, timetables, institutional responsibilities, expected outputs, and practical applications. In principle, planning could help science by securing long-term funding, preventing duplication, building laboratories, coordinating large projects, and connecting research with national needs. In practice, under Stalinist conditions, planning also narrowed intellectual freedom and encouraged conformity to approved categories. A research topic became more secure if it could be presented as part of a plan, and more vulnerable if it appeared individualistic, speculative, ideologically ambiguous, or insufficiently useful. This affected disciplines differently. In physics or chemistry, planning might concentrate resources around instrumentation, industrial materials, energy, or defence-relevant questions. In history or philosophy, planning might translate into approved interpretive frameworks and politically acceptable themes. The result was a new economy of scientific value. The planned topic had institutional protection; the unplanned topic had to justify its existence.

The relationship between science and production became one of the strongest official priorities. The 1952 law explicitly connected Academy tasks with economically significant scientific problems and with the transfer of research results into practice (*Zákon č. 52/1952 Sb., 1952*). This gave technical and natural sciences a privileged rhetorical position. Chemistry, metallurgy, engineering, geology, agriculture, medicine, energy research, mathematics, and physics could all be presented as fields necessary for industrialisation and modernisation. The Academy's later institutional structure reflected this emphasis, because many of its institutes were designed to support basic research with potential technical or economic relevance. Yet the relationship between science and production was not always straightforward. Basic research often produces value unpredictably, over long periods, and through theoretical work whose applications cannot be immediately known. The socialist planning language tended to compress this uncertainty into promises of practical contribution. This could protect basic research when scientists skilfully framed their work as foundational for future development. It could also distort research by pressuring institutes to promise applicability where open-ended inquiry was more appropriate. Scientific priority thus became a negotiation between disciplinary integrity and planned usefulness.

Agriculture was one field where political power and scientific doctrine intersected especially sharply. The post-war state needed increased agricultural productivity, collectivisation brought enormous social and economic pressure, and Soviet models acquired official authority. In this context, biological science became vulnerable to Lysenkoism, which claimed ideological compatibility with dialectical materialism and practical agricultural transformation. Czechoslovakia adopted Lysenkoist doctrine in the late 1940s, and the fate of geneticist Jaroslav Kříženecký later became one of the best-known examples of the damage caused by this ideological campaign (*Valová, 2011*; *Orel, 1992*). This episode shows that the politicisation of scientific priority was not limited to humanities or social sciences. It could penetrate natural science when an ideological doctrine claimed to be more progressive, practical, and socialist than established scientific theory. Genetics could then be condemned not because it lacked scientific merit, but because it was framed as bourgeois, formalist, or hostile to the new biology. The redefinition of priority here became destructive. It elevated a politically favoured pseudoscientific doctrine over empirical disciplinary standards. The

broader lesson was clear: where political authority claimed competence to decide scientific truth, scientific institutions could be seriously damaged.

The humanities and social sciences faced a more continuous form of ideological pressure. Their objects—history, society, culture, law, literature, nation, class, religion, education, and public consciousness—were directly relevant to the regime's legitimacy. The new state needed historians who could present Czech and Slovak history as a progressive movement towards socialism, literary scholars who could elevate realist and socially committed traditions, philosophers who could teach dialectical and historical materialism, and legal scholars who could articulate socialist legality. Some of this work was intellectually serious, because Marxist categories could be used creatively and critically. Yet in the early Stalinist period, the permitted range of interpretation was narrow. The party-state did not merely fund humanities research; it demanded that humanities research participate in the ideological education of society. Disciplines such as sociology, political science, and some areas of philosophy were especially vulnerable because they could produce independent descriptions of social reality. Under such conditions, scientific priority in the humanities was defined by ideological reliability as much as by scholarly need. The Academy would later contain humanities and social-science institutes, but their early development was inseparable from this pressure.

Zdeněk Nejedlý's role in the redefinition of scientific priorities was particularly important because he linked politics, culture, history, and institutional reform. He was not only a communist politician but also a scholar and public intellectual with deep roots in Czech cultural life. This enabled him to present socialist transformation not as a break with Czech history, but as the fulfilment of its progressive national tendencies. His presidency of the Czech Academy of Sciences and Arts from 1945 to 1952 symbolised the transition from the old learned world to the new socialist Academy (*Akademie věd České republiky, n.d.*). Secondary scholarship on Czech communist intellectuals has emphasised how Nejedlý and related figures constructed a "national road to socialism", in which communism was portrayed as heir to Czech democratic, Hussite, national, and popular traditions (*Mervart, 2017*). This had direct consequences for scientific priority. It allowed the regime to rank disciplines and topics according to their supposed contribution to the progressive national narrative. Historical research, musicology, literary studies, education, and cultural history could be valued when they supported this narrative. Alternative interpretations could be marginalised as bourgeois, clerical, cosmopolitan, formalist, nationalist in the wrong sense, or insufficiently progressive.

This national-communist framing also helped the regime appropriate the prestige of older Czech science. The law establishing ČSAV did not present the new Academy as an institution created out of nothing. It stated that it arose through the reconstruction of the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts and continued progressive traditions of Czech and Slovak science (*Zákon č. 52/1952 Sb., 1952*). The word "progressive" was crucial. It selected from the past those traditions that could be assimilated into the socialist story and excluded others as reactionary or obsolete. The older learned tradition was not simply discarded; it was filtered. This filtering allowed political power to claim historical legitimacy while changing institutional substance. The Academy could be described as both new and inherited, both socialist and national, both centralised and rooted in centuries of Czech learned culture. That ambiguity gave ČSAV symbolic strength. It also obscured the loss of independent representation and the subordination of scientific priorities to state ideology.

The Soviet model played a decisive role in this redefinition, but it must be understood with some precision. Soviet influence did not mean that every Czechoslovak institute copied a Soviet institution mechanically. It meant that the Soviet Academy of Sciences, Soviet research planning, Soviet ideological language, and Soviet political authority provided the dominant reference framework. The new Academy was imagined as a centralised institution combining a learned corporation with a network of research institutes, advisory functions, and coordination of scientific work. This differed from the older Western-style learned academy and from the university-centred research tradition. The Soviet model was attractive to the party-state because it promised concentrated resources, hierarchical control, visible scientific achievement, and integration with national economic plans. It also provided ideological legitimacy: if Soviet science was presented as the most advanced science of the socialist world, then Czechoslovak science had to learn from it. Macková's study shows that Soviet institutional examples influenced the reorganisation of fields such as Slavonic studies, where research divisions were proposed according to models associated with the Soviet Academy (*Jůnová Macková, 2017*). Thus the redefinition of priority involved not only domestic politics but also geopolitical orientation. To be scientifically progressive increasingly meant to be institutionally and ideologically aligned with the Soviet bloc.

International scientific orientation was consequently reorganised. The interwar Czechoslovak scientific world had been deeply European, multilingual, and connected with German, French, British, American, Russian, and other scholarly cultures. After 1945, German connections were morally and politically burdened by occupation, while Soviet connections gained enormous symbolic value as links to the liberating power and to socialist modernity. After 1948, this shift became official policy. Western contacts did not disappear entirely, because many scientific fields still depended on Western publications, instruments, theories, and conferences. Yet the public hierarchy of prestige changed. Soviet literature, Soviet advisers, Soviet terminology, and Soviet institutional experience received official priority. The establishment of bodies such as the Czechoslovak-Soviet Institute signalled that scientific internationalism was to be channelled through socialist alliance structures (*Jůnová Macková, 2017*). This had a subtle effect on scientific priorities. Research connected with Soviet themes, Soviet collaboration, or socialist-bloc needs could be privileged. Work requiring Western contact could become politically delicate, even when scientifically necessary.

The Academy's advisory role to government made the new relationship between expertise and power especially clear. Act No. 52/1952 defined the Academy as an adviser to the government in fundamental scientific questions (*Zákon č. 52/1952 Sb., 1952*). In a democratic setting, such an advisory function might strengthen the public role of science by allowing experts to influence policy. In a Stalinist setting, however, the relationship was asymmetrical. The Academy advised the government, but the government and party also determined the Academy's leadership, resources, permissible priorities, and ideological boundaries. Expertise was therefore elevated and subordinated at the same time. The state needed scientists because modern governance required specialised knowledge. Yet it distrusted independent experts because autonomous expertise could challenge political decisions. This produced a distinctive socialist expert culture. Scientists were expected to provide knowledge, but also to accept the political premises within which that knowledge would be used. The Academy became the central institutional mediator of this expert culture.

The redefinition of priorities also affected the hierarchy between basic and applied research. The 1952 law gave the Academy responsibility for basic research, but also for scientific tasks

of major economic importance and for the application of research results in practice (*Zákon č. 52/1952 Sb., 1952*). This combination produced both opportunities and tensions. On the one hand, basic research received institutional recognition at the highest level, which was important for mathematics, physics, chemistry, astronomy, linguistics, and other fields whose value could not always be reduced to immediate application. On the other hand, basic research had to justify itself within a practical and ideological framework. The Academy's task was not only to pursue truth, but to contribute to socialist construction. Scientists therefore learned to translate disciplinary questions into the language of social need, economic value, or future technological significance. This translation was not always dishonest; many fields genuinely had long-term practical implications. Yet it changed the public presentation of science. The boundary between intellectual justification and political rhetoric became increasingly blurred.

Personnel policy was one of the most powerful instruments for redefining priorities. A scientific field can be redirected not only by banning topics, but by promoting certain people, marginalising others, controlling appointments, and shaping the next generation of researchers. After 1948, academic and scientific careers were increasingly affected by class origin, party membership, political reliability, attitude towards Marxism-Leninism, and willingness to participate in the new institutional order. Connelly's comparative work on the Sovietisation of higher education shows how communist regimes used purges, reforms, admissions policies, and ideological requirements to reshape universities in East Central Europe, with Czechoslovakia as one of the central cases (*Connelly, 2000*). Similar mechanisms affected research institutions. Older scholars might retain positions because their expertise was indispensable, but they were no longer the sole arbiters of disciplinary direction. Younger scholars with political legitimacy could advance more rapidly within institutes and Academy structures. This changed not only who conducted science, but what questions were likely to be asked. Institutional priority followed personnel priority.

The social rhetoric of the regime gave this personnel transformation a moral vocabulary. The old academic world could be criticised as bourgeois, elitist, detached from labour, socially exclusive, or insufficiently connected with the people. There was some truth in the claim that pre-war higher education and scholarly life had strong social barriers. The tragedy was that the solution was not genuine academic democratisation, but political selection under the language of democratisation. Students and researchers from working-class and peasant backgrounds could indeed gain new opportunities. Yet access was mediated by ideological loyalty and party structures. This created a new form of hierarchy rather than the disappearance of hierarchy. Scientific priority was affected because topics and methods associated with the older elite could be delegitimised, while those associated with socialist transformation gained institutional advantage. The regime's social language therefore did not simply broaden science. It politicised the criteria by which scientific authority was recognised.

The transformation of scientific priorities was also visible in the treatment of disciplines that seemed insufficiently useful or ideologically suspect. Sociology, for example, had a difficult position in many communist systems because independent empirical research into society could produce findings that contradicted official doctrine. Political science in the Western sense had little room because politics was already defined through Marxism-Leninism and party leadership. Philosophy was not abolished, but it was expected to operate within dialectical and historical materialism. Economics was reorganised around political economy and planning. Law became a field for articulating socialist legality rather than a neutral science

of legal institutions. These shifts did not necessarily prevent all serious work, but they narrowed permissible frameworks. A scholar could conduct research, but the conceptual vocabulary had to be acceptable. The Academy's later social-science institutes would carry these tensions throughout the 1950s and into the reform debates of the 1960s. The roots lay in the post-war and early Stalinist redefinition of what counted as useful social knowledge.

In the natural and technical sciences, ideological pressure often operated through priority-setting rather than direct doctrinal control. Physics, chemistry, geology, mathematics, and engineering were valuable because they could be connected with industrialisation, energy, military capacity, materials, transport, and technological prestige. The official Academy history records the creation of central research institutes in biology, chemistry, physics, geology, mathematics, astronomy, and polarography within the Scientific Research Centre founded in 1949 (*Akademie věd České republiky, n.d.*). This shows that political power was willing to invest in high-level scientific infrastructure before the formal establishment of ČSAV. Yet investment came with expectations. Research was to be coordinated, planned, and placed in the service of state goals. The state wanted modern science, but it wanted modern science inside a socialist command structure. This made natural science a privileged but not autonomous domain. Its institutional growth was real, but its priorities were increasingly negotiated with planning offices, ministries, Academy leadership, and party expectations.

The case of polarography is especially useful for understanding how scientific excellence could be appropriated by the new order. Jaroslav Heyrovský's work represented a major Czech contribution to international science, later recognised by the Nobel Prize in Chemistry in 1959. Even before that recognition, polarography offered an example of a field in which Czech science could claim originality, technical relevance, and international visibility. For the emerging Academy, such achievements were politically valuable because they demonstrated that socialist Czechoslovakia could produce world-class research. Scientific excellence was therefore not rejected; it was used as evidence of the regime's modernising success. This could benefit individual disciplines by attracting institutional support. Yet it also turned achievement into a showcase. The value of a field was partly measured by its ability to represent national and socialist progress. The Academy's future image as the "showcase" of Czechoslovak science was already implicit in this logic. Prestige became a political resource.

This symbolic function should not be underestimated. Political regimes need institutions that embody their promises, and ČSAV was designed to embody the promise that socialism could organise knowledge more rationally than liberal democracy or market society. The Academy's centralisation, full-time research staff, institutes, plans, and government advisory role were all supposed to demonstrate the superiority of socialist scientific organisation. Recent historiography on ČSAV has noted that interpretations of its foundation often emphasise Soviet experience, while also recognising continuities with existing non-university scientific institutions (*Franc, 2024*). Both elements are necessary. The Academy was a political showcase, but it was not an empty façade. It contained real scholars, real laboratories, real archives, real libraries, and real research problems. Its political function did not cancel its scientific function. Rather, the two were entangled. This entanglement is what makes the early history of ČSAV so difficult to evaluate in simple terms.

The redefinition of priority also changed the temporality of science. In older academic culture, research could be slow, cumulative, and governed by disciplinary rhythms. A philological edition, archaeological survey, mathematical theory, linguistic dictionary, or historical source

collection might require decades. The planned state preferred timetables, campaigns, five-year horizons, reports, and visible results. This created tension between the long time of scholarship and the short time of political expectation. Some fields adapted by dividing long projects into plan-compatible stages. Others suffered because their value was difficult to demonstrate within administrative cycles. The Academy could protect long-term projects by giving them institutional homes, but it could also subject them to periodic ideological and bureaucratic review. The result was a new discipline of reporting. Scientists had to narrate their work in forms intelligible to administrators. This was one of the quieter ways in which political power reshaped intellectual life.

The transformation of scientific priorities also affected language. Terms such as “progressive”, “people’s”, “bourgeois”, “formalist”, “cosmopolitan”, “reactionary”, “materialist”, “planned”, “productive”, and “socialist” became evaluative categories. They did not simply describe research; they ranked it. A method could be praised as materialist or condemned as formalist. A historical interpretation could be celebrated as progressive or attacked as bourgeois. A field could be protected by claiming practical value or endangered by appearing detached from social needs. Such vocabulary created a moral atmosphere around scholarly decisions. It encouraged self-censorship because researchers learned which words made a project safer. It also encouraged opportunistic reframing, as scholars translated older topics into new ideological language. Not every use of this vocabulary was insincere, because many intellectuals genuinely believed in socialist transformation. Nevertheless, the language narrowed the range of legitimate scientific self-description. Priority was now partly decided through political semantics.

The Academy’s creation therefore changed the relationship between autonomy and responsibility. The old learned societies had often claimed autonomy in the name of scholarship, tradition, and international standards. The new regime claimed that autonomy was a bourgeois illusion and that science had responsibilities towards society. This critique could be powerful, because science is never entirely outside society. Yet the regime converted responsibility into subordination. The Academy was responsible not to a plural public, but to a state that claimed to represent the people. It was responsible not to open social debate, but to a political programme. This distinction is crucial for understanding the early ČSAV. The institution did not lack social purpose; it had an excess of politically defined purpose. Its problem was not that science served society, but that society was officially reduced to the party-state’s interpretation of socialist construction.

The effects of this redefinition were uneven across the scientific landscape. Some institutes gained resources, staff, buildings, collections, and publication possibilities that they would not otherwise have obtained. Some research programmes flourished because the Academy provided stable employment and concentrated expertise. Some scholars used the system pragmatically, protecting serious work under the cover of acceptable rhetoric. Others were damaged by ideological campaigns, excluded from careers, forced to change topics, or silenced. Disciplines with high technical value were often better protected than disciplines dealing directly with culture, society, and human interpretation. Yet even protected disciplines had to operate within constraints on travel, publication, institutional hierarchy, and official orientation. The redefinition of priority was therefore not a uniform repression, but a differentiated structure of incentives and risks. It gave with one hand and controlled with the other. This duality would define the Academy’s foundational decade.

By 1952, the direction of scientific policy had become clear. The state would not merely finance science; it would define its institutional centre, its official mission, its coordination mechanisms, its relationship to government, and its ideological justification. ČSAV emerged as the institutional answer to this ambition. Its founding law condensed the entire post-war transformation into a single legal architecture: highest scientific institution, reconstruction of older learned bodies, service to science and technology, building of socialism, coordination of basic research, attention to economically significant tasks, application of results, and advisory role to government (*Zákon č. 52/1952 Sb., 1952*). These elements formed a new model of scientific authority. Authority no longer rested only on learned distinction or university tradition. It rested on incorporation into a state-academic structure that claimed to organise knowledge for socialist society. This model gave science a privileged place in the state. It also made science dependent on the state's political definition of value.

The redefinition of scientific priorities in the foundational period should therefore be understood as a process of political translation. Scholarly excellence was translated into social usefulness. National tradition was translated into progressive heritage. Research autonomy was translated into coordinated responsibility. International exchange was translated into socialist orientation. Institutional continuity was translated into reconstruction. Basic research was translated into future practical contribution. In each case, something was preserved and something was altered. This is why the history of Czech and Czechoslovak science after 1945 cannot be written only as a story of destruction. It was also a story of institutional growth, professionalisation, and new research infrastructure. But that growth occurred inside a political order that redefined what science was for. The future Academy would carry this ambiguity into every part of its early development.

Thus, political power after 1945, and especially after 1948, redefined scientific priorities by changing the criteria through which knowledge was valued, organised, financed, and legitimised. Science was no longer expected merely to advance truth, represent national culture, or maintain international scholarly standards; it had to serve reconstruction, production, socialist planning, ideological education, and the welfare of the people as defined by the party-state. This transformation did not erase scientific achievement, nor did it make all research propaganda. It did, however, alter the institutional conditions under which achievement could occur. Universities were subordinated, learned societies lost free representation, state institutes were absorbed, and specialised research was reorganised through central planning. The Czechoslovak Academy of Sciences emerged as the legal and symbolic centre of this new order. Its creation was possible because political power had already recoded scientific priority as a matter of state purpose. The foundational paradox of ČSAV lay precisely here: it concentrated resources for serious research while embedding that research in an ideological and administrative framework that limited autonomy. This paradox would shape the Academy's leadership, institute structure, relations with universities, and scientific achievements throughout the first decade of its existence.

The Soviet Model and the Founding of ČSAV

1. The Institutional Logic of a Centralised Academy of Sciences

The institutional logic of a centralised academy of sciences in post-war Czechoslovakia should be understood as a response to several overlapping pressures rather than as a single administrative imitation of Moscow. The Soviet model was decisive, but it became persuasive to the Czechoslovak communist leadership because it appeared to solve problems that had already become visible in the domestic scientific landscape. Universities were overloaded with teaching, social reconstruction, ideological re-education, and the training of new professional cadres. Learned societies possessed prestige, memory, and symbolic authority, but they lacked the material capacity to organise large-scale research. State institutes had valuable collections, staff, periodicals, and disciplinary traditions, yet they were dispersed across ministries and operated under different legal and financial conditions. The post-war state wanted science to be useful, visible, governable, and planned. A central academy promised precisely that: a single institutional centre able to concentrate elite scholars, organise permanent institutes, coordinate basic research, advise the government, and translate scientific knowledge into economic and cultural practice. In this respect, the foundation of ČSAV was not merely a political event; it was an institutional answer to the perceived disorder of the older scientific system. The answer, however, was shaped by Stalinist assumptions about hierarchy, ideology, planning, and state authority. Its centralising power was therefore both a modernising device and a mechanism of political control. The logic of the new Academy lay in this combination of research concentration and administrative subordination.

The older Czech learned tradition had already contained the idea that advanced science might require a non-university institutional centre. The official historical overview of the present Czech Academy of Sciences recalls that Jan Evangelista Purkyně had proposed, in his treatise *Academia* between 1861 and 1863, an autonomous non-university scientific institution that would associate research institutes representing the main fields of science (*Akademie věd České republiky, n.d.*). This earlier proposal is important because it shows that the academy-institute idea was not exclusively Soviet in origin. Czech scientific culture had long imagined a body that could stand beside universities, connect disciplines, and protect research from the narrow limits of faculty structures. Yet Purkyně's ideal had been autonomous, scholarly, and intellectually plural, whereas the socialist academy created in 1952 was centralised, state-bound, and politically tasked. The difference is therefore not the mere existence of a non-university academy, but the purpose and governance of that academy. A 19th-century project of scholarly self-organisation was transformed into a 20th-century project of planned scientific administration. This transformation allowed the regime to claim continuity with older Czech aspirations while changing their institutional meaning. The new Academy could present itself as the realisation of a long Czech desire for organised research. At the same time, it subjected that desire to a Sovietised state logic. The result was a hybrid: historically rooted in Czech academic imagination, but politically organised according to socialist centralism.

The interwar scientific order had been too plural for the new regime's taste, but it was not institutionally empty. The Czech Academy of Sciences and Arts functioned as a selective learned society, representing Czechoslovak science at home and abroad, publishing scholarly work, and redistributing research scholarships and grants from both state and private funds (*Akademie věd České republiky, n.d.*). The Royal Czech Society of Sciences, the Masaryk Academy of Labour, the Czechoslovak National Research Council, and autonomous state institutes such as the Slavonic, Oriental, and Archaeological Institutes also played important roles in the interwar period (*Akademie věd České republiky, n.d.*). This system had breadth,

historical depth, and international connections, but it also distributed scientific authority across multiple bodies. Such plurality could be intellectually productive, because it allowed fields to develop through different patronage systems, scholarly cultures, and institutional rhythms. For a communist state, however, this same plurality appeared inefficient, politically unreliable, and difficult to coordinate. Centralisation promised to overcome fragmentation by placing research under one superior institutional roof. The Soviet model gave this impulse a ready-made form: a high academy with a network of institutes, a hierarchy of sections, and a direct relationship to state planning. The new Czechoslovak Academy therefore did not arise where no institutions existed. It arose by gathering existing institutions into a different logic of power.

This distinction between inheritance and reorganisation is central. The foundation of ČSAV did not mean that Czech science began again in 1952. It meant that older institutions, people, collections, journals, buildings, and research programmes were reclassified within a new hierarchy. The Czech Academy's historical overview records that after 1945, under Zdeněk Nejedlý's presidency, specialised departments of the Czech Academy of Sciences and Arts began to transform into scientific institutes, including the Czech Language Institute, the Nuclear Physics Institute, the Mathematical Research Institute, and the Institute for Czech Literature (*Akademie věd České republiky, n.d.*). These examples show that institutional centralisation had a domestic prehistory. The central academy model did not simply create research institutes by decree; it absorbed and redirected an already visible movement towards permanent research workplaces. Yet the decisive change lay in the meaning of these workplaces. Under the older academy, institutes could still be understood as extensions of scholarly initiative and national-cultural work. Under ČSAV, they became parts of a planned state research system. The institute was no longer merely a scholarly tool; it became an administrative unit within a central scientific order. In this sense, the institutional logic of ČSAV converted research capacity into governable capacity. It made science more organised, but also more dependent.

The Soviet model supplied the clearest template for this conversion. In the Soviet research system, the academy was not simply a ceremonial association of distinguished scholars. It was a large research complex whose institutes carried much of the country's fundamental research, while universities played a comparatively smaller role in research production. Recent comparative work on the Soviet legacy in higher education and research describes the Soviet model as one built around a large network of research institutes affiliated with the USSR Academy of Sciences, republican academies, and sectoral ministries, with universities playing a minor role in research (*Lovakov et al., 2022*). This model was attractive to regimes that wanted to separate research from older university autonomy and place it in more directly manageable institutions. It also suited the planned economy, because institutes could be assigned tasks, budgets, personnel, and thematic priorities more easily than traditional universities. For Czechoslovakia, adopting such a model meant shifting the centre of gravity from the professorial chair and learned society to the full-time research institute. The scientist was increasingly imagined not as an autonomous scholar with a university seminar, but as a member of a planned collective within an academy workplace. This was a profound sociological change. It altered careers, disciplinary authority, research rhythms, and the relationship between knowledge and state power.

The separation of teaching and research was one of the most consequential features of this model. In the older Central European university ideal, research and teaching were supposed to

form a single intellectual process. The professor produced knowledge, transmitted methods, formed students, and maintained a disciplinary school. In the Sovietised model, universities were increasingly directed towards teaching, ideological education, and professional training, while academy institutes became the privileged centres of research. This separation was never absolute in practice, because many academy researchers taught and many university scholars continued to conduct research. Yet institutionally the distinction mattered. It allowed the state to treat higher education and research as different administrative sectors. Universities could be reorganised to train cadres and expand access according to social and political criteria, while the Academy could concentrate elite research under a separate hierarchy. This arrangement seemed efficient from the standpoint of planning, but it weakened the organic link between advanced research and student formation. It also created long-term tension between universities and the Academy. The later rivalry and cooperation between ČSAV and Charles University were already built into this institutional logic.

The centralised academy also offered a solution to the problem of scale. 20th-century science increasingly required expensive instruments, specialised libraries, long-term fieldwork, large collections, technical staff, and collective projects. A small national scientific system could not rely indefinitely on scattered individual scholars or underfunded university chairs. Institutes made it possible to build laboratories, maintain archives, publish journals, employ assistants, and pursue projects that exceeded the capacity of one professor or one faculty. In this respect, centralisation answered a genuine modern research problem. The difficulty was that in Czechoslovakia, the concentration of resources was inseparable from political concentration. The same institution that could fund an institute could also inspect it, appoint its leadership, approve its plan, and define its ideological obligations. A central academy therefore appeared as both a rational instrument of scientific modernisation and a convenient apparatus of control. This dual character should not be flattened into a single judgement. ČSAV did expand research capacity, but it did so within an order that limited institutional autonomy. The logic of centralisation was powerful precisely because it fused real scientific needs with the regime's political needs.

The legal structure of ČSAV expressed this fusion with unusual clarity. Act No. 52/1952 stated that the Academy served, through all its activity, the development of science and technology and thereby the building of socialism and the welfare of the people (*Zákon č. 52/1952 Sb., 1952*). It defined the main tasks of the Academy as research work in all fields concentrated on major questions, directive and supreme coordination in basic research and economically significant scientific tasks, and cooperation in transferring research results into practice (*Zákon č. 52/1952 Sb., 1952*). The same law also made the Academy an adviser to the government in fundamental scientific questions (*Zákon č. 52/1952 Sb., 1952*). These provisions show that the Academy was not conceived as an independent republic of scholars. It was a state scientific authority. Its central position lay in combining research, coordination, economic relevance, application, and governmental advice. This was the institutional grammar of socialist science. Research was to be broad in disciplinary range, concentrated on major questions, coordinated from above, linked to practice, and made available to government. The law thus translated the Sovietised academy model into Czechoslovak legal form.

The word "coordination" deserves particular attention. Coordination can sound neutral, even benign, because scientific systems often need it. Without coordination, institutes may duplicate work, resources may be wasted, and long-term research programmes may remain

underfunded. Yet in the Stalinist context, coordination also meant hierarchy. The Academy was not merely asked to facilitate communication among scientists. It was empowered to direct and concentrate research around major questions defined by the political and economic priorities of the state. This gave ČSAV authority over the structure of basic research and over scientific tasks considered important for the economy. The result was a vertical model of scientific governance. Disciplines, institutes, and researchers could still retain internal expertise, but their work had to be legible to the central plan. The Academy became the intermediary between scientific judgement and political-administrative command. It translated state priorities into research programmes and translated scientific expertise into advice for the state. This intermediary role gave it power, but also made it dependent on the political order that authorised it.

The centralised academy model also changed the meaning of membership. A traditional learned academy recognises distinction; it elects scholars who have already achieved authority in their fields. A socialist central academy also recognised distinction, but recognition was embedded in institutional command and political mission. The Academy was at once a corporation of academicians and a network of institutes. This duality gave it a peculiar structure. Its members symbolised the unity and prestige of national science, while its institutes carried out research work on a daily basis. The older learned-society element gave the institution dignity and historical continuity. The institute network gave it operational capacity. The political mission gave it state authority. These three elements did not always fit comfortably together. Academicians could embody scholarly excellence, but institute directors had to manage plans, staff, budgets, and ideological expectations. The Academy thus joined honour, labour, and administration in a single structure. That joining was one of the most distinctive features of ČSAV.

The disappearance of freely elected scientific representation was one of the costs of this structure. The present Czech Academy of Sciences notes that the Czech scientific community lost its freely elected scientific representation in 1952, when the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts were replaced by the Czechoslovak Academy of Sciences, a body with a distinctly political mission (*Akademie věd České republiky, n.d.*). This does not mean that all scholarly continuity disappeared, since many members of older institutions became academicians or corresponding members of the new Academy. Yet the mode of representation changed fundamentally. The scientific community no longer represented itself primarily through independent learned societies. It was represented through a central institution created by the socialist state. The difference was not merely formal. It affected how authority was distributed, how disagreement could appear, and how institutional legitimacy was constructed. In the older model, learned societies could claim continuity with scholarly self-government. In the new model, ČSAV claimed authority through state recognition, historical succession, and socialist purpose. Scientific representation became part of political representation.

The incorporation of state institutes demonstrates how this logic worked at the level of concrete institutions. Adéla Jůnová Macková's study shows that interwar state institutes had emerged after 1918 as independent scientific institutions affiliated with the Ministry of Schools and National Education, receiving regular subsidies while having their scientific focus and budgets approved by the state (*Jůnová Macková, 2017*). They were therefore already public institutions, not purely private scholarly societies. Yet their incorporation into the Academy after 1948 and around 1952–1953 changed their status. Macková emphasises that the

absorption of these institutes into the Academy reveals the centralisation of science in the 1950s according to the Soviet model (*Jůnová Macková, 2017*). The logic was clear: previously semi-independent institutes would become planned research workplaces inside a central academy. Their budgets, personnel, property, and programmes could then be aligned with a broader scientific policy. This was centralisation by incorporation rather than centralisation by pure invention. The new Academy grew by absorbing what already existed.

The Oriental Institute and the Institute of Slavonic Studies show the depth of this transformation. Before incorporation, such institutes had performed several functions at once: research networking, publication, fellowships, language teaching, international cultural knowledge, and, in some cases, business or intercultural communication activities. Macková records that the Oriental Institute had no full-time research positions in its earlier form, but acted as a platform supporting scholars with or without university posts, while publishing the internationally respected periodical *Archiv Orientální* (*Jůnová Macková, 2017*). Under the emerging academy model, however, this loose platform character was replaced by the structure of a full-time research institute. The business section disappeared, administrative and scholarly functions were reorganised, and the institute focused on research positions. This was not simply a loss. It meant professionalisation, salary-based research, library development, and institutional stability. But it also meant functional narrowing. The centralised academy preferred a research institute with a defined plan over a flexible scholarly platform with multiple social roles.

The same logic affected Slavonic studies. Macková's analysis shows that the Institute of Slavonic Studies had originally combined research, publication, international networking, language teaching, and cultural-geographical expertise, especially in relation to Slavic regions (*Jůnová Macková, 2017*). During the late 1940s and early 1950s, it moved towards a larger departmentalised research institution focused on history, literature, language, and archaeology. Its future was increasingly imagined in relation to the Academy of Sciences, and by 1952 its affiliation to the new Academy had become effectively unavoidable. The institutional shift was therefore from broad scholarly and cultural mediation to planned academic specialisation. This corresponded to the Sovietised model, where research fields were organised into departments, sections, and institutes aligned with central priorities. Yet the transformation did not erase all earlier expertise. It reorganised it. The Academy inherited the intellectual capital of Slavonic scholarship while changing the conditions under which that scholarship could operate. Again, centralisation produced both consolidation and constraint.

The treatment of property and personnel further reveals the administrative logic of the new Academy. A centralised research system cannot function only by proclaiming authority; it must control libraries, collections, buildings, salaries, equipment, and posts. The transfer of institutes into ČSAV therefore involved the transfer of institutional assets and the reclassification of workers. The law establishing ČSAV empowered the government to resolve legal questions concerning the facilities and property of institutions whose tasks the Academy was taking over, including the transfer of that property (*Zákon č. 52/1952 Sb., 1952*). It also authorised regulation of the working and salary conditions of Academy employees (*Zákon č. 52/1952 Sb., 1952*). This mattered because modern research depends on material continuity. To control an archive, a library, or a laboratory is to control future research possibilities. The central academy model therefore gathered not only scholars but also the material infrastructure of scholarship. In this sense, centralisation was physical and financial as much as intellectual. It was a reallocation of the means of scientific production.

The role of the government in the first appointments also demonstrates the political character of the new order. Act No. 52/1952 provided that the first academicians and first members of the Presidium would be appointed by the president of the republic on the proposal of the government (*Zákon č. 52/1952 Sb., 1952*). This was a decisive mechanism of founding control. It allowed the state to shape the initial elite of the Academy and to set the tone for its future hierarchy. Subsequent elections and internal procedures would occur inside an institution whose founding composition had already been politically selected. The Academy therefore began with a controlled act of recognition. It needed distinguished scientists for legitimacy, but it also needed politically acceptable leadership for governance. The first generation of academicians was thus placed at the intersection of scholarly prestige and state selection. This arrangement reflected the broader logic of socialist centralisation: expertise was valued, but it had to be authorised. Scientific honour and political trust were joined at the point of institutional foundation.

The central academy also fitted the broader command economy. A planned economy requires knowledge about resources, labour, production, technology, health, agriculture, infrastructure, and education. It also requires institutions that can generate expert advice without appearing politically independent from the state. ČSAV was designed to fill this role. Its legal tasks included not only research in all fields, but also coordination of economically important scientific tasks and cooperation in transferring research results into practice (*Zákon č. 52/1952 Sb., 1952*). This made the Academy a bridge between fundamental inquiry and state development. The bridge was necessary because the regime did not want science to remain a closed scholarly activity. It wanted science to produce usable knowledge for socialist construction. At the same time, by locating this function in a central academy, the regime avoided leaving the direction of research to ministries alone. The Academy could claim a higher scientific competence than ordinary bureaucracy, while remaining integrated into the state. Its logic was therefore technocratic and ideological at once.

The centralised academy was also a way of managing disciplinary hierarchy. Not all fields had equal political value, economic relevance, or ideological sensitivity. The Academy's sections and institutes could rank disciplines by assigning them institutional weight, budgets, posts, and symbolic visibility. Natural sciences and technical disciplines could be privileged because they promised industrial, military, medical, or technological gains. Humanities could be retained because they served national culture, historical interpretation, and ideological education. Social sciences could be controlled because they touched the regime's legitimacy most directly. The central structure allowed the state and Academy leadership to organise this hierarchy visibly. It did not need to abolish a field in order to weaken it; it could reduce its institutional space, reframe its tasks, or attach it to an approved section. Conversely, it could strengthen a field by creating a dedicated institute, supporting journals, or providing access to equipment. The Academy thus became a mechanism for distributing scientific value. In a plural system, such distribution would emerge through many negotiations; in the centralised system, it became a matter of planned institutional architecture.

The Soviet model's appeal also lay in its promise of collective science. Stalinist and socialist rhetoric often criticised bourgeois individualism and celebrated collective labour. In scientific organisation, this translated into research teams, institute plans, collective projects, and large thematic tasks. Some of this rhetoric corresponded to real changes in modern science, where many fields had indeed become too complex for isolated individual work. Laboratories, archaeological surveys, lexicographical projects, nuclear physics, chemical research, and

mathematical schools all benefited from collective organisation. Yet collective science under political centralisation could also suppress individual intellectual risk. The planned collective might protect a researcher from material insecurity, but it could also discourage unapproved questions. A central academy could make collaboration easier, but it could also make dissent more visible and more punishable. The institutional logic of ČSAV therefore transformed both the social form of research and the moral psychology of scholarship. Scientists gained colleagues, posts, and infrastructure, but they also learned to work inside approved collective frameworks.

The relation between basic and applied research was another core element of the model. The Academy was assigned responsibility for basic research, but always in relation to major questions, economic significance, and practical application. This was not accidental. The Sovietised academy model sought to avoid a sharp separation between pure science and social utility. Basic research was to be supported, but it was expected to justify itself as the foundation of future technological, economic, or ideological progress. This formulation could be advantageous for fields such as mathematics, physics, chemistry, and linguistics, because it gave them a high institutional home even when immediate applications were not obvious. But it also subjected them to the language of usefulness. The Academy had to show that its most theoretical work belonged to the general project of socialist development. The result was a carefully balanced justification: science needed freedom to discover, but its institutional freedom was framed as service. This balance remained unstable throughout the socialist period. It was already present in the founding logic of ČSAV.

The central academy also created a new type of scientific career. In the older system, the highest academic career often passed through universities, professorial appointment, learned-society membership, and public scholarly reputation. The new system opened another path: full-time employment in an academy institute, advancement through research plans and scientific ranks, participation in institute councils, and possible election to Academy membership. This was a major professionalisation of research. It allowed scholars who did not hold university chairs to become permanent researchers. It also produced a new dependence on institute directors, Academy presidia, and state budgets. Macková's study shows that institutions absorbed into the Academy moved towards full-time research posts and defined plans, especially after 1948 (*Jůnová Macková, 2017*). For younger scholars, this could be attractive because it offered stable paid research at a time when universities were politically constrained and socially reorganised. For older scholars, it could feel like a loss of independence. The Academy therefore changed not only where research was done, but how a scientific life could be imagined. It created the academy researcher as a distinct social figure.

This new career structure required a system of scientific degrees and postgraduate training. The Academy was not only a workplace for established scholars; it also became part of the formation of new scientific personnel. The related legal framework after 1952 included regulations on scientific degrees and the organisation of scientific aspirants, as shown by the implementing and related regulations listed with Act No. 52/1952 (*Zákon č. 52/1952 Sb., 1952*). This reflected the Soviet model of the candidate and doctor of sciences, which restructured advanced scholarly qualification outside the older habilitation-centred university order. The Academy thus participated in reproducing the scientific elite. It trained, evaluated, employed, and promoted researchers within a state-defined hierarchy of qualifications. This further strengthened the separation between teaching universities and research institutes. It also gave the Academy long-term influence over disciplinary development, because control of research

training means control over future research directions. The centralised academy was therefore not only a present-tense administrative body. It was a machine for producing the next generation of science.

The federal or Czechoslovak dimension added another reason for centralisation. The Czech lands possessed older and denser scientific institutions, while Slovak science had its own institutional history and post-war developmental needs. A central Czechoslovak Academy offered a way to present science as a common state project. It could symbolically unite Czech and Slovak research under one socialist scientific authority. Yet this unity was asymmetrical, because Prague remained the dominant centre of institutional capacity, archives, universities, laboratories, and learned traditions. The Slovak Academy had to be fitted into the larger Czechoslovak structure, and the relationship between Czech and Slovak scientific development remained politically delicate. Centralisation could therefore be presented as integration, but it also risked reproducing Prague-centred hierarchy. The Soviet model, with its union academy and republican academies, provided a conceptual template for managing national plurality within central authority. In Czechoslovakia, this template was adapted to a smaller and historically different state. The Academy became not merely a scientific institution, but a device of state cohesion.

Centralisation also changed the public image of science. Under the older system, the public encountered science through universities, museums, learned societies, public lectures, journals, foundations, and professional associations. Under the Academy system, organised science acquired a more unified face. ČSAV could represent national scientific achievement, publish through its own channels, organise major research programmes, advise government, and speak with institutional authority. This visibility made science politically useful. It gave the regime a prestigious institution through which to display modernisation, rationality, and cultural seriousness. The Academy could be presented as the summit of Czechoslovak intellectual life. Yet this public visibility came with an official script. Science was to appear not as autonomous inquiry, but as an organised force of socialist society. The Academy's image therefore combined dignity and discipline. It honoured knowledge, but only as knowledge placed in the service of the new order.

The institutional logic of ČSAV also reflected distrust. The communist regime needed experts, but it did not fully trust inherited elites, university autonomy, independent societies, or international scholarly networks. A central academy reduced this uncertainty. It gathered experts where they could be supported and watched. It allowed the regime to use older scholarly competence without leaving it institutionally free. This was especially important because many leading scientists had been formed before communism and maintained intellectual habits incompatible with Stalinist orthodoxy. The Academy could incorporate them as academicians, directors, advisers, or symbolic authorities, while placing them within a political hierarchy. Younger politically reliable researchers could then be promoted through the same structure. The result was managed continuity. The state did not destroy the old elite wholesale because it needed expertise. It reorganised the conditions under which expertise could operate.

At the same time, the centralised academy must not be understood only as an instrument of repression. It also offered a real solution to chronic underfunding, fragmentation, and the limited capacity of small scholarly institutions. Libraries could grow, laboratories could be built, periodicals could be maintained, research staff could be employed, and long-term

projects could survive. The Mathematical Institute provides a clear example of this institutional continuity within transformation: the Mathematical Institute of the Czech Academy of Sciences and Arts had been established in 1947, reorganised as the Central Mathematical Institute in 1950, and incorporated into the Czechoslovak Academy after its foundation (*O'Connor & Robertson, n.d.*). Such developments show that centralisation could stabilise and expand research fields. It also allowed Czechoslovak science to maintain high-quality work despite political pressure, as later histories of mathematical institutions have noted. The problem was not that the Academy lacked scientific substance. The problem was that scientific substance was placed inside a politically dependent institutional form. The centralised academy was therefore productive and restrictive at the same time.

This ambivalence is essential for understanding why the model lasted. Institutions that only repress often generate resistance, but institutions that provide resources while constraining autonomy generate adaptation. Many scientists could work inside ČSAV because it gave them conditions for research unavailable elsewhere. They might dislike ideological rituals, administrative planning, or political interference, but they also needed laboratories, assistants, salaries, journals, and access to collections. Some fields found ways to protect serious scholarship under acceptable rhetoric. Others suffered more directly from ideological intervention. The central academy therefore created a complex moral economy. It rewarded conformity, but it also enabled work of genuine value. It narrowed autonomy, but it expanded research infrastructure. It subordinated science, but it also made science institutionally powerful. This is why the history of ČSAV cannot be reduced either to a success story or to a story of pure domination.

The model also had long-term consequences for the Czech research system after socialism. The contemporary Czech Academy of Sciences still describes itself as a network of research institutes working across natural, technical, social, and human sciences, although within a democratic and legally different framework that explicitly recognises freedom of scientific research (*Akademie věd České republiky, n.d.*). This contemporary continuity does not mean that the socialist form remained unchanged. On the contrary, after 1989 the Academy had to separate itself from its political mission and redefine its autonomy. Yet the persistence of the institute-based academy structure shows how deeply the centralised research model reshaped the Czech scientific landscape. What began as a Sovietised form became, after transformation, one of the main pillars of Czech research. The historical irony is striking. An institution created under political centralisation later became a democratically reorganised research network. Its origins remained marked by the 1952 model, but its later legitimacy depended on freeing that model from Stalinist political content. This makes the foundational period all the more important. It created structures whose meanings would later be contested and revised.

For the early 1950s, however, the immediate meaning of centralisation was unmistakable. The Academy concentrated research authority, reorganised older institutions, subordinated scientific representation, created a new career system, separated research from universities, and aligned science with socialist state priorities. Its institutional logic reflected the belief that science should be planned, collective, economically useful, ideologically reliable, and administratively visible. It also reflected the belief that the state should not merely support science, but organise it. This was the decisive difference between pre-war public patronage and socialist scientific governance. Under the First Republic, the state could fund institutes and support academies while leaving considerable room for institutional diversity. Under the

early communist regime, diversity was treated as a problem to be overcome. The Academy became the answer because it joined legitimacy, expertise, control, and visibility in one organisation. It was a scientific institution, but it was also a political technology.

Thus, the institutional logic of a centralised academy of sciences in Czechoslovakia lay in the transformation of a plural scholarly landscape into a state-directed research system. The Soviet model supplied the organisational template: a high academy, a network of institutes, separation of research from teaching, planned priorities, government advice, and the subordination of scientific authority to socialist construction. Czech and Czechoslovak traditions supplied the historical material: learned societies, state institutes, university scholarship, national-cultural research, technical expertise, and earlier visions of a non-university scientific centre. ČSAV emerged where these two lines met. It was not simply copied from the USSR, nor was it a natural continuation of the old Czech Academy of Sciences and Arts. It was a politically centralised reconstruction of inherited scientific capacity. Its strength lay in its ability to concentrate resources, employ researchers, maintain institutes, coordinate programmes, and represent science at the highest state level. Its weakness lay in the same concentration, because centralisation made scientific life dependent on ideological approval, administrative planning, and state-defined priorities. The foundational paradox of ČSAV was therefore structural: it modernised the organisation of research while reducing the autonomy of the scientific community. This paradox would shape the Academy's leadership, institute formation, university relations, and research achievements throughout the first decade of its existence.

2. Soviet Advisers, Ideological Frameworks, and Research Planning

The Sovietisation of Czechoslovak science after 1948 was not limited to the formal creation of a centralised Academy of Sciences. It also involved a new way of thinking about expertise, discipline, authority, and the permissible relationship between knowledge and political power. Soviet influence entered the Czechoslovak scientific field through several channels at once: direct advisers, study visits, institutional templates, translated literature, ideological campaigns, party resolutions, administrative planning, and the prestige accorded to the Soviet Academy of Sciences as the supposed model of socialist scientific organisation. The phrase "Soviet advisers" should therefore not be understood only in the narrow sense of individual specialists sitting in offices and giving instructions, although such advisers did exist in Czechoslovakia between 1949 and 1956 in several sectors of state power, security, economy, and the army (*Kaplan, 1993*). The deeper issue was advisory dependence as a form of political culture. Soviet experience was treated as a source of legitimacy, and Czechoslovak institutions were expected to learn not only technical solutions, but also the ideological grammar through which science was to be justified. This grammar presented research as a planned, collective, socially purposeful activity directed towards the building of socialism. It narrowed the older difference between scholarly judgement and political judgement, because the correct scientific priority was increasingly expected to be simultaneously scientifically productive and ideologically sound. The Academy that emerged in 1952 was therefore not simply a building or a legal body. It was the institutional crystallisation of a Sovietised understanding of science as a state-organised, planned, ideologically supervised force.

The role of Soviet advisers in Czechoslovakia has to be placed within the wider dependency of the post-February regime on the Soviet Union. Karel Kaplan's study of Soviet advisers in

Czechoslovakia from 1949 to 1956 remains important because it shows that advisers were not marginal visitors, but part of a broader mechanism through which Soviet practices penetrated the Czechoslovak power system (*Kaplan, 1993*). Their most visible influence was in security, military, economic, and administrative spheres, yet the consequences reached education, culture, and science indirectly through the restructuring of the whole state. Scientific planning could not be isolated from this environment. A system that was learning Soviet methods of industrial management, political control, cadre selection, and ideological education naturally came to treat Soviet scientific organisation as a normative model. In this sense, scientific Sovietisation did not require a Soviet adviser in every laboratory. The Soviet adviser functioned as one element in a much broader ecology of dependence. Ministries, party commissions, state planning offices, academic bodies, and individual scientists all operated in an atmosphere where Soviet approval and Soviet precedent carried decisive weight. The result was not mechanical copying in every detail, but a strong asymmetry of prestige. Czechoslovak reformers could propose local solutions, yet these solutions became safest when they could be described as consistent with Soviet experience.

The institutional pressure towards Sovietisation was visible before the formal foundation of ČSAV. The State Planning Office had already envisaged a Centre for Scientific Research, which would include research and experimental as well as regulatory institutions, and this centre was established in 1949 with centralised institutes in biology, chemistry, physics, geology, mathematics, astronomy, and polarography (*Jůnová Macková, 2017*). This development is significant because it shows how planning entered the scientific system before the Academy was legally created. The state was already thinking of research as a sector that could be gathered, divided, assigned tasks, and coordinated through central institutions. The same study records that from 1946 to 1951 new research institutes were formed and former representative institutions were reorganised into state-financed institutes with paid researchers, all of them intended to become part of the new centralised Academy of Sciences (*Jůnová Macková, 2017*). Here the Soviet model operated as both an organisational promise and an administrative expectation. It promised stronger research capacity, but it also expected institutional obedience. The future Academy would therefore inherit a research landscape already reorganised by planning logic. Its creation in 1952 formalised a process that had been progressively Sovietised during the previous years.

The Czechoslovak-Soviet Institute was one of the clearest instruments of this ideological and mediating function. Jůnová Macková describes it as a Soviet-style indoctrination tool, established in 1950 and included in the Academy in 1953; its role was ideological and mediatory, linking Czechoslovak institutions to Soviet institutions and Soviet research interests (*Jůnová Macková, 2017*). The institute was not merely a centre for neutral cultural exchange. It helped translate Soviet science into a model for Czechoslovak researchers, administrators, and party officials. Its publications, lectures, and organisational work made Soviet scientific life visible and exemplary. The periodical *Sovětská věda* was especially meaningful in this respect, because it presented Soviet research not simply as foreign research, but as the proper form of progressive socialist knowledge. In the humanities, *Sovětská věda: Historie* functioned as a model for historians' work and as an instrument of ideological instruction, showing how scholarship could be filtered through the Soviet interpretive frame. Such mediation mattered because ideological control rarely works only through prohibitions. It also works by offering authoritative models, recommended

vocabularies, exemplary authors, and acceptable methods. Soviet science was thus imported not only through advisers, but through an entire apparatus of intellectual exemplarity.

The ideological framework that accompanied Sovietisation was Marxism-Leninism, but this term should not be treated as a decorative slogan. It functioned as an organising code for scientific legitimacy. Political planners expected research to be based on Marxist-Leninist doctrine, and Jůnová Macková explicitly notes that this assumption lay behind the reorganisation of academic bodies in the early 1950s (*Jůnová Macková, 2017*). In fields dealing with history, society, literature, language, philosophy, law, economics, education, ethnography, and culture, this expectation directly affected methods and interpretations. In natural and technical sciences it operated more unevenly, sometimes through priority-setting rather than through direct doctrinal control. Yet even where the internal logic of a discipline resisted ideology, the institutional language of justification remained ideological. A project could be framed as serving socialist construction, raising production, helping the people, strengthening state defence, developing progressive science, or overcoming bourgeois residues. Marxism-Leninism therefore became a language of research administration as well as a philosophical doctrine. It did not replace every laboratory technique or mathematical proof, but it shaped the institutional environment in which such work had to be defended. Science was not expected simply to be true; it was expected to be true in a socially and ideologically useful way.

The founding law of ČSAV turned this ideological framework into legal structure. Act No. 52/1952 established the Academy as the highest scientific institution of the Czechoslovak Republic and defined its activity as service to the development of science and technology, the building of socialism, and the welfare of the people (*Zákon č. 52/1952 Sb., 1952*). It also gave the Academy responsibility for preparing long-term programmes for the development of Czechoslovak science, drafting state-wide plans for key scientific research work, monitoring the fulfilment of these plans, and caring for the theoretical level of all scientific fields (*Zákon č. 52/1952 Sb., 1952*). This legal language shows that planning was not an auxiliary activity. It was one of the Academy's central tasks. The Academy was to be both a research body and a planning body, both a scholarly institution and a state-coordinating authority. It stood between scientists and government, translating political objectives into research programmes and scientific claims into governmental advice. The law also made the Academy directly responsible to the government and placed its budget within the state budget, confirming that scientific autonomy was structurally subordinated to state authority. The legal form of ČSAV thus fused science, planning, ideology, and state administration into one institutional design.

Research planning had a dual meaning in this context. On one level, it responded to genuine scientific needs. Modern research required laboratories, instruments, libraries, archives, collective projects, technical personnel, and long-term continuity. A small or medium-sized state could not build serious science if every field was left to isolated professors, voluntary societies, and unstable funding. Planning promised to avoid duplication, concentrate resources, and connect basic research with national priorities. On another level, however, planning was a technology of political control. It made research visible to administrators, transformed intellectual questions into plan items, and created criteria by which institutes could be inspected. A planned project could receive budget, staff, and institutional protection; an unplanned or poorly justified project could disappear. This did not necessarily mean that every planned project was intellectually weak. Many were scientifically serious and necessary. The difficulty was that the plan became the medium through which scientific judgement had to

pass before it could become institutional reality. In this sense, planning was both infrastructure and discipline.

The Soviet model also transformed the temporal structure of research. Scholarly time is often long, uneven, and difficult to predict. A linguistic dictionary, a historical source edition, a biological experiment, a mathematical theory, an archaeological survey, or a chemical research programme does not always yield results according to an annual administrative timetable. Soviet-style planning, by contrast, preferred programmes, stages, deadlines, deliverables, and reports. It encouraged the translation of scientific work into measurable tasks and expected progress to be narrated in planned intervals. This created a tension between the open-ended character of inquiry and the planned character of socialist administration. Scientists learned to describe long projects as sequences of practical stages, to connect theoretical work with future applications, and to produce reports that satisfied administrative language. Some fields adapted successfully to this format, especially where research could be organised around laboratories and teams. Others struggled, especially where intellectual discovery depended on interpretive openness or individual scholarly rhythm. The Academy became the place where these two temporalities collided. It had to protect long-term research while demonstrating fulfilment of plans.

The Czechoslovak case was not merely a passive reception of Soviet planning. Local scientists and administrators also shaped how planning was implemented. The example of František Šorm and the Institute of Organic Chemistry and Biochemistry is especially instructive. Recent historiography describes how Šorm's working method had roots in industrial research and development during and after the occupation, where large teams focused on specific topics while anticipating practical use in a defined time frame (*Franc, 2024*). He later brought this method into non-university research and participated actively in the preparation of the new Academy, incorporating his institute into the emerging ČSAV structure (*Franc, 2024*). This shows that the Academy's planning culture did not derive only from Soviet instructions. It also resonated with certain local research practices, especially in chemistry and industrially oriented science. Šorm's case is revealing because he was both a serious scientist and a politically loyal organiser. He used the communist system to build a powerful research institute, but his model of research also demonstrated how collective, team-based, application-aware science could flourish within the Academy. The Soviet framework therefore interacted with domestic scientific entrepreneurship.

Yet Šorm's example also reveals the limits of planned research. Franc notes that the practical-results-oriented method associated with Šorm corresponded to the Communist Party's general requirements for science in society, but that the actual work of his institute was time-consuming and did not fit easily within rigid annual plans with predefined objectives and deliverables (*Franc, 2024*). This point is crucial. Even scientists who believed in collective research and practical usefulness found that bureaucratic planning could be too rigid for serious scientific work. The state wanted certainty, but research is inherently uncertain. The state wanted defined outputs, but major discoveries often arise from unexpected turns. The state wanted practical relevance, but basic research frequently moves through theoretical detours. The Academy therefore inherited a contradiction at its birth: it was supposed to plan research, yet much of valuable research could not be fully planned. Loyal and powerful scientists could negotiate this contradiction more effectively than vulnerable scholars. They could secure resources, protect teams, and interpret plans flexibly. Less protected institutes had fewer such possibilities.

The Soviet adviser and the loyal domestic scientist should therefore be seen as complementary figures in the early Academy's formation. Soviet advisers and Soviet institutions provided authority, examples, and pressure. Loyal Czechoslovak scientists translated those models into local disciplinary worlds. They decided how to organise laboratories, which young researchers to recruit, what themes to prioritise, how to present work to party and state organs, and how far ideological language should enter daily practice. In some cases, they protected their disciplines from crude interference by demonstrating political loyalty. In other cases, they reinforced ideological conformity. The Academy depended on such mediating figures because party officials could not manage every scientific detail. Franc's study of Šorm explicitly observes that the Communist Party often left concrete policy in individual scientific disciplines to selected loyal scientists, who became powerful "men of science" able to shape institutional landscapes (*Franc, 2024*). This mechanism is essential for understanding Sovietisation. It was not only an external imposition; it was carried out through domestic scientific elites who combined competence, ambition, and political reliability.

This pattern also affected the relationship between ideology and expertise. The regime distrusted autonomous experts, but it could not govern modern science without experts. It therefore sought experts who were ideologically reliable, or at least politically manageable. The Academy became the institutional solution to this problem. It gathered leading scientists into a hierarchy where their prestige could be used, their work could be supported, and their authority could be monitored. The founding law made Academy membership depend not only on significant scientific work but also, in the case of academicians and corresponding members, on contribution to the socialist construction of the state (*Zákon č. 52/1952 Sb., 1952*). This legal criterion joined scholarly achievement with political purpose. The scientist was no longer recognised merely as a producer of knowledge; he or she was expected to be a contributor to socialist state-building. This did not necessarily mean active propaganda, but it did mean institutional alignment. Expertise had to be socially placed and politically framed. The Academy's membership structure thus embodied the ideological redefinition of scientific authority.

The international orientation of science was also legally and ideologically redirected. Act No. 52/1952 stated that the Academy represented Czechoslovak science in international scientific relations and maintained ties with foreign academies and scientific institutions, above all with the academies and institutions of the Soviet Union and the people's democracies (*Zákon č. 52/1952 Sb., 1952*). This clause reveals the geopolitical hierarchy of scientific internationalism. International contact was not rejected, but it was reordered. The Soviet Union and the socialist bloc were placed at the centre of legitimate scientific exchange. Western science remained important in practice, especially in fields requiring instruments, journals, methods, and laboratory comparison, but it no longer occupied the same public position in official rhetoric. Czechoslovak science was to be international, yet its internationalism was to be socialist and politically aligned. The Academy became the principal institution for managing these external relationships. This gave it prestige, but also made international contact a controlled privilege. For many university researchers, the Academy became the more plausible route to foreign scientific life.

The ideological hierarchy of international science produced tensions inside research practice. Scientists often needed Western literature, equipment, patents, conferences, and correspondence, even when official prestige was assigned to Soviet science. Franc's study of the Institute of Organic Chemistry and Biochemistry shows that lack of hard Western currency

severely limited the purchase of instruments and that cooperation with Western partners often had to pass through state foreign trade enterprises rather than direct institutional agreements (*Franc, 2024*). This demonstrates that Sovietisation did not erase the material dependence of advanced research on wider international science. It did, however, regulate how such dependence could be acknowledged. A scientist could admire Soviet institutional models in public while privately recognising the necessity of Western instrumentation, journals, or laboratory standards. This split was not hypocrisy in every case; it was a structural condition of Cold War science in a small socialist state. The Academy had to perform socialist loyalty while also pursuing world-level research. The contradiction became particularly visible in disciplines where experimental quality depended on expensive instruments and international comparison.

Research planning also shaped the relationship between basic and applied science. The Academy was assigned responsibility for major scientific questions, basic research, economically significant scientific tasks, and the transfer of research results into practice. This meant that basic research had to be institutionally defended as part of a broader socialist development project. In chemistry, physics, mathematics, geology, biology, and medicine, this was often possible because theoretical work could be connected with industrialisation, health, agriculture, energy, or defence. In the humanities, the equivalent justification was cultural and ideological rather than technological. Historical research could serve progressive national consciousness; literary studies could shape socialist culture; linguistics could serve language planning, education, and national identity; philosophy could articulate dialectical materialism. The Academy's planning system therefore did not apply one identical criterion to all fields. It translated usefulness differently according to discipline. Nevertheless, the overall principle was consistent: no field could claim priority solely on the ground of internal scholarly curiosity. Each had to situate itself within the public project of socialism.

The humanities experienced Sovietisation through models of interpretation more than through laboratory planning. Historians, literary scholars, philosophers, and social scientists were expected to adopt categories drawn from Marxism-Leninism and from Soviet scholarship. The journal *Sovětská věda: Historie*, published from 1950 under the Czechoslovak-Soviet Institute, indicates how Soviet historical science was presented as a pattern for Czechoslovak historians (*Sovětská věda: Historie, 1950*). The effect was not only the introduction of Soviet themes. It was the modelling of scholarly behaviour: what counted as a legitimate question, which authors should be cited, how class analysis should be used, how national history should be integrated into a progressive framework, and how "bourgeois" interpretations should be criticised. The ideological framework thereby entered the workshop of scholarship. It influenced bibliographies, curricula, conference themes, reviews, and editorial policy. The humanities did not lose all scholarly value, but the boundaries of acceptable interpretation narrowed sharply. Soviet models functioned as both intellectual resources and instruments of discipline.

In the natural sciences, Sovietisation could take more doctrinaire forms when ideological theories claimed scientific authority. Biology and genetics offer the clearest warning. Lysenkoism presented itself as a Soviet, practical, dialectical, anti-bourgeois biology and thereby acquired political force in socialist countries. It affected Czechoslovak biology in the late 1940s and early 1950s, damaging the development of genetics and contributing to the persecution or marginalisation of scholars associated with Mendelian genetics. The case of Jaroslav Kříženecký became emblematic of how ideological frameworks could distort scientific

judgement when political authority endorsed a doctrine as scientifically and socially progressive (*Orel, 1992*; *Valová, 2011*). Here planning and ideology did not merely guide institutional priorities; they altered the boundary between science and pseudoscience. This episode shows why the Soviet model was ambivalent even for disciplines that seemed close to production. Agricultural usefulness, ideological approval, and Soviet prestige could combine against empirically grounded science. The result was not modernisation but damage. Czechoslovak science learned this lesson slowly and painfully.

The Soviet model also promoted the idea of complex or interdisciplinary research, though this developed more visibly in later debates. Doubravka Olšáková's study of Czechoslovak debates on central models of science and planning notes that discussions on planning science and research continued in the 1950s and were influenced by debates in the Soviet scientific community and the Academy of Sciences of the USSR (*Olšáková, 2012*). She also notes that "complex research", now often called interdisciplinary research, was associated with teams and institutes created for the purpose of solving specific research tasks (*Olšáková, 2012*). This is important because it shows that Soviet-style planning was not always primitive bureaucratic ordering. It also introduced a language of organised problem-solving, team science, and cross-disciplinary mobilisation. For a state seeking rapid industrialisation and technological development, this language was attractive. Yet it could also reduce interdisciplinarity to task-oriented mobilisation under administrative command. Complex research became valuable when directed towards a defined problem, not necessarily when it arose from free intellectual crossing of disciplines. The idea contained both future potential and authoritarian limitation.

The planning of science in the early Academy thus had an inherent performative dimension. Institutes had to show that they were not merely continuing old scholarly routines, but contributing to the new socialist order. Reports, plans, conferences, resolutions, and public speeches became part of scientific life. They did not necessarily reflect the whole reality of research, but they shaped its public face. A research institute could do serious work in laboratories or archives while presenting itself through the required language of production, progress, and Marxist-Leninist method. This created a double discourse. Internally, scientists often discussed practical problems of experiments, sources, instruments, or interpretation. Externally, they narrated these activities as contributions to socialist construction. The double discourse could protect scholarship, but it could also corrupt it by rewarding rhetorical conformity. Over time, experienced scientists learned how to navigate this gap. The early 1950s, however, were a period in which the required language was still being imposed with particular rigidity.

The impact of Soviet advisers and ideological frameworks was intensified by the transformation of higher education. The university reform of 1950 subordinated universities to the state and helped separate teaching from scientific research in a way that strengthened the future Academy's role. Research on Sovietisation in Slovak tertiary education emphasises that the reform introduced Soviet models, weakened academic self-government, and contributed to the separation of scientific and educational activities, a pattern especially marked in Czechoslovakia (*Šutajová, 2023*). This was not a minor educational detail. Once universities were redefined primarily as institutions for cadre training and ideological education, the Academy could be built as the specialised centre for research. Sovietisation therefore operated simultaneously in universities and in the Academy. The two processes reinforced each other. The university was made more teachable and governable; the Academy was made more research-oriented and governable. The result was a divided scientific system in which

training and research were institutionally separated more sharply than in the older Central European tradition.

The cadre question connected advisers, ideology, and planning into a single mechanism. A planned research system required not only institutes and budgets, but also politically reliable researchers, directors, secretaries, and section heads. The Soviet model therefore implied new personnel criteria. Class origin, party membership, ideological reliability, willingness to use Marxist-Leninist language, and loyalty to the socialist state became relevant to scientific careers. This did not eliminate the need for competence, because the Academy could not function without real scientists. But competence alone was no longer sufficient for institutional power. The most influential figures were often those who could combine disciplinary authority with political trust. Šorm is again an example, because his party membership and political standing helped him build institutional power within the Academy while also supporting a serious scientific programme (*Franc, 2024*). Such figures became indispensable intermediaries between party leadership and scientific practice. They were not mere puppets, because many had genuine scientific agendas. Yet their power depended on the new ideological framework.

Planning also changed the relation between institutes and ministries. Earlier state institutes had often been affiliated with ministries, especially the Ministry of Schools and National Education, while retaining distinct scholarly profiles. After incorporation into the Academy, they entered a more unified scientific hierarchy. Jůnová Macková describes the absorption of institutes such as the Oriental Institute and the Institute of Slavonic Studies into the Academy as part of the centralisation of science in the 1950s according to the Soviet model (*Jůnová Macková, 2017*). The Academy thereby reduced ministerial dispersion and concentrated research under one high institution. This concentration made scientific planning easier, but it also narrowed the institutional pluralism that had previously allowed institutes to negotiate among different patrons and functions. An institute that had once combined research, teaching, publication, business expertise, and cultural diplomacy could be reclassified as a research workplace with approved plans. The Soviet model preferred such clarity. It wanted institutes with defined tasks and accountable leadership. The loss was flexibility. The gain was stability and funding.

The Academy's publication system also reflected ideological and planning functions. A central academy could issue journals, monographs, proceedings, reports, and series that helped standardise scientific communication. This was important for scholarship, because publication infrastructure is one of the foundations of disciplinary life. Yet in the early socialist period, publication also became an instrument of orientation and control. Journals could disseminate Soviet models, promote approved themes, and signal shifts in ideological line. The Czechoslovak-Soviet Institute's periodicals are a clear example, but the logic extended beyond them. Academy publishing could present Czechoslovak science as organised, productive, and internationally connected, especially with the Soviet bloc. It could also marginalise work that did not fit official priorities. Publication thus became part of research planning. What was printed helped determine what counted as visible science. The Academy inherited the publication functions of older learned bodies, but placed them in a new ideological economy.

The ideological framework of Sovietisation was not identical in all periods. The early 1950s were marked by Stalinist rigidity, and the language of Marxism-Leninism, party loyalty, class struggle, and socialist construction was especially strong. After Stalin's death and during the

later 1950s, certain debates opened, including discussions on cybernetics, genetics, and the planning of science. Olšáková's study notes that discussions on planning science and research developed in the context of de-Stalinisation and broader changes in the Soviet scientific community during 1956–1957, with reflections appearing in Czech scientific publications such as *Vesmír* (*Olšáková, 2012*). This later development shows that Soviet influence itself was not static. The Soviet model could transmit dogma, but also, after de-Stalinisation, transmit debates about reforming scientific organisation. For the early Academy, however, the initial institutional architecture had already been shaped under Stalinist conditions. The later softening did not erase the founding logic. It only revealed that even within Sovietised science there were shifting possibilities and internal contradictions.

One of the most important contradictions lay in the claim that Marxism-Leninism guaranteed scientific truth. This claim was easiest to maintain in public rhetoric and hardest to sustain in actual research. Mathematical proof, chemical analysis, archaeological evidence, linguistic data, astronomical observation, and medical experiment all obeyed disciplinary procedures that could not be replaced by political slogans. The regime therefore relied on a selective application of ideology. It intervened heavily where ideological stakes were high or where Soviet doctrine claimed scientific authority, and it allowed more room where practical results and international standards demanded professional competence. This selective pattern did not make the system benign. It made it unpredictable. Researchers had to judge whether their field, topic, terminology, or foreign connection might suddenly become politically sensitive. The Academy offered institutional protection in some cases, but it also made scholars more visible to political scrutiny. Sovietisation therefore produced not only rules, but uncertainty. This uncertainty shaped the behaviour of scientists as much as explicit commands did.

The symbolic value of Soviet science also affected Czechoslovak national narratives. The new regime did not want to present Czech and Slovak science as inferior or merely derivative. It wanted to claim that local traditions were now being elevated through socialist organisation and Soviet friendship. This is why the Academy's foundation was described as both a continuation of progressive Czech and Slovak scientific traditions and an institution aligned with socialist construction. The official history of the present Czech Academy notes that in 1952 older entities and research facilities were integrated into the newly founded Czechoslovak Academy of Sciences, while also recognising that Czech science remained under heavy ideological pressure until 1989 (*Akademie věd České republiky, n.d.*). This retrospective formulation captures the duality of the historical process. Sovietisation did not destroy all continuity; it reorganised continuity under ideological rule. Czech and Slovak scientific traditions were not denied, but they were reinterpreted as traditions that had found their proper institutional form in socialism. This narrative allowed the regime to claim both national legitimacy and Soviet alignment.

The practical operation of research planning also depended on bureaucracy. Plans had to be written, reviewed, revised, approved, and reported. Institutes needed directors, scientific councils, administrative staff, financial officers, technical workshops, and connections with ministries and production sectors. The Academy Presidium and its executive apparatus became essential to this process. The founding law assigned the Presidium responsibility for discussing state-wide plans of key scientific research work, approving plans of the Academy's research activity, establishing and abolishing scientific workplaces, and affiliating scientific societies (*Zákon č. 52/1952 Sb., 1952*). This made the Presidium a centre of scientific administration. It did not merely symbolise the Academy; it managed the institutional flow of

priorities, resources, and authority. Such bureaucracy could be burdensome, but it was also how the Academy became powerful. Control over plans meant control over the future of disciplines. Control over workplaces meant control over careers. Control over budgets meant control over research possibility.

The Sovietised framework also changed the meaning of failure. In a more autonomous scientific culture, a failed experiment, abandoned project, or delayed publication may be part of normal research life. In a planned socialist research system, failure could become administratively sensitive because it appeared as non-fulfilment of a plan. This encouraged caution in proposing research aims, rhetorical inflation in describing results, and sometimes formalism in reporting. Institutes had incentives to show progress even where research was uncertain. At the same time, powerful institutes and influential directors could negotiate delays or reinterpret outcomes. The planning system therefore did not eliminate scientific uncertainty; it concealed and managed it. This had consequences for the moral culture of research. Scientists learned to distinguish between actual intellectual progress and officially reported fulfilment. Such a distinction could become cynical, but it could also be a survival technique. The early Academy already contained the seeds of this bureaucratic double accounting.

The question of advisers should therefore be broadened from individual Soviet personnel to advisory structures, models, and dependencies. Direct Soviet advisers mattered, and their presence in Czechoslovakia between 1949 and 1956 forms an important part of the political background to scientific Sovietisation (*Kaplan, 1993*). Yet the Soviet model also advised through books, journals, plans, institutional diagrams, visits, party resolutions, translated lectures, and the careers of Czechoslovak scientists who had trained or spent time in Soviet institutions. Šorm's Soviet internship, for example, influenced his recognition of biochemistry's potential and helped him introduce it into his own institutional environment (*Franc, 2024*). This is a different form of advisory influence: not coercive command, but intellectual and organisational learning within an asymmetrical political relationship. Such learning could have positive scientific effects when it introduced new fields or team methods. It could have negative effects when it transmitted ideological dogma or administrative rigidity. The Czechoslovak Academy was shaped by both. Soviet influence was therefore neither purely external nor uniformly destructive. It was a mixed field of dependence, borrowing, ambition, and control.

By the time ČSAV began operating as the central research institution, the ideological and planning framework was already deeply embedded. Older learned societies had lost their independent representational role. Universities had been subordinated and assigned a more teaching-centred function. State institutes had been absorbed into a unified structure. The Czechoslovak-Soviet Institute mediated Soviet models and ideological expectations. The law defined the Academy as a socialist institution directly responsible to the government, with tasks in planning, coordination, international representation, and practical application. This does not mean that every researcher internalised Marxism-Leninism or that every institute became intellectually sterile. It means that scientific work now had to pass through a system in which Soviet prestige, political loyalty, and plan fulfilment were institutional realities. The Academy could support excellent science, but it supported it under conditions of ideological framing. The foundational period of ČSAV was therefore not simply the creation of a research network. It was the creation of a planned and ideologically mediated scientific order.

Thus, Soviet advisers, ideological frameworks, and research planning together formed the operating environment in which the Czechoslovak Academy of Sciences was founded and consolidated. Sovietisation worked through direct advice, but also through institutional models, translated doctrine, mediated prestige, training experiences, party expectations, and the legal codification of planned scientific work. Marxism-Leninism supplied the language of legitimacy, while research planning supplied the administrative mechanism by which priorities could be approved, financed, monitored, and redirected. The result was not a complete elimination of serious science, because the Academy also created laboratories, institutes, careers, journals, teams, and opportunities for advanced research. Yet it changed the conditions of scientific freedom by making research dependent on state-defined usefulness, ideological acceptability, and bureaucratic plan fulfilment. The Soviet model gave Czechoslovak science resources and structure, but also hierarchy and dependence. The Academy's early history must therefore be read through this double movement. It was a place where scientific ambition and political discipline met, where local traditions were reframed through Soviet authority, and where planning promised rational organisation while often constraining the unpredictability on which genuine discovery depends.

3. The Establishment of ČSAV in 1952

The establishment of the Czechoslovak Academy of Sciences in 1952 marked one of the decisive institutional ruptures in the history of Czech and Czechoslovak scholarship. It did not merely create a new learned body beside older universities and academies; it reorganised the whole hierarchy of scientific authority in the state. The Academy was founded by Act No. 52/1952 Coll., dated 29 October 1952 and effective from 12 November 1952, as the highest scientific institution of the Czechoslovak Republic (*Zákon č. 52/1952 Sb., 1952*). The wording of the law was direct and programmatic: ČSAV was to gather the most important scientific workers of the state and to arise through the reconstruction of the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts (*Zákon č. 52/1952 Sb., 1952*). This phrasing was politically careful. It avoided presenting the new Academy as a total break with the older scholarly past, but it also made clear that the older institutional order was no longer sufficient. The new body was to inherit "progressive traditions" of Czech and Slovak science, while redefining those traditions inside a socialist legal and ideological framework (*Zákon č. 52/1952 Sb., 1952*). The act therefore performed two operations at once. It claimed continuity with the Enlightenment and national academic tradition, and it subordinated that continuity to the state-socialist project. The establishment of ČSAV was consequently not just an administrative event, but a symbolic rewriting of scientific inheritance.

The date of foundation has to be read in relation to the longer post-war preparation of the institution. By 1952, many of the components of the future Academy were already in motion: specialised departments of the Czech Academy of Sciences and Arts had begun to transform into institutes, the Scientific Research Centre had built central research institutes from 1949 onward, and several ministry-linked research institutions were being prepared for transfer into a unified framework (*Akademie věd České republiky, n.d.*; *Jůnová Macková, 2017*). The official historical overview of the present Czech Academy of Sciences notes that in 1952 the older entities and their research facilities were integrated into the newly founded Czechoslovak Academy of Sciences, including research facilities previously under the Ministry of Education, Sciences and Arts (*Akademie věd České republiky, n.d.*). This means that the founding law did

not create a scientific landscape out of nothing. Rather, it gave legal form to an institutional consolidation already shaped by political centralisation, Soviet models, and post-war demands for organised research. The Academy was born as a structure of absorption. It absorbed older learned prestige, state institutes, specialised committees, central research workplaces, scientific collections, publishing functions, and research personnel. This absorbent character explains why ČSAV could quickly become powerful. Its foundation was not only a declaration; it was the legal concentration of existing scientific assets.

The legal language of Act No. 52/1952 reveals with unusual clarity what kind of institution the regime wanted to create. ČSAV was not defined as a voluntary scholarly association, nor as an honorary learned society, nor as a university federation. It was defined as the highest scientific institution of the republic, directly connected with the state and responsible for scientific work in all fields concentrated on major questions (*Zákon č. 52/1952 Sb., 1952*). Its main tasks included research work across all disciplines, supreme coordination in basic research and scientific tasks of central economic significance, and cooperation in transferring research results into practice (*Zákon č. 52/1952 Sb., 1952*). The Academy was also made adviser to the government in all fundamental scientific questions (*Zákon č. 52/1952 Sb., 1952*). These provisions show that the Academy was designed as a hybrid institution. It was simultaneously a research organisation, a coordinating authority, a state advisory body, a mechanism of personnel formation, a publisher, and a symbolic representative of Czechoslovak science. Such a structure corresponded closely to the Sovietised academy model discussed in the preceding part of this chapter. The new Academy was to be more than a centre of scholarly honour; it was to be an instrument for governing science. Its foundation therefore shifted the centre of scientific authority away from plural learned institutions and towards a state-academic hierarchy.

The most important phrase in the law may be the one that connected science and technology with the building of socialism and the welfare of the people. This formulation placed scientific activity inside a political teleology. Science was not only expected to discover, explain, classify, or preserve; it was expected to participate in socialist construction (*Zákon č. 52/1952 Sb., 1952*). The language of "the welfare of the people" gave the institution moral legitimacy, while the language of "building socialism" defined the political meaning of that welfare. This was characteristic of early 1950s Czechoslovakia. Public good, economic reconstruction, class transformation, and ideological loyalty were presented as a single field of obligation. The Academy's scientific legitimacy was therefore inseparable from its declared social function. A research programme was valuable not only because it was intellectually serious, but because it could be integrated into the state's vision of development. This did not mean that all science became propaganda. It did mean that the official justification of science was no longer autonomous. Scientific priority was now written into the language of state purpose.

The establishment of ČSAV also ended the older role of the Czech Academy of Sciences and Arts as the principal learned representative of Czech science. That older Academy had been a selective learned society, deeply connected with the legacy of Josef Hlávka and with the late 19th-century formation of modern Czech scholarly culture. It had represented Czechoslovak science at home and abroad, published scholarly works, and distributed scholarships and grants from public and private sources (*Akademie věd České republiky, n.d.*). Yet by 1952, this learned-society model appeared obsolete to the new political regime. The state wanted institutes, plans, employees, budgets, research tasks, and government advice, not only prestige, elections, publications, and awards. The foundation of ČSAV therefore converted the

older Academy's symbolic capital into a new administrative structure. Continuity was proclaimed, but autonomy was not preserved. The old Academy's name, traditions, members, and some research initiatives were drawn into a structure that had a very different logic. The transformation was not simply institutional replacement. It was a political appropriation of academic memory.

The Royal Czech Society of Sciences occupied a similar position in the founding narrative. Founded in 1784, it linked Czech science with Enlightenment learned culture, aristocratic patronage, early modern scholarship, and the long prehistory of organised research in Bohemia. The 1952 law explicitly named this society as one of the bodies through whose reconstruction the new Academy arose (*Zákon č. 52/1952 Sb., 1952*). That reference served an important legitimising purpose. The socialist state could present the new Academy not as a Soviet import imposed upon Czech scholarship, but as the modern culmination of a long domestic tradition. At the same time, the wording "reconstruction" concealed a radical change in institutional substance. The Royal Czech Society had belonged to a plural learned world in which scholarly authority was negotiated through membership, publication, reputation, and intellectual exchange. ČSAV belonged to a planned political order in which scholarly authority was embedded in state tasks and government approval. The reference to the Royal Society therefore created continuity at the level of genealogy, but rupture at the level of governance. This dual movement was typical of the new Academy's founding ideology. It preserved the past as a source of legitimacy while transforming the rules under which that past could speak.

The law's treatment of research planning shows how deeply the Academy was embedded in the machinery of socialist governance. ČSAV was authorised to establish and direct its own scientific workplaces and to prepare short-term and long-term plans for its research activity (*Zákon č. 52/1952 Sb., 1952*). It was also tasked with preparing proposals for long-term programmes of Czechoslovak science and state-wide plans for key scientific research work, which were to be submitted to the government for approval (*Zákon č. 52/1952 Sb., 1952*). This arrangement made the Academy a planning institution in its own right. It was not merely subject to plans; it helped produce them. Yet it produced them inside a political order where the government and party defined the ultimate priorities of socialist development. The Academy thus stood between scientific expertise and state power. It had enough authority to shape research programmes, but not enough independence to define the social meaning of science on its own. This intermediary position gave ČSAV considerable influence. It also made it structurally dependent on the political regime.

The Academy's right to inspect and influence scientific workplaces outside its own structure further broadened its authority. The founding law allowed it to request necessary information from state and other bodies, identify shortcomings, propose remedies, and monitor or examine the activity of scientific workplaces not incorporated into the Academy when necessary (*Zákon č. 52/1952 Sb., 1952*). It could also create advisory commissions for particular fields, composed of representatives of academies, universities, central offices, production, and social organisations (*Zákon č. 52/1952 Sb., 1952*). This meant that ČSAV was not simply one institution among others. It was assigned a supervisory and coordinating role over the broader scientific field. Universities, ministries, production organisations, and scientific societies could all be drawn into its orbit. The Academy therefore became a central node in the governance of knowledge. Its founding transformed the scientific landscape from a plural ecology into a more vertical system. In practical terms, this made scientific coordination easier. In political terms, it made scientific autonomy more fragile.

International representation was another major function assigned to ČSAV. The law declared the Academy the supreme representative of Czechoslovak science in international scientific relations and instructed it to maintain relations with foreign academies and scientific institutions, above all those of the Soviet Union and the people's democracies (*Zákon č. 52/1952 Sb., 1952*). This clause is particularly revealing. The Academy was to represent Czechoslovak science abroad, but its international orientation was explicitly hierarchised. The Soviet Union and the socialist bloc were placed first, not merely as partners but as normative centres of scientific cooperation. The Academy's foundation therefore reorganised scientific internationalism. The interwar pattern of broad European and global scholarly exchange was not abolished overnight, but it was ideologically reframed. The new official route to international legitimacy passed through socialist cooperation. This did not prevent Czechoslovak scientists from needing Western literature, instruments, conferences, and recognition. But it changed the public language and institutional channels through which such contacts could be managed.

The Academy's legal personality and budgetary status further demonstrate its state character. ČSAV was defined as a socialist legal person, seated in Prague, with the right to establish scientific-organisational centres and workplaces outside its seat (*Zákon č. 52/1952 Sb., 1952*). Its budget was made part of the state budget (*Zákon č. 52/1952 Sb., 1952*). This solved one of the chronic problems of older scholarly institutions: financial insecurity. Institutes and researchers could now be supported through state allocations rather than unstable grants, foundations, donations, or ministry-specific arrangements. Yet this solution came at the price of dependence. If the Academy's budget was part of the state budget, then the state possessed a decisive instrument over the scope, pace, and direction of research. Financial centralisation was therefore inseparable from intellectual centralisation. It allowed the Academy to expand, but also made its expansion conditional on political and economic priorities. The institution's material strength was linked to its administrative subordination.

The establishment of ČSAV also changed the status of scientific membership. Members of the Academy were divided into full members, academicians, and corresponding members, both categories defined as active scientists enriching science through significant work and contributing to the socialist construction of the state (*Zákon č. 52/1952 Sb., 1952*). This criterion joined scholarly merit with political service. The scientist was no longer recognised merely as an author of important works, but as a participant in the construction of socialism. Honorary membership was likewise linked either to works of world significance or to special service to the state and socialism (*Zákon č. 52/1952 Sb., 1952*). Such wording shows how the new Academy fused scientific distinction with political loyalty. It did not deny the importance of high-level research, but it placed research excellence inside an ideological frame. Membership became both academic recognition and a mark of public-political reliability. This was a major departure from the older learned-society model, where ideological service to a socialist state could not have been a membership criterion.

The obligations imposed on academicians and corresponding members show the same transformation from honour to service. According to the law, members were required to take creative part in the Academy's activity, fulfil tasks assigned to them, perform functions conscientiously, consider the Academy's plans in their scientific work, and contribute to their fulfilment (*Zákon č. 52/1952 Sb., 1952*). This was not the language of a purely honorary academy. It was the language of organised labour. The academician was not simply a recognised scholar; he or she was a worker within the Academy's planned activity. Monthly

remuneration reinforced this status, because membership carried a regular material relationship to the institution (*Zákon č. 52/1952 Sb., 1952*). The Academy thus transformed distinction into obligation. It rewarded scientific authority, but also claimed that authority for collective tasks. The founding of ČSAV therefore changed the social meaning of academic prestige. Prestige became functional, planned, and accountable.

The organisation of the Academy's bodies followed the same centralising logic. Its highest body was the General Assembly, composed of all members and honorary members, but elections of members and members of the Presidium required government approval (*Zákon č. 52/1952 Sb., 1952*). The Presidium was defined as the highest governing body of the Academy between sessions of the General Assembly, composed of the president, deputy presidents, the chief scientific secretary, section chairs, and other members as required (*Zákon č. 52/1952 Sb., 1952*). This formal arrangement retained an academic institutional vocabulary: assembly, election, sections, presidency, reports. Yet government approval and presidial authority ensured political control. The General Assembly could deliberate on fundamental questions and create sections according to groups of disciplines, but its autonomy was limited by the state framework. The Presidium, meanwhile, became the practical centre of management. The Academy's internal democracy was thus heavily mediated by political supervision. It was an academic body with state-controlled mechanisms of legitimacy.

The Presidium's powers were especially important for the Academy's early consolidation. It discussed state-wide plans of key scientific research work, approved research plans of the Academy, established and abolished scientific workplaces, affiliated scientific societies, prepared elections, and managed budgetary matters with powers comparable to those of the head of a central state office (*Zákon č. 52/1952 Sb., 1952*). These powers made the Presidium the operational heart of ČSAV. The Academy was not only a gathering of distinguished scientists; it was a bureaucratic-administrative system with real control over research infrastructure. The office of the Presidium, headed administratively under the chief scientific secretary, handled economic and administrative affairs (*Zákon č. 52/1952 Sb., 1952*). This structure reveals the bureaucratic seriousness of the new institution. It was designed to manage budgets, personnel, institutes, plans, and publications. In this sense, the establishment of ČSAV was also the establishment of a new scientific bureaucracy. The history of the Academy cannot be separated from this administrative architecture.

The transitional provisions of the law make clear how carefully the regime controlled the first stage of institutional formation. The first academicians and the first members of the Presidium were to be appointed by the president of the republic on the proposal of the government (*Zákon č. 52/1952 Sb., 1952*). This provision was decisive. It meant that the founding elite of ČSAV was not produced by an autonomous election of the scientific community. It was selected through state authority. Later elections and internal procedures would operate inside a body whose initial composition had been politically shaped from the beginning. This was not merely a technical matter. The first composition of an academy defines its symbolic identity, disciplinary balance, personnel networks, and political tone. The government's role in naming the first academicians ensured that the Academy began as a controlled institution. Scientific prestige was needed, but it was filtered through state selection.

The law also empowered the government to regulate the property, facilities, finances, remuneration, working conditions, and salary conditions associated with institutions whose tasks the Academy was taking over (*Zákon č. 52/1952 Sb., 1952*). This provision transformed

the foundation of ČSAV from symbolic succession into material transfer. Libraries, laboratories, offices, collections, archives, staff positions, and budgets could now be reorganised under Academy authority. The dissolution of earlier legal frameworks, including the law on the Masaryk Academy of Labour and the law establishing the Slavonic and Oriental Institutes, completed this process (*Zákon č. 52/1952 Sb., 1952*). The new Academy did not merely stand above the older institutions; it legally displaced or absorbed them. This was one of the clearest signs of rupture. The state did not leave older bodies to coexist freely with the new Academy. It reallocated their functions and assets into the socialist research system. Institutional memory survived, but institutional independence did not.

The official historical overview of the Czech Academy confirms the breadth of this integration. It notes that in 1952 the Czech Academy of Sciences and Arts, the Royal Czech Society of Sciences, the central research institutes of the Scientific Research Centre, and research facilities formerly under the Ministry of Education, Sciences and Arts were integrated into the Czechoslovak Academy of Sciences (*Akademie věd České republiky, n.d.*). The list included the State Institute of Archaeology, the State Historical Publishing Institute, the Oriental Institute, the Institute of Slavonic Studies, and other workplaces (*Akademie věd České republiky, n.d.*). This range is striking. The new Academy brought together natural sciences, technical fields, humanities, source publication, archaeology, philology, area studies, and national-cultural research. It was not a narrow scientific institute, but an encyclopaedic research system. Its institutional breadth reflected the ambition of socialist science to organise knowledge as a total social resource. The Academy's founding thus marked a change not only in governance, but in the imagined scale of science. Science was to be systematised across the whole field of knowledge.

The Slovak dimension of the foundation was also important, although it remained structurally asymmetrical. The official historical overview states that the Slovak Academy of Sciences with its research institutes was an autonomous part of the overarching institute (*Akademie věd České republiky, n.d.*). This arrangement reflected the Czechoslovak character of the new institution. ČSAV was not named a Czech academy, but a Czechoslovak academy. Its symbolic task was to represent the scientific life of the whole republic. Yet the historical density of Czech institutions, especially in Prague, meant that the new Academy's centre of gravity remained strongly Czech. The relationship between Prague and Slovak scientific institutions therefore had to be managed through a combination of centralisation and declared autonomy. This was one of the more delicate features of the Academy's foundation. The institution had to embody socialist Czechoslovak unity while acknowledging Slovak scientific development. Its creation therefore belonged not only to the history of science, but also to the history of Czechoslovak statehood.

The role of Prague as the Academy's seat was not accidental. Act No. 52/1952 defined Prague as the seat of the Academy, while allowing the establishment of scientific-organisational centres and workplaces outside the capital (*Zákon č. 52/1952 Sb., 1952*). Prague had long been the strongest scientific centre in the Czech lands: Charles University, the Czech Technical University, libraries, museums, archives, learned societies, and older academies were concentrated there. The choice of Prague therefore followed historical geography. At the same time, the law's provision for workplaces outside Prague acknowledged that modern science could not be entirely capital-centred. Brno, Bratislava, and other centres had their own scientific capacities and disciplinary importance. The Academy was thus conceived as a Prague-centred but territorially extensible institution. This structure reproduced older

centrality while offering a mechanism for broader national distribution. It would later shape the geography of Czechoslovak research.

The foundation of ČSAV also had a ceremonial and symbolic dimension connected with Zdeněk Nejedlý. Nejedlý had been the last president of the Czech Academy of Sciences and Arts from 1945 to 1952 and became the first president of the new Czechoslovak Academy of Sciences (*Akademie věd České republiky, n.d.*). This personal continuity was politically meaningful. Nejedlý embodied the passage from the older Czech academic tradition to socialist cultural authority. As a historian, musicologist, public intellectual, communist politician, and minister, he was able to present the new Academy as both nationally legitimate and ideologically progressive. His position softened the appearance of rupture by placing a recognisable scholarly figure at the head of the new institution. Yet it also revealed how thoroughly scholarship and politics had merged in the early 1950s. The first president of ČSAV was not simply a senior scientist chosen by the scientific community. He was a political-cultural figure whose authority rested on his capacity to connect Czech historical narratives with communist power. This made the Academy's foundation symbolically coherent for the regime. It also marked the end of older academic autonomy.

The first decade of ČSAV has been treated in recent historiography as a distinct foundational period, not simply as a prelude to later reforms. The collective publication *Dějiny Československé akademie věd I (1952–1962)* examines the first decade of the institution's existence, the circumstances of its establishment, changes in membership and leadership, and the development of selected scientific institutions and common facilities (*Dvořáčková & Franc, 2020*). The description of that volume emphasises that the first decade was headed by Zdeněk Nejedlý and that the Academy's evolution must be understood in a broad political and social context (*Dvořáčková & Franc, 2020*). This historiographical framing is useful because it prevents us from treating 1952 as a single date detached from subsequent institutional consolidation. The founding act created the legal shell, but the Academy's real character emerged through the appointment of members, creation of sections, absorption of institutes, establishment of budgets, development of international contacts, and negotiation of research plans. The first decade was therefore a period of construction, not mere continuation. The Academy had to learn how to be the institution that the law had declared it to be.

The foundation of ČSAV also made possible a new model of scientific employment. Older learned societies had relied on members who often held posts elsewhere, especially at universities, schools, museums, archives, or ministries. The new Academy, by contrast, was built around scientific workplaces and employed researchers. This changed the sociology of Czech and Czechoslovak science. Research could become a full-time career outside the university, with its own hierarchy, salary conditions, institutional plans, and promotion routes. The law's provisions on employees, scientific aspirantura, and the awarding of scientific degrees reveal this new professional structure (*Zákon č. 52/1952 Sb., 1952*). The Academy was to care for the systematic training and qualification of its workers, with scientific aspirantura established as one means of that training (*Zákon č. 52/1952 Sb., 1952*). This was a major shift from the older Central European model of university-based scholarly formation. ČSAV became not only a place where science was done, but a place where scientific personnel were reproduced.

The introduction of scientific degrees such as candidate of sciences and doctor of sciences further connected ČSAV with Soviet institutional practice. The law authorised the Academy to

award scientific degrees and honorary scientific degrees, with details regulated by special provisions (*Zákon č. 52/1952 Sb., 1952*). This altered the traditional hierarchy of academic qualification. The older university habilitation and professorial career did not disappear, but it no longer held a monopoly over advanced scientific legitimacy. The Academy became a centre of research qualification and evaluation. This strengthened the separation between teaching and research already created by the Sovietisation of higher education. It also gave the Academy long-term influence over disciplinary standards, because control over degrees and aspirantura meant influence over the formation of future scientific elites. In this sense, the foundation of ČSAV affected not only existing scientists but future generations. It created a new institutional pathway into science. The Academy was thus designed as both an organiser of research and a producer of researchers.

The establishment of ČSAV also transformed publication. The law authorised the Academy to publish journals and non-periodical works and to establish a publishing enterprise for that purpose (*Zákon č. 52/1952 Sb., 1952*). This provision continued older academy traditions of scholarly publishing, but under new institutional conditions. Publications were now to be part of a state-academic system that represented Czechoslovak science, disseminated planned research results, and contributed to ideological and scientific orientation. The Academy's publishing capacity mattered greatly because journals, monographs, proceedings, dictionaries, source editions, and technical reports are the visible surface of scholarly life. By controlling publication infrastructure, ČSAV could shape what counted as recognised research. It could support serious scholarly production, but also regulate intellectual visibility. Publication therefore became both a scholarly function and an administrative instrument. The founding of ČSAV created an institutional channel through which scientific authority could be printed, circulated, and publicly legitimised.

The Academy's foundation must also be read against the Sovietisation of universities. The Higher Education Act of 1950 had already subordinated universities to the state and weakened their self-governing traditions. When ČSAV was founded two years later, the research system was reorganised around non-university institutes under a central academy. The official history of the Czech Academy later noted that compared with universities, which had been completely Sovietised by the Higher Education Act of 18 May 1950, the scientific community at ČSAV retained at least formally a greater degree of decision-making autonomy (*Akademie věd České republiky, n.d.*). This observation is important, but it must be interpreted carefully. Formal autonomy inside ČSAV did not mean independence from the totalitarian regime. It meant that, within the controlled state-academic system, the Academy sometimes provided more room for certain researchers than universities did. The Academy could become both an instrument of control and a limited shelter for scholarship. This ambiguity would later become one of the most important features of its history.

The formal establishment of ČSAV therefore cannot be judged only by the ideological language of the founding law. That language was real and restrictive, but the institution also concentrated resources that enabled serious research. The Academy inherited laboratories, libraries, archives, journals, collections, institutes, and scientific personnel. It created stable workplaces, salaries, and long-term research possibilities. It made possible projects that would have been difficult to sustain within fragmented learned societies or politically transformed universities. The paradox is that this modernisation was achieved through a politically dependent form. The same law that supported research also declared service to socialism, government responsibility, state budgetary incorporation, and plan fulfilment. This

made ČSAV structurally ambivalent from the beginning. It was neither a mere façade nor a free scientific republic. It was a powerful research institution formed under authoritarian conditions. Its achievements and compromises were inseparable.

The political context of 1952 sharpened this ambivalence. Czechoslovakia was by then firmly within the Soviet bloc, the Communist Party had consolidated power, political trials and purges had created an atmosphere of fear, and public institutions were expected to demonstrate loyalty to socialist construction. In such a climate, the founding of a highest scientific institution had a performative function. It showed that the regime did not reject science; it claimed to organise science better than the old bourgeois-democratic order. ČSAV was meant to embody rationality, progress, national prestige, technological development, and ideological clarity. Its creation allowed the state to display modern scientific ambition while keeping that ambition politically disciplined. This was why the Academy mattered so much symbolically. It was not simply a workplace for scientists. It was a monument to the regime's claim that socialism could master knowledge. That claim would be tested repeatedly in the Academy's early history.

The foundation also altered the meaning of the word "academy" itself in the Czech and Czechoslovak context. Before 1952, academy could mean a learned society, an honour-granting body, a cultural institution, or a national scholarly representative. After 1952, it increasingly meant a large research organisation with institutes, employees, plans, budgets, and state functions. This semantic shift was not minor. It changed how science was imagined by the public, by policymakers, and by scientists themselves. The Academy was no longer only a place of recognition; it was a place of production. It did not only certify scholarly value; it generated and organised scientific labour. The older academy ideal of learned distinction was absorbed into a socialist academy ideal of organised research. This transformation would outlast the Stalinist moment, even though its political meanings later changed. The institute-based academy became a durable feature of Czech scientific life.

By 1952, therefore, the search for a new institutional model of Czechoslovak science had reached a definitive legal answer. The answer was centralised, state-funded, institute-based, research-oriented, ideologically framed, and government-linked. It inherited older scholarly traditions but did not preserve their autonomy. It created new research possibilities but tied them to political planning. It gave scientists stable workplaces but also required them to work inside the Academy's plans and socialist mission. It raised the public status of science but reduced the independence of scientific representation. The establishment of ČSAV was therefore one of the central events in the transformation of Czechoslovak intellectual life after the war. It reorganised the structures through which knowledge would be produced, authorised, transmitted, and used. All later developments in the Academy's leadership, institutes, university relations, and scientific achievements must be understood in relation to this founding moment.

Thus, the establishment of the Czechoslovak Academy of Sciences in 1952 was both the culmination of post-war institutional transformation and the beginning of a new state-academic order. Act No. 52/1952 Coll. created ČSAV as the highest scientific institution of the republic, linked it to the reconstruction of older learned bodies, gave it authority over research, planning, coordination, publishing, international representation, personnel training, scientific degrees, and government advice, and placed it directly within the socialist state framework. The Academy inherited the prestige of the Royal Czech Society of Sciences and the Czech

Academy of Sciences and Arts, but transformed their legacy into a centralised research system. It absorbed state institutes and emerging central research workplaces, thereby concentrating the material and intellectual infrastructure of Czechoslovak science. Its foundation brought resources, professionalisation, and institutional permanence, but also ideological dependence, government oversight, and the loss of freely elected scholarly representation. ČSAV was therefore born as a paradoxical institution: a modernising centre of serious research and, at the same time, a product of Stalinist political ordering. This paradox did not disappear after 1952. It became the basic condition under which the Academy would develop during its first decade.

Early Leadership and Institutional Consolidation

1. Zdeněk Nejedlý and the Symbolic Politics of the New Academy

Zdeněk Nejedlý's role in the early history of the Czechoslovak Academy of Sciences cannot be reduced to the fact that he became its first president. He was important because he embodied, almost too perfectly, the symbolic grammar through which the new Academy wished to present itself: national and socialist, scholarly and political, continuous with older Czech traditions and yet loyal to the Stalinist transformation of public life. He had been the last president of the Czech Academy of Sciences and Arts between 1945 and 1952 and then became president of the newly established Czechoslovak Academy of Sciences from 12 November 1952 until his death on 9 March 1962 (*Akademie věd České republiky, n.d.*). This personal continuity was not accidental. It allowed the regime to stage institutional rupture as historical succession, making the abolition or absorption of older learned bodies appear as their fulfilment rather than their destruction. Nejedlý's figure therefore functioned as a bridge, but it was not a neutral bridge. It carried the older academic world into a new ideological order and gave that order the appearance of rootedness in Czech cultural history. The new Academy needed precisely such a figure because it was created through a paradox: it claimed the authority of accumulated scholarship while subordinating scholarship to socialist state-building. Nejedlý's career, with its mixture of musicology, historical writing, public polemic, communist politics, and ministerial authority, made him unusually suitable for this role. He was not only a president of an institution; he was a symbol of how the institution wanted to be understood.

The symbolic politics of Nejedlý's presidency began before the legal foundation of ČSAV. As president of the Czech Academy of Sciences and Arts after 1945, he presided over a body whose prestige came from the late 19th-century national academic tradition, the legacy of Josef Hlávka, and the older idea of Czech scholarly self-representation. Yet during his presidency, a number of specialised departments of that Academy began to transform into scientific institutes, including the Czech Language Institute, the Nuclear Physics Institute, the Mathematical Research Institute, and the Institute for Czech Literature (*Akademie věd České republiky, n.d.*). In purely institutional terms, this meant that the older learned society was already becoming more research-oriented before the formal creation of the new socialist

academy. In symbolic terms, it meant that Nejedlý could be presented not as the destroyer of the old Academy, but as the organiser of its higher transformation. This mattered because Stalinist institutional change often required historical camouflage. The state could abolish old forms more easily when it claimed to be realising their progressive essence. Nejedlý's presidency of the old Academy supplied that continuity. His presidency of the new Academy then completed the symbolic passage from learned society to centralised research institution.

Nejedlý's political usefulness rested on his long-standing claim that communism was not foreign to Czech history but the heir of its deepest democratic and national traditions. This claim was developed most famously in his wartime and post-war argument that communists were the inheritors of the great traditions of the Czech nation (*Nejedlý, 1946/1950*). In that formulation, the Czech national revival, Hussite tradition, popular democratic struggle, progressive cultural memory, and modern communism could be placed in one historical line. Michal Kopeček's analysis of Czech communist intellectuals and the "national road to socialism" shows how this post-1945 concept drew on the Third Republic's language of national and democratic revolution, pro-Soviet orientation, Slavophile cultural feeling, and the theory of people's democracy (*Kopeček, 2016*). Nejedlý's importance lay in giving these elements a historical narrative. He did not present socialism as an imported administrative model alone; he presented it as the culmination of Czech progressive history. This was a powerful symbolic device for the new Academy. If communism could be interpreted as the heir of Czech cultural and scholarly traditions, then ČSAV could be interpreted as the legitimate heir of the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts. The political argument and the institutional argument reinforced each other.

This symbolic strategy corresponded directly to the wording of the founding law of ČSAV. Act No. 52/1952 Coll. stated that the Academy was established as the highest scientific institution of the Czechoslovak Republic and that it arose through the reconstruction of the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts, while following the progressive traditions of Czech and Slovak science (*Zákon č. 52/1952 Sb., 1952*). The adjective "progressive" was not ornamental. It allowed the regime to select from the past those elements that could be assimilated into socialist historical legitimacy. The Academy did not claim all traditions equally; it claimed those that could be reinterpreted as leading towards socialism. Nejedlý was the ideal president for such a formula because his entire intellectual-political project consisted in sorting Czech history into progressive and reactionary lines. He could make the transition from old academy to new academy seem like a historical judgement rather than an act of political takeover. The law gave this judgement legal form. Nejedlý gave it cultural voice. The Academy thus entered public life not only as a research institution, but as a state-approved interpretation of national scholarly history.

Nejedlý's background as a historian and musicologist is essential to understanding his symbolic role. He was not a bureaucrat without scholarly credentials, nor merely a party functionary placed at the head of science. His early work had been formed in the intellectual world of Charles University, positivist history, Czech musicology, aesthetic debate, and national cultural polemic. His lifelong devotion to Bedřich Smetana, his conflicts over the canon of Czech music, and his historical writings on Czech culture made him a figure deeply associated with cultural interpretation (*Křesťan, 2012*; *Locke, 2006*). This did not make his later political authority benign, but it did give it scholarly texture. For the new Academy, that texture mattered. The president of ČSAV could be presented not simply as a communist official, but as a scholar whose political convictions allegedly arose from Czech historical consciousness.

The state needed such cultural authority because scientific institutions cannot live by command alone. They also require symbols, rituals, names, genealogies, and narratives. Nejedlý supplied all of these.

His reputation was, however, already controversial long before the foundation of ČSAV. In Czech musicology and criticism, Nejedlý was known for strongly polemical judgements, factional disputes, and a tendency to turn questions of artistic interpretation into questions of historical and moral alignment. His defence of the Smetana tradition and his attacks on alternative musical lineages were not merely aesthetic disagreements; they were battles over the meaning of Czech national culture (*Locke, 2006*). This habit of organising culture into correct and incorrect historical lines later fitted the ideological needs of Stalinist cultural policy. A scholar who had long treated cultural interpretation as a struggle over national truth could easily become a politician who treated academic life as a struggle over progressive legitimacy. This continuity does not mean that the young Nejedlý already contained the whole later Stalinist minister. It does mean that his intellectual temperament was compatible with a politics of cultural selection. The Academy under his presidency inherited this atmosphere of hierarchy and judgement. Some traditions could be canonised; others could be marginalised. The presidency of ČSAV therefore carried not only his institutional authority, but his older polemical style of cultural ordering.

His ministerial career made that symbolic authority administratively effective. Nejedlý served as minister in the immediate post-war period and again after February 1948, when the Communist Party returned him to the sphere of education and culture with strengthened powers. Czech and Slovak educational historiography identifies him as a key actor in the early communist transformation of schooling, culture, and higher education, including the reorientation of curricula, institutions, and intellectual life according to the ideological needs of the new regime (*Křesťan, 2005*; *Šutajová, 2023*). His ministry was not separate from the foundation of the Academy; it formed part of the same political ecology. The university reform of 1950 had already subordinated universities to the state, while ČSAV in 1952 created a central research institution outside the older university model. Nejedlý stood at both crossroads: education and science, culture and administration, historical memory and institutional planning. This made him a uniquely dense symbol of the new order. He did not merely preside ceremonially over the Academy after others had created it. He belonged to the broader political process that made such an Academy possible.

The foundation of ČSAV also occurred at a moment when the symbolic management of science was especially important for the regime. The early 1950s were marked by Stalinist centralisation, political trials, purges, ideological campaigns, and the reorganisation of public institutions. In that context, the Academy had to present itself not as a coercive intervention into scholarship, but as a national achievement. Its foundation declared that socialism was not hostile to science, but capable of organising science more systematically than the older liberal-democratic or learned-society order. Nejedlý's presence at the top helped make this claim plausible to the public and to parts of the scholarly community. His age, scholarly titles, long cultural career, and association with Czech national themes gave the new institution a patina of continuity. At the same time, his communist authority reassured the regime that the Academy would not become a refuge of uncontrolled academic autonomy. He was therefore both ornament and guarantee. He decorated the institution with cultural legitimacy and guarded it through political reliability.

The presidency of ČSAV was not simply one more honour in Nejedlý's late career; it was the culmination of his symbolic position within Czech communism. By 1952, he had become one of the public faces of the regime's claim to inherit Czech national culture. He was elderly, visibly connected with the pre-1918 and First Republic academic world, and yet firmly embedded in the post-1948 communist state. This combination made him useful in a way that a younger party technocrat could not have been. A technocrat might have organised institutes, budgets, and plans, but he could not so easily embody the alleged historical continuity between Enlightenment learned societies, the national revival, Masarykian educational culture selectively reinterpreted, Soviet liberation, and socialist science. Nejedlý could. His authority was therefore symbolic before it was managerial. The real administrative work of the Academy would depend heavily on figures such as František Šorm, the first general scientific secretary, and other institute-building scientists. But the founding presidency had to be occupied by someone who could carry the myth of continuity. Nejedlý's function was to make a new, highly political institution look historically inevitable.

This is why his presidency should be distinguished from executive scientific leadership in the narrower sense. Nejedlý was not the primary architect of all research programmes, nor could he personally direct the specialised work of physics, chemistry, mathematics, biology, or technical science. The Academy's operational consolidation required scientific organisers, institute directors, section chairs, administrators, and party-approved experts. Yet symbolic leadership mattered because the new Academy had to define its place in society. In public speeches, institutional ceremonies, legal language, and official histories, the Academy was presented as a summit of national science and a servant of socialist construction. Nejedlý's name connected these claims. He could speak about Smetana, Hussitism, the Czech people, progressive tradition, Soviet friendship, education, and science as if they belonged to a single historical drama. That drama was precisely the ideological frame in which ČSAV was founded. The presidency therefore did not need to be technically managerial in order to be institutionally decisive.

The symbolic politics of Nejedlý's presidency also shaped the relationship between science and culture. Modern academies often contain both natural sciences and humanities, but the balance between them depends on the ideology of knowledge that governs the institution. Nejedlý's intellectual world had been formed by history, music, literature, national culture, and public education rather than by laboratory science. His presidency therefore gave the Academy a strong cultural-historical aura even as the state invested in natural and technical research. This was useful because the new Academy had to claim more than economic utility. It had to claim guardianship of national culture under socialist conditions. Institutes of language, literature, history, archaeology, Oriental studies, and Slavonic studies were therefore not decorative appendices to a scientific-technological project. They were central to the symbolic order of the Academy. Under Nejedlý, the humanities could be framed as instruments of progressive national consciousness. At the same time, this framing exposed them to ideological discipline more directly than many natural sciences. The cultural authority he brought to the Academy was therefore double-edged.

His conception of Czech history strongly influenced this double edge. Nejedlý's historical imagination tended to organise the past around morally charged traditions: Hussitism, the national revival, Smetana, democratic-popular culture, and eventually communism as their culmination. Such a view could dignify scholarship by connecting it with national memory. It could also reduce historical complexity by forcing the past into a progressive teleology. In the

Academy's symbolic politics, this mattered because institutional history itself was rewritten according to the same logic. The Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts were not simply predecessors; they became predecessors insofar as their "progressive" elements could be claimed. This selective inheritance was essential to the new institution's legitimacy. It allowed the regime to honour the old while disqualifying the old forms of autonomy. Nejedlý's historiographical style was ideally suited to such work. He could transform discontinuity into a story of historical purification.

The Academy's headquarters also acquired symbolic significance in this transition. The Czech Academy of Sciences and Arts moved into the former savings bank building on Národní Street in 1945, and Nejedlý, as president of that Academy, sought to secure the building for academic use after the war (*Akademie věd České republiky, n.d.*). The present Czech Academy's account of its headquarters notes that after negotiations and state intervention, the building eventually became the property of the Czechoslovak Academy of Sciences, whose Presidium and Main Library were placed there after the new Academy was established (*Akademie věd České republiky, n.d.*). This was more than a matter of office space. The monumental building in the centre of Prague, with its 19th-century civic and financial history, became the visible seat of socialist organised science. In spatial terms, the new Academy occupied a site associated with Czech urban modernity, public prestige, and institutional dignity. Nejedlý's effort to secure this building belongs to the symbolic politics of academic continuity. The new Academy inherited not only traditions and personnel, but also architectural authority. It placed its socialist scientific mission inside a historical urban shell.

The Main Library's early role in the new headquarters likewise reflected symbolic and material inheritance. The library received valuable book collections from the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and the Masaryk Academy of Labour, becoming immediately one of the largest universal scientific libraries in Prague (*Akademie věd České republiky, n.d.*). This transfer condensed the founding logic of ČSAV in material form. Books accumulated by older learned institutions were gathered under the authority of the new socialist Academy. The library therefore became an archive of continuity under new ownership. It preserved scholarly capital while changing its institutional meaning. Nejedlý's presidency gave this transfer a recognisable historical face. The same figure who had headed the old Academy now stood at the head of the institution that inherited its collections. This softened the violence of institutional absorption, even though the legal and political consequences were real. The symbolic politics of the Academy thus operated through people, laws, buildings, and books at once.

At the level of law, Nejedlý's presidency coincided with a conception of membership that fused scientific merit with socialist service. Act No. 52/1952 defined academicians and corresponding members as active scientists who enriched science through significant work and contributed to the socialist construction of the state (*Zákon č. 52/1952 Sb., 1952*). This definition reveals the political meaning of the new Academy more sharply than any ceremonial speech. A scientist could no longer be publicly recognised only for intellectual achievement. Recognition was linked to contribution to socialism. Nejedlý's own career personified precisely this fusion. He was a scholar whose political identity had become inseparable from his public authority. As president, he represented a model of the academician as both scientist and ideological servant of the state. The Academy's membership criteria transformed that model into institutional principle. In this sense, Nejedlý was not an exception to the Academy's law; he was its human emblem.

The obligation of Academy members to take part creatively in the Academy's work, fulfil assigned tasks, consider the Academy's plans, and contribute to their fulfilment further shows how the older idea of academic honour was transformed into planned scientific labour (*Zákon č. 52/1952 Sb., 1952*). Nejedlý's symbolic presidency helped legitimate this transformation because he presented service as historical responsibility. If science belonged to the people and to the progressive line of national development, then planned service could be represented as a higher form of scholarly duty rather than as subordination. This was one of the central ideological moves of the new Academy. Autonomy was not openly attacked as ignorance or incompetence; it was morally redefined as insufficient social commitment. The scholar was expected to become a participant in collective construction. Under Nejedlý's presidency, this expectation could be clothed in patriotic language. Czech science was not merely obeying the state; it was allegedly fulfilling its historical mission. Such rhetoric gave the Academy moral grandeur while masking the loss of independent self-government.

Nejedlý's relationship to universities also influenced the symbolic meaning of ČSAV. The universities had been strongly Sovietised by the Higher Education Act of 1950, and the present Academy's historical overview notes that compared with universities, the scientific community at ČSAV retained at least formally a greater degree of decision-making autonomy, even though decision-making mechanisms remained under totalitarian control (*Akademie věd České republiky, n.d.*). This apparent autonomy was part of the Academy's symbolic appeal. It could be presented as the highest community of science rather than merely as another administrative office. Nejedlý, who had himself been a university professor and minister of education, embodied the transfer of authority from the older university world to the new non-university research system. His presidency signalled that advanced scholarship no longer had its natural centre only in the university. The Academy now claimed that centre. This claim had practical consequences for research careers, institutes, scientific degrees, and the division between teaching and research. It also had symbolic consequences: the scholar-state relationship was now mediated through ČSAV rather than primarily through the university.

The symbolic politics of Nejedlý's leadership were not limited to the humanities. The Academy's early credibility also depended on natural sciences, mathematics, medicine, and technical disciplines. Institutes in biology, chemistry, physics, geology, mathematics, astronomy, and polarography had been developed as part of the Scientific Research Centre founded in 1949 and were integrated into the new Academy in 1952 (*Akademie věd České republiky, n.d.*). Nejedlý did not personally symbolise these fields in the same way that he symbolised culture and history, but his presidency gave them a national-political frame. The natural sciences could be presented as evidence that socialist Czechoslovakia was entering modernity through organised research. The humanities could tell the story of progressive national culture; the natural sciences could demonstrate technological and intellectual advancement. Together, they made the Academy an encyclopaedic institution. Nejedlý's role was to hold these different symbolic functions under one narrative of socialist-national progress. The tension between cultural ideology and scientific specialisation would remain visible throughout the Academy's first decade.

His presidency also reveals the difference between symbolic authority and scientific pluralism. The new Academy claimed to unite all fields of knowledge, but that unity was not neutral. It was structured by a hierarchy of political trust, economic utility, ideological sensitivity, and institutional visibility. Nejedlý's cultural authority favoured a strong ideological interpretation of the humanities, while the state's modernising ambitions favoured natural and technical

research. Some disciplines could thrive within this arrangement; others were distorted or constrained. The Academy could offer protection to certain scholars expelled from universities, but it could also enforce ideological boundaries. This is why Nejedlý's presidency should not be romanticised as cultural continuity, nor dismissed only as bureaucratic Stalinism. It was both. It preserved parts of scholarly infrastructure while placing them inside a political story that narrowed interpretive freedom. The symbolic force of his presidency lay precisely in making this contradiction appear coherent.

The production of homage around Nejedlý also belongs to the symbolic history of the Academy. A large commemorative volume entitled *Zdeňku Nejedlému Československá akademie věd* was published by the Academy in 1953, the year after its foundation (*Československá akademie věd, 1953*). The very existence of such a publication shows how quickly the new institution invested in the cultic representation of its president. It was not enough for Nejedlý to hold office. He had to be publicly inscribed as a figure worthy of academic tribute. Such volumes were part of the ceremonial culture of socialist institutions, in which political loyalty, scholarly authority, and public celebration often overlapped. The Academy honoured its president and thereby honoured the political meaning of its own foundation. The tribute was therefore not merely personal. It was institutional self-representation. By celebrating Nejedlý, ČSAV celebrated the fusion of science, national tradition, and socialism that it claimed to embody.

At the same time, the later memory of Nejedlý became deeply ambivalent, even hostile. Contemporary Czech discussions often remember him as a symbol of early communist cultural dogmatism, educational control, and ideological rigidity. Jiří Křesťan's major biography, *Zdeněk Nejedlý: Politik a vědec v osamění*, is described in Czech bibliographical and review sources as the first large and complex analysis of this controversial figure in modern Czech history (*Křesťan, 2012*). This later historiographical reassessment matters for the Academy's history because it reveals how symbolic capital can reverse over time. In 1952, Nejedlý's name lent legitimacy to ČSAV. After 1989, the same name could evoke the compromised origins of socialist scientific governance. The figure who once connected the Academy to progressive national tradition later became a reminder of political instrumentalisation. This reversal does not invalidate his founding importance. It makes it more historically interesting. Nejedlý's presidency is a case of symbolic power that was effective in its own time and problematic in retrospective memory.

The historiographical problem, however, is not solved by turning Nejedlý into a caricature. His later public image as a rigid communist ideologue can obscure the fact that he was also an extremely productive scholar, a major cultural polemicist, and a man whose intellectual formation belonged to the older Czech academic world. Křesťan's biographical work is important precisely because it treats him as a complex and controversial figure rather than merely as a symbol of absurdity or oppression (*Křesťan, 2012*). This complexity is essential for understanding his role in ČSAV. If he had been only a party official, his appointment would have symbolised political takeover but not continuity. If he had been only a scholar, he would not have reassured the regime. His usefulness lay in the combination. The new Academy required a founding president whose biography could be read in two directions at once. Nejedlý's life could be read backward into Czech national scholarship and forward into socialist institutional control. That double readability made him indispensable.

His age and late-career status also affected his presidency. Born in 1878, Nejedlý was 74 when ČSAV was established in 1952. He belonged biologically and culturally to a generation formed before the First World War, before Czechoslovak independence, and long before the Stalinist state. This made him a living bridge to a vanished scholarly world. Yet because he had joined the communist movement and identified himself with the Soviet-oriented post-war order, he could also be presented as proof that the old national intelligentsia had found its true future in socialism. The symbolism was almost theatrical. The aged scholar, shaped by the national revival's cultural memory and the university culture of the Habsburg and First Republic worlds, stood at the head of a new socialist research system. His body itself became an image of continuity. But this continuity was selective, political, and staged. It connected generations while suppressing alternative inheritances.

The Academy's first decade, headed by Nejedlý, is now treated by Czech historiography as a specific stage in the institution's development. The first volume of the collective history of ČSAV, covering 1952–1962, explicitly deals with the decade when the Academy was headed by him and examines the institution's creation, membership, leadership, international contacts, and key research facilities in a broad political and social context (*Dvořáčková & Franc, 2020*). This confirms that Nejedlý's presidency was not a short transitional episode. It coincided with the entire foundational decade of the Academy. During that decade, ČSAV had to turn the legal act of 1952 into a functioning system of institutes, sections, plans, libraries, publishing organs, and international relations. Nejedlý's symbolic authority stood over this process, even when others handled much of the practical organisation. His presidency therefore framed the Academy's earliest institutional identity. The Academy learned to speak publicly in a language that combined scientific ambition, socialist obligation, and national historical legitimacy. That language bore his mark.

The symbolic politics of Nejedlý's presidency also affected the Academy's relationship with Slovak science. The founding law and official institutional narratives presented ČSAV as a Czechoslovak academy, following the progressive traditions of both Czech and Slovak science (*Zákon č. 52/1952 Sb., 1952*). The Slovak Academy of Sciences with its research institutes was an autonomous part of the overarching structure, according to the present Czech Academy's historical overview (*Akademie věd České republiky, n.d.*). Yet Nejedlý was above all a Czech cultural figure, formed by Czech national history, Czech musicology, Czech literary and educational debates, and Czech communist cultural politics. This produced a symbolic asymmetry. The president embodied the Czech line of academic continuity more strongly than the Slovak one. Nevertheless, his national-communist narrative could be extended to Czechoslovak statehood through the language of Slavic solidarity, Soviet friendship, and socialist unity. The Academy's Czechoslovak symbolism thus rested partly on Czech cultural capital and partly on socialist federalising rhetoric. This tension would remain important in later relations between Czech and Slovak research institutions.

Nejedlý's presidency also helps explain why the new Academy's ideological mission was presented not as a limitation on science but as a higher form of responsibility. The founding law stated that the Academy served the development of science and technology and thereby the building of socialism and the welfare of the people (*Zákon č. 52/1952 Sb., 1952*). This formula could sound technocratic, but under Nejedlý it gained a historical-cultural resonance. Science was not only a productive force; it was part of the people's cultural ascent. Research was not only a professional activity; it was a national and socialist duty. Such rhetoric could mobilise enthusiasm, especially among younger researchers who saw the Academy as a place of full-

time scientific work and social advancement. It could also conceal coercion, because refusal to accept the official mission could be interpreted as refusal of the people's welfare. Nejedlý's symbolic politics transformed institutional subordination into moral language. The Academy was not merely obeying the state; it was said to be serving history.

The limits of this symbolism became visible wherever scholarly autonomy conflicted with ideological expectation. In fields such as history, philosophy, literary studies, sociology, pedagogy, and parts of biology, political doctrine could directly shape acceptable research. Nejedlý's own cultural authority made him a guardian of certain interpretations rather than a protector of plural debate. His presidency therefore cannot be separated from the narrowing of permissible intellectual frameworks in the early 1950s. Yet the Academy was large and internally differentiated. In mathematics, physics, chemistry, polarography, and parts of medicine, serious research could continue and sometimes flourish under the Academy umbrella, even if framed by official rhetoric. This internal diversity complicates any simple judgement about Nejedlý's symbolic leadership. The same presidency that represented ideological control also presided over institutional expansion and the concentration of scientific resources. The contradiction belonged not only to Nejedlý, but to the Academy itself. He personified it more visibly than anyone else.

His relationship to Soviet culture was another element of the symbolic politics of ČSAV. Nejedlý had spent the wartime years in the Soviet Union, joined the Communist Party, and after 1945 helped legitimise the pro-Soviet orientation of Czech cultural and educational life. For the new Academy, this mattered because international orientation was explicitly redirected towards the Soviet Union and the people's democracies in the founding law (*Zákon č. 52/1952 Sb., 1952*). The president's biography therefore matched the institution's geopolitical mission. He symbolised not only Czech national continuity, but also loyalty to the Soviet centre of socialist science. This duality was crucial. A purely Sovietising figure might have lacked national legitimacy; a purely national scholar might have lacked political trust. Nejedlý joined both. He allowed the Academy to appear Czech and Soviet-oriented at the same time. That was one of the central symbolic requirements of 1952.

It is also significant that Nejedlý's presidency lasted until his death in 1962, just before a new phase of Academy leadership began under František Šorm. The official list of Academy representatives records Nejedlý as president from 12 November 1952 to 9 March 1962 and Šorm from 30 March 1962 (*Akademie věd České republiky, n.d.*). This transition was more than generational. It marked the gradual shift from the symbolic founding presidency of a cultural-political elder to the more technocratic and research-organisational leadership associated with a prominent chemist and institute builder. Nejedlý's decade gave the Academy its founding myth, legal identity, and ideological frame. Šorm's later leadership would increasingly reflect the importance of scientific management, natural sciences, and institutional modernisation. The contrast helps clarify Nejedlý's function. He was less the president of mature scientific administration than the president of founding legitimacy. His death closed the first symbolic chapter of ČSAV.

The symbolic politics of Nejedlý's presidency therefore operated through several layers at once. At the biographical layer, he joined scholar, historian, musicologist, minister, communist, and cultural ideologue in one person. At the institutional layer, he moved from the presidency of the Czech Academy of Sciences and Arts to the presidency of ČSAV. At the legal layer, he embodied the founding law's claim that older learned bodies were being

reconstructed into a higher socialist form. At the cultural layer, he connected Czech national history with communist legitimacy. At the spatial layer, he helped secure and symbolise the Academy's Prague headquarters. At the international layer, he fitted the pro-Soviet orientation of the new institution. At the memory layer, he later became a controversial emblem of early communist cultural power. These layers together explain why his presidency matters historically even when the practical scientific management of the Academy depended on many other figures. Nejedlý made the new Academy narratable.

The danger of his symbolic success was that it made the political transformation of science appear historically natural. If the new Academy was merely the culmination of progressive Czech and Slovak science, then the loss of autonomous learned representation could be downplayed. If academicians were servants of socialist construction, then political loyalty could be made to look like scholarly responsibility. If Soviet orientation was the path to modern science, then the narrowing of Western contacts could be presented as liberation from bourgeois dependence. If research planning was service to the people, then bureaucratic control could be moralised as collective duty. Nejedlý's symbolic politics helped make these transformations rhetorically acceptable. That does not mean all scientists believed the rhetoric equally. Many adapted pragmatically, some embraced it sincerely, and others endured it in silence. But institutions do not require unanimous belief to function. They require enough symbolic coherence to organise behaviour. Nejedlý supplied such coherence.

Thus, Zdeněk Nejedlý's presidency of the Czechoslovak Academy of Sciences was foundational above all because it gave the new institution a usable symbolic identity. He linked the abolished or absorbed learned societies to the socialist Academy, connected Czech national-cultural traditions with communist historical legitimacy, and placed scholarly authority inside the language of service to socialism and the people. His figure allowed the regime to present rupture as continuity, centralisation as fulfilment, and ideological subordination as historical responsibility. At the same time, his presidency did not exhaust the reality of the early Academy, which also depended on scientific organisers, institute directors, natural-science research, libraries, laboratories, and professional researchers. The paradox of ČSAV was therefore concentrated in Nejedlý himself. He was a genuine scholar and a political ideologue, a representative of older Czech academic culture and an agent of its socialist transformation, a symbol of continuity and a marker of lost autonomy. His presidency made the Academy historically credible for the regime, but it also attached the Academy's founding memory to the ambiguities of early communist cultural power. The early ČSAV cannot be understood without this symbolic presidency, because through Nejedlý the new Academy learned to describe itself as the scientific summit of a socialist nation.

2. The First Generation of Academicians and Institutional Elites

The first generation of academicians of the Czechoslovak Academy of Sciences was not merely a list of distinguished scholars transferred into a new institution. It was a carefully constructed founding elite, assembled at the intersection of scholarly reputation, political reliability, disciplinary representation, institutional inheritance, and the practical needs of building a centralised research system. The very category of "academician" changed its meaning in 1952. In the older learned-society tradition, membership primarily signified scholarly distinction, election by peers, intellectual reputation, and belonging to a national or international community of learning. In the new Academy, it still signified scientific authority, but this

authority was now legally tied to socialist construction. Act No. 52/1952 Coll. defined academicians and corresponding members as active scientists who enriched science through significant work and contributed to the socialist construction of the state (*Zákon č. 52/1952 Sb., 1952*). This double criterion is the key to understanding the first Academy elite. The founding members had to legitimate the institution scientifically, but also politically. They were expected to demonstrate that the new socialist Academy was not an empty administrative invention, but the summit of Czechoslovak science. At the same time, their selection had to show that science would no longer be represented by a self-governing scholarly corporation, but by a state-recognised body aligned with the political order.

The creation of the first membership base was therefore one of the most sensitive tasks in the foundation of ČSAV. Jiří Beran's study of the formation of the Academy's membership in 1952 shows that the selection of members was assigned to the Government Commission for the Development of the Czechoslovak Academy of Sciences, led by Ladislav Štoll, by a government decision of 15 January 1952 (*Beran, 2005*). Beran's analysis is especially valuable because it focuses not only on scholarly criteria, but on the political criteria that shaped the selection process. The first academicians were not chosen through the ordinary self-reproductive procedures of a mature academy. They were selected before the Academy itself could operate independently. In other words, the body of members that would later represent the scientific community was initially constituted by political-administrative decision. This was not a mere technical necessity of founding a new institution. It was a founding act of power. The first generation of academicians was designed to embody a new kind of scientific legitimacy, one in which professional excellence was inseparable from acceptance by the socialist state.

The transitional provisions of the founding law made this political origin explicit. The first academicians and the first members of the Presidium were to be appointed by the president of the republic on the proposal of the government (*Zákon č. 52/1952 Sb., 1952*). This meant that the initial Academy elite did not emerge from an autonomous election of scholars already gathered in an independent institution. It was placed into existence by the state. Such an arrangement was consistent with the entire logic of the new Academy: continuity was claimed, but the actual mechanism of foundation was controlled from above. Later elections, assemblies, sections, and internal procedures would operate within a framework whose founding composition had already been politically shaped. The result was a paradoxical elite. It included many real scientists and scholars of high professional standing, yet its institutional authority was mediated through government appointment. This origin would mark the Academy for the whole first decade. Its members could speak in the name of science, but the first act that made them members had not been purely scientific.

The first generation of academicians also had to reconcile continuity with rupture. The new Academy claimed to arise through the reconstruction of older learned institutions, especially the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts. This legal and symbolic formula allowed many established scholars from the older academic world to be incorporated into the new structure. Yet incorporation did not mean preservation of the older rules of membership. The old learned societies had embodied scholarly representation, even if they had their own social limitations and elite patterns. ČSAV absorbed their prestige, but not their autonomy. Its founding members therefore occupied an ambiguous position. Many of them represented pre-war scholarly excellence, older university traditions, and long-standing academic networks. At the same time, by entering the new Academy, they became part of a socialist institution with planned tasks, political criteria, and government oversight. The first

generation was thus not simply a new elite replacing an old elite; it was a recomposed elite, in which inherited authority was filtered through ideological acceptability.

This recomposition was necessary because the regime could not build a credible academy without older scholarly capital. The communist state could subordinate institutions, reform universities, and impose ideological language, but it could not manufacture scientific prestige overnight. It needed mathematicians, chemists, physicians, historians, philologists, archaeologists, physicists, biologists, engineers, and linguists whose work had recognised professional weight. The first Academy therefore had to include figures whose reputations had often been made before 1948, and sometimes even before the Second World War. Yet the regime also needed to prevent the new body from becoming a mere refuge of pre-socialist academic authority. This is why the selection process combined inclusion and exclusion. Some older scholars were retained because their prestige was indispensable; others were marginalised because they were politically suspect, ideologically inconvenient, or institutionally unnecessary. The first generation of academicians was therefore an elite of controlled continuity. It gave the Academy scientific dignity while submitting that dignity to new political conditions.

The Government Commission's role shows how carefully this balance was managed. Beran notes that the commission's work included the selection of members for the new institution and that its procedures were shaped by political considerations, including the relationship between the Academy and planned sub-academies, the representation of Slovak scholars, and the connection between ČSAV and earlier academic societies (*Beran, 2005*). The commission's task was not simply to identify "the best scientists" in a neutral sense. It had to design a founding membership that would be scientifically impressive, disciplinarily balanced, politically acceptable, and institutionally useful. This was an extremely delicate operation. Too much continuity could make the Academy look like a disguised old learned society. Too much political selection could make it scientifically weak. Too little Slovak representation could damage its Czechoslovak legitimacy. Too much autonomy for sub-academies could weaken the central model. The first membership base therefore reveals the Academy's founding tensions more clearly than any ceremonial proclamation.

The distinction between academicians and corresponding members also mattered. Full members, or academicians, represented the highest level of scholarly recognition inside the new body. Corresponding members expanded the Academy's scientific base and allowed it to recognise active researchers who were important but not yet placed at the summit of the hierarchy. Both categories were legally tied to significant scientific contribution and socialist construction (*Zákon č. 52/1952 Sb., 1952*). The distinction created a layered elite. At the top stood figures whose prestige was used to personify the Academy before the state and society. Around them stood a wider circle of recognised scholars and researchers who connected the Academy to specific institutes, universities, ministries, and disciplines. This structure helped ČSAV appear broad without losing hierarchy. It also allowed political selection to operate with nuance. A scholar could be recognised as useful and significant without being elevated to the highest symbolic rank. Membership categories therefore became instruments of institutional architecture, not merely honours.

The Academy's leadership structure reflected the same layered logic. Zdeněk Nejedlý became the first president, but the first operational leadership was broader and more differentiated. The official list of Academy representatives records Nejedlý as president from 12 November

1952 to 9 March 1962, with Vilém Laufberger as first deputy and Jaroslav Böhm as second deputy during the initial period from 1952 to 1957; František Šorm served as chief scientific secretary from 12 November 1952 to 15 November 1957 (*Akademie věd České republiky, n.d.*). This leadership combination was significant. Nejedlý supplied symbolic-cultural legitimacy, Laufberger represented biomedical and physiological science, Böhm represented archaeology and historical scholarship, and Šorm represented chemistry, institute-building, and practical scientific management. The early leadership thus embodied the Academy's attempt to cover several registers at once: national culture, biological science, historical research, and modern chemical research. It was not a purely ideological presidium, nor a purely scientific board. It was a hybrid leadership for a hybrid institution.

František Šorm is particularly important for understanding the institutional elite of the first Academy generation. Although Nejedlý was the symbolic head, Šorm quickly became one of the most powerful organisers of Academy science. Martin Franc's study of the Institute of Organic Chemistry and Biochemistry shows that Šorm had been involved in the preparations for the establishment of ČSAV, incorporated his institute into the Academy, and was appointed general scientific secretary of the institution after its foundation (*Franc, 2024*). Šorm's rise illustrates a new type of scientific elite. He was not merely an honoured scholar from the old academy world; he was a builder of teams, institutes, research plans, and disciplinary infrastructure. His authority rested on scientific competence, organisational ambition, political loyalty, and his ability to use the socialist research system to concentrate resources. In this sense, he represented the future more than Nejedlý did. Nejedlý symbolised the transition from old academic prestige to socialist legitimacy. Šorm embodied the practical elite of the new institute-based science.

The chemistry group around Šorm also demonstrates how the first generation of academicians was shaped by wartime and post-war experience. Franc notes that after the closure of Czech universities in 1939, some lecturers and students found refuge in industrial research and development, and that this experience later influenced their academic working methods (*Franc, 2024*). The group around Šorm developed a team-based, problem-oriented style of research, anticipating practical application and organised around collective work. This was highly compatible with the new Academy's emphasis on planned research and usefulness. The Academy did not simply impose collective research upon scholars who had never practised it. In some fields, especially chemistry, the institutional logic of ČSAV resonated with existing research habits formed in wartime industrial laboratories. This explains why certain scientists could sincerely support the Academy model. It gave them the resources and organisational form they needed. The political danger lay not in the team method itself, but in the subordination of such methods to ideological and bureaucratic control.

The first generation of academicians therefore contained more than one type of elite. There were symbolic elders, such as Nejedlý, whose authority came from national culture, long scholarly careers, and political representation. There were disciplinary authorities, such as leading mathematicians, physicians, chemists, archaeologists, philologists, and natural scientists, whose inclusion gave the Academy professional credibility. There were institute-builders, such as Šorm, whose power came from organising research workplaces and attracting resources. There were political-cultural figures, such as Ladislav Štoll, who linked academic institutions with party ideology and cultural policy. There were also corresponding members and institute directors whose influence may have been less publicly visible but was crucial for the daily operation of research. This plurality is important. The first Academy elite

was not homogeneous. It was united by the institution, but divided by generation, discipline, political function, and practical power.

The mathematical sciences offer an instructive example of continuity within transformation. Eduard Čech, one of the most internationally significant Czech mathematicians of the 20th century, belonged among the first academicians and was entrusted with leadership in the Academy's mathematical institutional framework, while also maintaining strong links to university mathematics (*Lukášová, 2007*). His case shows that the new Academy needed scholars whose authority extended beyond domestic politics. Mathematics was not a field that could be easily legitimised by ideological proclamation. Its international standards, proofs, journals, and schools required genuine expertise. By incorporating figures such as Čech, ČSAV gained scientific seriousness. At the same time, mathematics was drawn into the institute-based and planned structure of the new Academy. This did not necessarily destroy mathematical research; in some respects, it offered stability and resources. But it changed the institutional location of mathematical authority. The mathematical elite was now expected to operate within the Academy-state relationship, even when the internal content of the discipline remained comparatively protected.

The technical sciences and applied disciplines were more complicated. The new Academy's founding rhetoric placed strong emphasis on science and technology, but the first membership structure still reflected the weight of older learned traditions, natural sciences, and humanities. Technical expertise had important predecessors in institutions such as the Masaryk Academy of Labour, and some technical scientists entered the Academy's elite. Yet the relationship between technical research, industrial ministries, universities, and the Academy was not simple. Much applied research remained in branch institutes, production ministries, and technical schools rather than being fully concentrated in ČSAV. This created a distinctive division of labour. The Academy claimed responsibility for basic research and major scientific questions, while applied industrial research often remained distributed across the state economy. The first generation of academicians therefore had to represent technology symbolically without necessarily absorbing all technical research institutionally. This arrangement reflected the hybrid nature of socialist science: centralised in principle, differentiated in practice.

The humanities and social sciences occupied a particularly sensitive place in the first Academy elite. On the one hand, they were necessary for national legitimacy. The Academy had to contain historians, philologists, linguists, literary scholars, archaeologists, philosophers, and ethnographers because the Czech and Slovak learned traditions had long been built around language, history, and culture. On the other hand, these fields were ideologically exposed. Their methods and conclusions touched the legitimacy of the regime, the interpretation of national history, and the public education of society. The inclusion of figures such as Jaroslav Böhm in the early leadership shows that archaeology and historical scholarship were central to the Academy's self-definition, not peripheral (*Akademie věd České republiky, n.d.*). Yet their inclusion took place under political supervision. The humanistic elite had to demonstrate that national scholarship could be transformed into socialist scholarship. This was one of the hardest tasks of the first Academy generation. It required the preservation of archives, editions, collections, and disciplinary skills while narrowing the interpretive frameworks that could be publicly defended.

The case of historical institutes illustrates this tension. The Institute of History of the Czech Academy of Sciences traces its origins to the Czechoslovak State Historical Publishing Institute, founded in 1921 to publish sources on Czech and European history, and notes that this predecessor was integrated into ČSAV in 1952 (*Historický ústav AV ČR, n.d.*). This meant that source scholarship, archival work, and historical editing entered the Academy as part of an older scholarly mission. Yet after 1952, such work operated within a political culture that expected history to serve a progressive and Marxist-Leninist interpretation of national development. The first humanistic academicians and institute leaders therefore had to mediate between professional historical craft and official historical teleology. Some did this with conviction, some with caution, and some through strategic accommodation. The Academy preserved the material conditions of historical research, but the ideological environment changed the public meaning of that research. This was one of the central ambivalences of the first scholarly elite.

The Slovak question was another test of the first generation's representativeness. ČSAV was formally a Czechoslovak Academy, not a Czech one, and its membership had to demonstrate that it represented the whole state. Beran's study explicitly examines the extent to which Slovak scholars were represented in ČSAV and connects this issue with the later establishment of the separate Slovak Academy of Sciences in 1953 (*Beran, 2005*). This was not merely a matter of numerical fairness. It concerned the political geography of knowledge in a state where Prague possessed older and denser research institutions than Slovakia. The centralised academy model could easily reproduce Czech institutional dominance under Czechoslovak language. Slovak scholars therefore needed visible recognition, but Slovak scientific life also required its own institutional development. The first Academy elite was thus caught between centralisation and national plurality. The later position of the Slovak Academy reflected this unresolved problem.

The relationship between ČSAV and the planned sub-academies further shows how the founding elite was tied to institutional hierarchy. Beran notes that the Government Commission considered the relationship between the Academy and assumed sub-academies, of which ultimately only the Czechoslovak Academy of Agricultural Sciences came into being and survived for one decade (*Beran, 2005*). This detail is revealing because it shows that the early system was not fully settled in 1952. The state experimented with different ways of organising scientific and applied knowledge. Agriculture, in particular, was strategically important for a socialist economy undergoing collectivisation, productivity campaigns, and ideological pressure in biology. The existence of a separate agricultural academy suggested that not all scientific authority could be easily contained inside ČSAV. At the same time, the limited survival of such sub-academies showed the strength of the centralising impulse. The first generation of academicians had to operate within this uncertain institutional ecology, where boundaries between central Academy, branch academies, ministries, and universities were still being tested.

Political exclusion was part of the same founding process. Beran's article is especially important because it notes that the selection process included a list of scholars excluded at the last moment from elections of corresponding members after intervention by dogmatic members of the Communist Party apparatus (*Beran, 2005*). This fact demonstrates that the first Academy elite was formed not only by inclusion but also by last-minute removal. The final membership was therefore the visible surface of a hidden struggle over legitimacy. Some scholars who might have satisfied professional criteria were blocked because political actors

judged them unacceptable. This shows how deeply the party apparatus penetrated the creation of the Academy's membership base. It also shows that the first generation cannot be understood simply by reading official lists. One must also ask who was absent, who was postponed, who was downgraded, and who was excluded. The making of an elite is always also the making of a boundary. In 1952, that boundary was political as well as scientific.

The first academicians were also connected with the new Academy's section structure. The founding law allowed the General Assembly to create sections according to groups of disciplines, while the Presidium and Academy leadership managed research plans and workplaces. Sections were important because they translated membership into institutional influence. A member was not only an honoured scholar, but a participant in disciplinary governance. Through sections, academicians could affect research priorities, appointments, publications, and the creation or reorganisation of institutes. Yet section work also occurred within the limits of central planning and party oversight. This gave academicians a real but bounded authority. They were not powerless, but neither were they autonomous. Their influence depended on their discipline, political standing, relation to the Presidium, and ability to control or protect institutes. The first generation of academicians therefore became a governing stratum inside a centralised scientific system.

The difference between public prestige and actual power must be kept in mind. Some academicians had immense symbolic authority but limited executive control over research infrastructure. Others, especially those who directed institutes or held Presidium positions, had more practical power. Šorm is the clearest example of a scientist whose influence derived from both his official position and his control over an expanding chemical research complex. Franc argues that one of the formative principles of ČSAV institutes in the 1950s and 1960s was that the Communist Party often left concrete policy in individual scientific disciplines to selected loyal scientists, who became powerful "men of science" able to shape institutional landscapes (*Franc, 2024*). This insight is crucial for understanding the first generation. The Academy elite was not composed only of scholars recognised by the state; it also included scientific managers who used state structures to build their fields. These managers were powerful because they combined expertise, organisation, political reliability, and access to resources.

This pattern created a new kind of academic patronage. In the older university system, patronage often passed through professorial chairs, seminars, doctoral students, learned societies, and publication networks. In ČSAV, patronage increasingly passed through institute posts, research teams, budget allocations, equipment, scientific aspirantura, publication plans, and international travel permissions. The first generation of academicians and institute directors could therefore shape careers in new ways. A young researcher's future might depend less on university habilitation and more on entry into an Academy workplace, attachment to a research group, and the protection of an influential director. This did not eliminate scholarly quality. Strong institutes needed capable researchers. But it changed the channels through which quality was recognised and rewarded. The first Academy elite thus created a new social structure of science. It made the institute director and Academy organiser as important as the university professor.

The generation of academicians formed in 1952 also had to navigate the relationship between scientific internationalism and Cold War restriction. The Academy's founding law made ČSAV the representative of Czechoslovak science in international relations, with special emphasis

on the Soviet Union and people's democracies. For the institutional elite, this meant that international prestige remained important, but its approved direction changed. Scholars with older Western contacts had to adapt to a scientific world increasingly mediated by socialist-bloc cooperation. At the same time, fields such as chemistry, physics, mathematics, and medicine still required access to Western publications, instruments, and standards. Franc's study of Šorm's institute shows that Academy affiliation could offer advantages in international scientific relations, because the Academy held a privileged position in managing foreign contacts, while university staff often had fewer possibilities to travel to Western countries or the United States (*Franc, 2024*). The first generation of academicians therefore became gatekeepers of international scientific movement. They operated in a system that celebrated Soviet friendship but could not ignore global science.

The first Academy elite was also gendered in ways typical of the period. The formal language of socialist science celebrated the inclusion of workers, women, and socially disadvantaged groups, but the highest scientific authority remained overwhelmingly male. This reflected older academic structures, limited access of women to senior scholarly careers before the war, and the persistence of male-dominated networks in universities, institutes, and political bodies. The new regime did open some educational and professional paths for women, but this did not immediately transform the summit of scientific representation. The first generation of academicians therefore reproduced older gender hierarchies while claiming a new social ideology. This contradiction was not unique to Czechoslovakia, but it is important for understanding the social composition of the Academy. The socialist rhetoric of democratisation changed some entry points into education and research, yet the highest symbolic positions remained shaped by inherited structures of authority. The first elite was new politically, but not radically new socially in every respect.

Age also mattered. Many first academicians belonged to older generations whose scientific reputations had been formed in the First Republic or earlier. Their inclusion gave the Academy legitimacy, but it also meant that the founding elite could not represent only the new socialist intelligentsia. At the same time, younger politically reliable scientists and organisers were promoted into influential roles, especially where they could build institutes and manage research teams. This produced a generational compromise. Older authorities provided continuity and reputation; younger organisers provided dynamism and political alignment. The result was not a simple replacement of old by young. It was a layered founding generation, with elders at the symbolic top and younger institute-builders shaping the future of research practice. This generational layering was one of the Academy's strengths, because it allowed the institution to draw on established expertise while creating new structures. It was also a source of tension, because older academic habits did not always fit the language of socialist planning.

The first generation of academicians also had to deal with the moral memory of war and occupation. The closure of Czech universities, the persecution of students and scholars, the destruction of academic normality, and the post-war reckoning with collaboration shaped the authority of many scientific figures. Some acquired moral prestige through resistance, exile, imprisonment, or survival under difficult conditions. Others were compromised or vulnerable. The new regime used the language of anti-fascism and national restoration to legitimate its own personnel choices. Yet after 1948, anti-fascist legitimacy could be joined with party loyalty and class criteria in ways that blurred moral and political judgement. The first Academy elite was therefore formed in a moral atmosphere still marked by the war, but increasingly governed by

communist political categories. This affected both inclusion and exclusion. Scholarly biography became part of political biography. The Academy was not only selecting scientists; it was selecting interpretable lives.

The institutional elite also included those who controlled the Academy's administrative apparatus. The chief scientific secretary, section secretariats, institute directors, and Presidium officials formed a practical governing layer beneath the ceremonial level of academicianship. This layer was indispensable because the new Academy had to manage budgets, workplaces, plans, personnel, publications, and international relations. The official list of Academy representatives makes clear that the role of chief scientific secretary was a major position from the beginning, occupied first by František Šorm and then by Jaroslav Kožešník (*Akademie věd České republiky, n.d.*). These offices mattered because they translated the Academy's legal mission into daily administration. The first generation of institutional elites therefore included people who may not always have been the most publicly celebrated intellectuals, but who shaped the actual functioning of the Academy. In a centralised research system, administration is not secondary to science. It is one of the ways science is governed.

The first membership base must therefore be read as a political sociology of knowledge. It shows which disciplines the regime wanted to elevate, which older authorities it needed to preserve, which political figures it trusted, which national balances it had to manage, and which scholars it chose to exclude. It also shows that scientific power after 1952 no longer flowed only through universities or learned societies. It flowed through a central Academy whose members, directors, secretaries, and sections controlled access to research infrastructure. The first academicians were not merely recipients of honour; they became part of a system that allocated visibility, resources, legitimacy, and career opportunities. This transformed the meaning of elite status in Czech and Czechoslovak science. To be a leading scientist now meant not only to publish important work, but to be institutionally placed within the Academy's hierarchy. The first generation of academicians helped create this new meaning, whether they embraced it, negotiated it, or adapted to it reluctantly.

At the same time, it would be historically inaccurate to portray the first Academy elite as a group of mere political appointees without scientific substance. Many of them were major figures in their disciplines, and the Academy's later achievements depended on their expertise, schools, laboratories, collections, and organisational capacities. The issue is not whether they were "real scientists". The issue is how real scientific authority was recontextualised by a new political-institutional order. ČSAV needed authentic scholarship to function, and the state understood this. The founding elite therefore had to be credible before both scientists and political authorities. This double credibility was difficult to maintain. Some figures succeeded by combining serious research with loyalty. Others remained important because their expertise was too valuable to ignore. Still others disappeared from central visibility because political criteria outweighed scholarly merit. The first generation of academicians thus reveals the complicated coexistence of quality and control.

The later historical study of ČSAV's first decade confirms the importance of this membership question. The large collective history of the Academy's first decade includes a dedicated section on the first members of ČSAV and the development of membership up to 1956, as well as sections on leadership and governing mechanisms (*Dvořáčková & Franc, 2019*). The very structure of this historiography shows that membership was not a decorative matter. It was

one of the foundations of institutional power. Who became an academician, who became a corresponding member, who entered the Presidium, who directed an institute, and who was excluded from recognition all shaped the Academy's character. The first generation created the patterns by which later scientific authority would be distributed. It also established the balance between symbolic prestige and managerial control. In this sense, the early membership history is inseparable from the Academy's organisational history.

Thus, the first generation of academicians and institutional elites of ČSAV embodied the founding paradox of the new Academy. They gave the institution scientific legitimacy, historical continuity, disciplinary breadth, and practical capacity, yet their selection was shaped by state authority, political criteria, ideological expectations, and the needs of socialist research planning. The first members were not simply the heirs of the old learned societies, nor were they merely the servants of a new regime. They were a recomposed elite, drawn from older scholarly authorities, loyal scientific organisers, institute-builders, politically acceptable intellectuals, and representatives of key disciplines. Their authority rested on real achievement, but it was institutionalised through a system that linked achievement to socialist construction. They created the first working hierarchy of the Academy: president, deputies, chief scientific secretary, Presidium, sections, institute directors, academicians, corresponding members, and research staff. Through them, ČSAV became more than a legal act of 1952; it became a functioning social organism. The early Academy's strength lay in the quality and organisational energy of many of these figures. Its weakness lay in the political conditions under which they were selected, ranked, and authorised. The first generation therefore made possible both the scientific achievements and the institutional compromises of the foundational decade.

3. The Formation of Institutes, Sections, and Research Agendas

The formation of institutes, sections, and research agendas was the moment when the Czechoslovak Academy of Sciences ceased to be only a legal and symbolic project and began to become a functioning research organism. The law of 1952 declared ČSAV the highest scientific institution of the Czechoslovak Republic, but that declaration could have remained empty without workplaces, personnel, budgets, scientific plans, sections, publishing capacities, and mechanisms for directing research. The founding of the Academy therefore had two levels: the public act of institutional creation and the slower internal act of building a working system. The first level belonged to legislation, ceremony, and symbolic politics; the second belonged to offices, archives, laboratories, libraries, sections, commissions, institute statutes, staff appointments, and research plans. This distinction is important because the early Academy's real power came less from its title than from its ability to reorganise the daily conditions of research. Older learned societies had prestige, but they did not command a broad system of permanent research institutes. Universities had scholarly traditions, but after 1950 they were increasingly defined as teaching and cadre-training institutions. ČSAV was meant to occupy the space between scholarship, state planning, and institutionalised full-time research. Its institutes became the practical cells of that new order, while its sections became the means of organising disciplines into a hierarchy. Research agendas gave ideological and administrative direction to the whole structure.

The legal framework gave the Academy a remarkably broad organisational mandate. Act No. 52/1952 stated that the Academy's main tasks included research work in all fields

concentrated on major questions, supreme coordination in basic research and economically significant scientific tasks, and cooperation in transferring research results into practice (*Zákon č. 52/1952 Sb., 1952*). It also authorised the Academy to establish and direct its own scientific workplaces and to prepare both short-term and long-term plans of its research activity (*Zákon č. 52/1952 Sb., 1952*). This means that the new Academy was not designed as a passive collection of distinguished scholars. It was designed as a planning and institution-building authority. Its mission was to create workplaces, direct research, prepare programmes, monitor scientific tasks, and serve as adviser to the government in fundamental scientific questions. The law thereby transformed the institute into the primary unit of socialist scientific organisation. Research was to be located, staffed, planned, reported, and coordinated. The Academy's early history must therefore be read not only through the biographies of academicians, but through the formation of these workplaces and the agendas assigned to them.

The preparatory work before the law shows that this institutional architecture was not improvised in a single moment. The Government Commission established by the decision of 15 January 1952 was tasked with examining the state of science, assessing future perspectives, evaluating existing scientific workplaces, considering their incorporation into ČSAV or the creation of new ones, selecting candidates for Academy membership, and preparing the relevant law. Its work initially proceeded in four sections — mathematical-natural sciences, biological, technical, and social sciences — and then, in the second half of 1952, in eight more differentiated sections (*Masarykův ústav a Archiv AV ČR, n.d.*). This preparatory structure is revealing because it already treated science as an organised field that could be surveyed, classified, evaluated, and redistributed. The future Academy was imagined not as a loose federation of existing institutions, but as a system to be rationally mapped from above. The commission's work ended with the preparation of the law on ČSAV and its adoption on 29 October 1952 (*Masarykův ústav a Archiv AV ČR, n.d.*). Thus, the Academy's institute network was rooted in a preparatory exercise of scientific inventory. Science was first made administratively visible, and only then reorganised into a central academy.

The section principle was essential because it allowed the Academy to translate the total field of knowledge into manageable administrative categories. Act No. 52/1952 gave the General Assembly authority to establish sections according to groups of scientific disciplines (*Zákon č. 52/1952 Sb., 1952*). The same law defined the Presidium as the highest governing body between sessions of the General Assembly, composed of the president, deputy presidents, the chief scientific secretary, section chairs, and other members as required (*Zákon č. 52/1952 Sb., 1952*). This meant that the sections were not decorative scholarly subdivisions. They were built into the governing structure of the Academy. Through them, disciplines entered the Academy's hierarchy, acquired representation, and became subject to planning. The section chair stood between a discipline and the central Presidium. In practice, this arrangement gave the Academy a mechanism for transforming disciplinary knowledge into institutional policy. It also allowed political and administrative priorities to reach the level of individual fields.

The institute principle complemented the section principle. Sections organised broad fields; institutes carried out research. This distinction allowed ČSAV to combine learned representation with operational capacity. An academy made only of members could confer prestige, but it could not easily produce systematic research across the whole field of knowledge. An academy made of institutes, by contrast, could employ researchers, assign tasks, build laboratories, maintain collections, publish results, train aspirants, and report plan

fulfilment. The Academy thus became both a learned society and a research organisation. This dual structure was one of the characteristic features of the Sovietised academy model. Yet in Czechoslovakia it also responded to a domestic problem: many specialised research activities had already outgrown the older framework of voluntary societies, university chairs, or ministry-supported institutes. The Academy's early institutes therefore represented both Soviet-style centralisation and real research professionalisation. This is why their history must be treated with precision rather than reduced to ideological formula.

The official historical overview of the Czech Academy of Sciences makes clear that several institutes had already begun to form before 1952 within or around the Czech Academy of Sciences and Arts. It lists the Czech Language Institute founded in 1946, the Nuclear Physics Institute in 1946–1950, the Mathematical Research Institute in 1947, and the Institute for Czech Literature in 1947–1948 as specialised departments that began to transform into scientific institutes during Zdeněk Nejedlý's presidency of the older Academy (*Akademie věd České republiky, n.d.*). This prehistory is significant because it shows that the institute system was not simply imposed upon an inert learned culture. The pressure towards permanent research workplaces was already present. Language, literature, mathematics, and nuclear physics had very different intellectual profiles, but all required institutional continuity beyond the older learned-society model. The future ČSAV absorbed these developments and placed them within a centralised state framework. The transformation therefore had two sides: it answered genuine disciplinary needs and simultaneously subjected those needs to socialist planning.

The incorporation of older institutions into ČSAV gave the new Academy immediate depth. In 1952, the Czech Academy of Sciences and Arts, the Royal Czech Society of Sciences, the central research institutes of the Scientific Research Centre, and several research facilities formerly attached to the Ministry of Education, Sciences and Arts were integrated into the new Academy (*Akademie věd České republiky, n.d.*). These included institutions such as the State Institute of Archaeology, the State Historical Publishing Institute, the Oriental Institute, and the Institute of Slavonic Studies. This integration mattered because ČSAV did not begin with a blank institutional map. It inherited libraries, collections, journals, archives, buildings, staff, research traditions, and scholarly reputations. At the same time, integration dissolved or transformed older legal identities. The state did not simply coordinate the older institutions; it reclassified them as components of a new academy system. This gave the Academy immediate capacity, but it also meant that much of its early development was shaped by the inherited unevenness of the institutions it absorbed. Some institutes were already mature; others were embryonic; still others had to be reorganised almost from the ground up.

The transition from older institute to Academy institute is especially visible in the case of the Oriental Institute. Adéla Jůnová Macková shows that before incorporation, the Oriental Institute had a complex profile that included scholarship, teaching, publications, cultural mediation, and earlier business-related functions. After 1948, its executive structure changed under communist pressure, and the institute was transformed towards a "working research institute" with altered membership and a reoriented programme (*Jůnová Macková, 2017*). By 1950–1952 it had begun hiring full-time researchers, and before September 1952 it had twelve researchers (*Jůnová Macková, 2017*). This case reveals the practical mechanism of Academy formation. A flexible scholarly-cultural institution was narrowed, professionalised, and made compatible with a state-subsidised research system. The change opened space for systematic research, but it also exposed Oriental studies to propaganda uses and Soviet-controlled

ideological expectations. The same institutional transformation therefore strengthened and constrained the discipline.

The Institute of Slavonic Studies underwent a related transformation. Its interwar and early post-war work had linked philology, history, literature, language teaching, Slavic cultural knowledge, and international scholarly mediation. Under the Academy model, however, its future lay increasingly in affiliation with ČSAV and in a more clearly defined research structure. Macková notes that by the early 1950s, its programme included periodicals such as *Slavia* and *Byzantinoslavica*, monographs, public lecture series, and a growing full-time staff; by November 1951 it had 28 employees including librarians, and a school of Slavonic languages together with a Brno office had opened (*Jůnová Macková, 2017*). The institute's future was already understood as lying in affiliation with the Academy, but without earlier sociological and business aspirations. This tells us much about the research agenda of early ČSAV. The Academy did not simply expand every inherited function. It selected those functions that fitted the planned research model and discarded or marginalised others. Scholarly depth was retained, but interdisciplinary or applied public functions could be reduced when they did not match the new institutional logic.

Historical research provides another example of institutional continuity under new governance. The Institute of History of the Czech Academy of Sciences traces its tradition to the Czechoslovak State Historical Publishing Institute founded in 1921, whose primary mission was to publish sources on Czech and European history; in 1952 this institute was integrated into ČSAV (*Historický ústav AV ČR, n.d.*). The continuity of source publication was important because historical scholarship depends on long-term editorial, archival, and philological labour. The Academy could provide a stable institutional framework for such work. Yet the early 1950s also meant that historical interpretation had to conform to Marxist-Leninist and national-progressive frameworks. The institute therefore entered ČSAV as both a repository of scholarly craft and a site of ideological expectation. Its agenda could not be reduced to propaganda, because source editions and archival scholarship retained real scholarly value. But the political environment altered the framing, priorities, and permissible interpretations of historical work. The Academy preserved the infrastructure of history while changing the conditions under which history could be publicly written.

The Institute for Czech Literature illustrates how national-cultural scholarship was institutionalised in the Academy system. Its formation began before ČSAV: a commission for founding the institute was created in February 1946, the ministry accepted the proposal in October 1946, and the institute's statute was approved on 11 June 1947 (*Ústav pro českou literaturu AV ČR, n.d.*). It was incorporated into the Czechoslovak Academy of Sciences as of 1 January 1953, and from autumn 1952 it began recruiting its first research assistants and participating in the education of new generations of literary scholars (*Ústav pro českou literaturu AV ČR, n.d.*). This trajectory reveals a typical pattern of the foundational period. A field central to national culture sought institutional consolidation before 1952, but its definitive research home came through the Academy. The new institute could organise literary history, bibliography, archives, editions, and canon studies more systematically. At the same time, literary scholarship was ideologically sensitive because it dealt with national tradition, realism, class interpretation, and socialist culture. Thus, the Academy gave Czech literary studies institutional security while tying its public agenda to the cultural politics of the regime.

Mathematics shows a different kind of institutional formation. The Mathematical Institute of the Czech Academy of Sciences and Arts had been established in 1947, reorganised as the Central Mathematical Institute in 1950, and incorporated into the Czechoslovak Academy after its foundation, with incorporation occurring in 1953 (*O'Connor & Robertson, n.d.*). This trajectory is important because mathematics was less directly exposed to ideological rewriting than history, literature, philosophy, or ethnography. Its internal criteria — proof, abstraction, international journals, disciplinary schools — were harder to subordinate to political language. Nevertheless, the institutional setting changed profoundly. Mathematical research moved from a mixed university-society ecology into a centralised Academy structure. The new Academy could provide stable posts, journals, and research continuity, but it also placed mathematical work inside a planned scientific hierarchy. The Academy's mathematics therefore represented a comparatively successful case of continuity through centralisation. It also demonstrated why the institute model could attract serious scholars: it offered professional conditions that universities alone could not always provide.

Physics and technical fields show how new institutes could be created in response to emerging scientific and technological priorities. The Institute of Physics notes that the Central Institute of Physics became one of the seven founding institutes of ČSAV in 1952, and after the establishment of the Academy it was renamed the Institute of Technical Physics (*Fyzikální ústav AV ČR, n.d.*). The Institute of Photonics and Electronics traces its foundation to the period when non-university research institutes were merged into ČSAV in 1952, while noting that several completely new institutes were also established at that time; the Presidium decided in 1953 to establish the Institute of Theoretical Radio Engineering, whose activity began in 1954 and whose official foundation date was 1 January 1955 (*Ústav fotoniky a elektroniky AV ČR, n.d.*). These examples show that the Academy was not only an absorber of older institutions. It was also a creator of new research capacity. Technical physics, radio engineering, electronics, and later information theory and automation reflected the state's interest in modern strategic technologies. Their formation illustrates the Academy's forward-looking agenda. It was to build research fields that could support industrial, military, communication, and technological development.

Nuclear research became one of the clearest symbols of the post-war redefinition of scientific priority. Although the official history of the Czech Academy's older specialised departments mentions a Nuclear Physics Institute in the period 1946–1950, the Nuclear Physics Institute in Řež states that in 1955 the Nuclear Physics Institute of ČSAV was founded as a basic Czechoslovak institution in the nuclear fields (*Akademie věd České republiky, n.d.*; *Ústav jaderné fyziky AV ČR, n.d.*). The history of ÚJV Řež similarly notes that, with support from the Soviet Union, the Czechoslovak government decided on 10 June 1955 to establish a nuclear research institute and a government committee for the research and peaceful use of atomic energy (*ÚJV Řež, n.d.*). This chronology shows how the Academy's foundational period extended beyond the legal act of 1952. New fields of strategic importance were still being institutionalised during the first decade. Nuclear science was not merely another research topic. It connected prestige, energy, defence, Soviet cooperation, technological modernity, and state planning. The Academy's agenda therefore followed the Cold War scientific imagination of the 1950s.

Chemistry, especially organic chemistry and biochemistry, illustrates the role of institute-builders in shaping research agendas from within. Martin Franc's study of the Institute of Organic Chemistry and Biochemistry shows that the formation of key Academy institutes

cannot be explained only by Soviet influence, because wartime and post-war research teams, especially those formed during the closure of Czech universities, played an important role in creating the core of later Academy workplaces (*Franc, 2024*). These teams brought with them habits of collective work, laboratory organisation, and practical orientation. František Šorm used the Academy framework to build a powerful research complex, and his institute became one of the most visible examples of successful Academy science. This case demonstrates that research agendas were not always imposed abstractly from above. They were often shaped by strong scientists who could translate their disciplinary ambitions into the language of socialist planning. The Academy gave such figures access to resources, personnel, and institutional permanence. The result could be genuine scientific quality, even though it operated within a politically controlled system.

The formation of sections and institutes also changed the relationship between basic and applied research. The law did not separate these sharply. It assigned the Academy responsibility for basic research, major scientific questions, economically significant scientific tasks, and the transfer of research results into practice (*Zákon č. 52/1952 Sb., 1952*). This created a broad and sometimes unstable agenda. On the one hand, fields such as mathematics, theoretical physics, linguistics, and source-based historical scholarship needed protection for long-term inquiry whose practical benefits were not immediate. On the other hand, the state expected science to assist industrialisation, agriculture, energy, public health, education, and technological development. Academy institutes therefore learned to justify basic research as the foundation of future usefulness. This justification could be intellectually honest, but it could also become bureaucratic rhetoric. The early research agenda of ČSAV was shaped by this tension between theoretical depth and planned utility. The Academy's sections had to manage that tension field by field.

Research planning gave this agenda its administrative form. The Academy was required to prepare proposals for long-term programmes for the development of Czechoslovak science, to draft state-wide plans of key scientific research work, and to monitor the fulfilment of those plans (*Zákon č. 52/1952 Sb., 1952*). Such provisions turned scientific planning into one of the Academy's core functions. A research agenda was not merely a list of scholarly interests; it became a state-recognised programme. Institutes had to formulate tasks, report progress, and connect their work with broader objectives. This gave research continuity and visibility, but also subjected it to bureaucratic rhythms. The plan became both a promise of support and an instrument of discipline. A field that entered the plan could gain staff and resources; a field outside the plan could become vulnerable. Planning thus determined not only what science did, but what science was allowed to become.

The obligation of academicians and corresponding members to consider the Academy's plans in their own scientific work shows how planning reached individual scholars. The law stated that members had to participate creatively in Academy activity, fulfil assigned tasks, perform functions conscientiously, and contribute to the fulfilment of Academy plans (*Zákon č. 52/1952 Sb., 1952*). This transformed academic distinction into planned responsibility. A member was not only honoured; he or she was mobilised. Such language was characteristic of the socialist research system, where scholarly authority was tied to collective tasks. It also changed the relationship between membership and institute work. Academicians were expected to serve the institutional agenda, not simply enjoy symbolic recognition. This gave the Academy a stronger capacity to direct intellectual labour. But it also weakened the older idea that learned distinction was primarily a form of autonomous scholarly recognition.

The Academy's agenda was also educational. It had the right to award scientific degrees of candidate of sciences and doctor of sciences and to organise scientific aspirantura as a means of training and raising the qualifications of its workers (*Zákon č. 52/1952 Sb., 1952*). This provision had major consequences for the formation of institutes. An institute was not only a place where research was conducted; it became a place where future researchers were trained. The Academy thus acquired a role previously associated primarily with universities. It could reproduce scientific personnel through its own structures, especially in specialised research fields. This reinforced the separation between teaching and research created by the Sovietisation of higher education. It also gave institute directors and section leaders influence over the next generation of scientists. The research agenda was therefore inseparable from personnel formation. By choosing aspirants, topics, supervisors, and institute positions, ČSAV shaped the future map of disciplines.

The Academy's publishing function was another part of its institutional consolidation. The law authorised it to publish journals and non-periodical works and to establish a publishing enterprise for that purpose. Publishing had been a key function of older learned societies, but within ČSAV it acquired a more systematic relation to research planning. Journals, monographs, proceedings, source editions, technical reports, and popularising publications became ways of making planned research visible. They also allowed the Academy to construct disciplinary communities around its institutes. For fields such as mathematics, chemistry, history, literature, Oriental studies, and Slavonic studies, publication was not secondary to research. It was part of the research infrastructure itself. At the same time, publication could be ideologically monitored. What was printed helped define what counted as legitimate science. The Academy therefore inherited the publishing authority of older institutions but placed it inside a new planned and political economy of knowledge.

The formation of institutes also involved property, buildings, libraries, and collections. Act No. 52/1952 authorised the government to regulate the property and facilities of institutions whose tasks the Academy was taking over, and it abolished earlier legal provisions concerning the Masaryk Academy of Labour and the Slavonic and Oriental Institutes (*Zákon č. 52/1952 Sb., 1952*). This material dimension is often less visible than the legal or ideological one, but it was fundamental. Research depends on books, instruments, archives, laboratories, field collections, manuscripts, catalogues, and administrative premises. The Academy became powerful because it could gather such resources under one roof, or at least under one authority. The transfer of property was therefore also a transfer of research possibility. An institute whose library, collection, or laboratory moved into the Academy's system acquired new stability but lost independent ownership. The new research agenda was built not only with ideas, but with the material inheritance of the previous scientific order.

The Main Library and other common facilities show that ČSAV was not merely a federation of specialised institutes. It required shared infrastructure. The collective history of the Academy's first decade emphasises not only members and leadership but also selected key scientific institutions and common institutions and facilities (*Dvořáčková & Franc, 2019*). Such common structures were essential because a central academy needed libraries, archives, publishing channels, administrative services, and scientific-organisational offices. They made it possible for institutes to operate as parts of a larger system rather than isolated workplaces. They also strengthened the central identity of the Academy. A researcher might belong to a specific institute, but that institute drew on Academy-wide resources. Common facilities therefore helped transform a collection of inherited and newly founded institutions into a recognisable

scientific organisation. The early Academy's consolidation depended on this connective tissue as much as on the prestige of individual institutes.

The creation of new institutes after 1952 demonstrates the dynamic character of the first decade. The Institute of Theoretical Radio Engineering was decided by the Presidium in 1953, began its activities in 1954, and was officially founded in 1955; by 1960 it had grown to 180 employees, including 30 scientists (*Ústav fotoniky a elektroniky AV ČR, n.d.*). This growth shows how the Academy could rapidly institutionalise new technological fields. It also shows how research agendas expanded in response to Cold War modernity. Radio engineering, electronics, precision time measurement, electromagnetic wave propagation, and later information theory and automation were not marginal areas. They belonged to the technological infrastructure of communication, defence, industry, and scientific instrumentation. The Academy's agenda therefore moved beyond inherited philological, historical, and mathematical traditions towards new technoscientific domains. This expansion was one of the reasons ČSAV became more than a reorganised learned society. It became a modern research system.

Ethnography and folk-culture research reveal a different, more ideologically sensitive process of agenda formation. Macková's discussion of the State Institute of Folk Music shows how an older representative scholarly body concerned with collecting songs, texts, and traditional music moved towards the idea of a fully subsidised research institute after the war. She also notes the emergence of a younger Marxist generation of ethnographers, including students at Charles University who formed a Marxist circle in 1949 and opposed their teachers (*Jůnová Macková, 2017*). This example shows how institute formation could also be generational and ideological. A field rooted in national culture and folklore was reoriented towards socialist interpretations of "the people", class transformation, and contemporary social change. The Academy's agenda in such fields did not simply preserve tradition; it redefined tradition. Folk culture could be collected, edited, and studied, but it was also expected to fit a new narrative of popular and socialist development. This made ethnography both a scholarly and political field.

The Academy's institute network also changed the status of universities. Many early institute researchers remained connected with university teaching, and some fields could not develop without university-trained students. Yet the institutional centre of advanced research increasingly moved towards ČSAV. The law's provisions on scientific workplaces, aspirantura, scientific degrees, and planning gave the Academy functions that had once been associated with universities or with a looser academic ecology. This did not eliminate university research, but it created a dual system. Universities trained large numbers of students and maintained disciplinary education, while Academy institutes concentrated professional research capacity. The arrangement could create productive cooperation, but also competition over prestige, personnel, equipment, and intellectual leadership. The formation of institutes therefore prepared the ground for the later relationship between the Academy and Charles University. That relationship would be neither purely cooperative nor purely antagonistic. It was structurally shaped by the Academy's claim to be the highest research institution of the state.

The relation between centralisation and regional distribution was another issue. Prague was the seat of the Academy, and many of the strongest inherited institutions were located there. Yet science could not be reduced entirely to Prague. Brno, Bratislava, Řež, and other centres became important in different fields. The Institute for Czech Literature would later establish a

Brno branch in 1961, while the Institute of Theoretical Radio Engineering initially operated in scattered Prague premises before later consolidating its buildings (*Ústav pro českou literaturu AV ČR, n.d.*; *Ústav fotoniky a elektroniky AV ČR, n.d.*). The Academy's geography was therefore uneven and developmental. It began from inherited Prague centrality but gradually extended through specialised locations and branches. Nuclear research in Řež is an especially strong example of research geography shaped by technological infrastructure rather than by older academic prestige. This spatial pattern reveals the Academy's dual origin: it inherited the capital-centred learned tradition but also created new research sites according to modern scientific needs.

The Academy's early research agendas were therefore plural, but their plurality was not free-form. They were organised by sections, guided by Presidium decisions, shaped by state planning, and filtered through ideological criteria. Natural sciences and technical disciplines were valued for their promise of economic, industrial, medical, military, and technological relevance. Humanities were valued for their role in national memory, cultural education, source work, and ideological interpretation. Social sciences were treated more cautiously because they could produce independent accounts of society. Area studies, Slavonic studies, and Oriental studies were reorganised according to geopolitical and propagandistic priorities as well as scholarly needs. Mathematics and parts of physics retained more internal disciplinary autonomy, though still inside the planned institutional framework. The Academy's agenda was thus not a single programme, but a ranked and governed diversity. Its unity came from administration rather than from intellectual uniformity.

One of the most important consequences of institute formation was the emergence of a new professional identity: the Academy researcher. This figure was different from the university professor, the gymnasium teacher-scholar, the museum curator, the ministry expert, or the member of a learned society. The Academy researcher was employed in a specialised workplace, attached to a plan, situated within a section, and often involved in collective research. This identity could be attractive, especially for younger scholars who wanted full-time research rather than a teaching-heavy university career. It could also be constraining because research depended on institute leadership, political approval, and plan fulfilment. The formation of institutes therefore changed the sociology of Czech and Czechoslovak science. It created career ladders, research teams, administrative hierarchies, and institutional loyalties that differed from the older academic world. This social transformation was one of the most durable consequences of the founding period. Even after later reforms, the institute-based researcher remained a central figure in Czech scientific life.

The first decade of ČSAV must consequently be understood as a period of institutional construction rather than simple consolidation. The Academy did not merely inherit institutes; it had to define their tasks, stabilise their personnel, organise their sections, develop common facilities, build or secure premises, coordinate plans, publish results, and train researchers. Some institutes had deep prehistories, while others were newly created. Some fields had strong international standards that could protect them from crude ideological distortion, while others were directly exposed to doctrine. Some research agendas were practical and technological, others cultural and archival, and still others theoretical or mathematical. The Academy's leadership had to govern all of this under conditions of political centralisation. That task explains why the institutional elite mattered so much. A centralised academy could not function by law alone. It required skilled organisers who could translate abstract plans into working laboratories, archives, journals, and research groups.

The formation of institutes, sections, and agendas also reveals the central ambivalence of ČSAV. On one side, the Academy created modern research infrastructure, stabilised scholarly careers, concentrated collections and laboratories, supported long-term projects, and made possible achievements that would have been difficult in the older fragmented system. On the other side, it narrowed autonomy, subordinated science to socialist planning, replaced free scholarly representation with state-approved structures, and tied research priorities to ideological and economic directives. Both sides were real. It is not historically adequate to describe the early Academy only as a political instrument, because its institutes performed serious scientific work. It is equally inadequate to describe it only as a modernising research institution, because its modernisation was inseparable from authoritarian governance. The institute network was therefore both the Academy's strength and the site of its compromise. Through institutes, science gained material form; through the same institutes, science became administratively governable.

Thus, the formation of institutes, sections, and research agendas transformed ČSAV from a founding law into a functioning scientific system. Sections organised the disciplinary field and linked scholarly communities to the Presidium; institutes became the basic workplaces of full-time research; research plans translated scientific priorities into state-approved programmes; and common facilities, publishing structures, aspirantura, and scientific degrees created the infrastructure of a new research profession. The Academy absorbed older learned societies, ministry institutes, and specialised research bodies, while also founding new institutes in fields such as technical physics, radio engineering, electronics, and nuclear research. Its agenda joined basic research with practical application, national-cultural scholarship with ideological interpretation, and disciplinary continuity with Soviet-style planning. This made ČSAV one of the most powerful institutions in Czechoslovak intellectual life. Its early institute system gave Czech and Slovak science resources, permanence, and organisational scale. Yet the same system made research dependent on central planning, political legitimacy, and administrative hierarchy. The foundational decade of the Academy must therefore be read as the creation of a modern research infrastructure under conditions of ideological control.

The Academy and Universities

1. Competition and Cooperation with Charles University

The relationship between the Czechoslovak Academy of Sciences and Charles University after 1952 was one of the most important structural relationships in the new socialist organisation of Czech and Czechoslovak science. It cannot be reduced either to rivalry or to partnership, because it contained both at the same time. Charles University possessed the deepest historical legitimacy of any scholarly institution in the Czech lands: founded in 1348, it had long stood as the symbolic centre of learned life in Prague and one of the oldest universities in Europe (*Charles University, n.d.*). ČSAV, by contrast, was a new institution, legally created in 1952 as the highest scientific institution of the Czechoslovak Republic (*Zákon č. 52/1952 Sb., 1952*). The university represented centuries of academic continuity, teaching authority, professional formation, and cultural memory; the Academy represented the new socialist state's ambition to concentrate, plan, and direct research. The competition between them therefore was not merely a bureaucratic dispute over buildings, posts, or budgets. It was a struggle over the institutional centre of science itself. Charles University could claim that research and teaching had traditionally belonged together in the university; ČSAV could claim that modern science required specialised institutes, full-time researchers, and centralised coordination. The two claims were not mutually exclusive in intellectual terms, but they became politically tense because the socialist state deliberately restructured the balance between education and research. The result was a dual system in which Charles University remained indispensable for training and disciplinary continuity, while ČSAV increasingly became the privileged home of organised non-university research.

The timing of this reorganisation is essential. Charles University had reopened after the Second World War as part of the restoration of Czech public and scholarly life, but its recovery was soon interrupted by the communist seizure of power in 1948. The university's own historical overview states that the renewal of free academic life was interrupted by the communist coup and that education and research were then subjected for many years to tight ideological and political control, with damaging consequences for international links and research opportunities (*Charles University, n.d.*). This means that by the time ČSAV was created, Charles University had already lost much of the autonomy that had historically underpinned its scholarly identity. The university was still prestigious, still necessary, and still filled with excellent scholars and students, but its institutional self-government had been radically weakened. The Academy was therefore founded not beside an untouched university system, but beside a university system already transformed by communist educational policy. This is why the competition between ČSAV and Charles University was asymmetrical from the beginning. The university retained historical authority, but the Academy received the state's new mandate for research coordination. The university trained future experts, but the Academy controlled many of the most important research workplaces. This asymmetry shaped the entire first decade of their relationship.

The Higher Education Act of 1950 was one of the decisive legal conditions for this new balance. Act No. 58/1950 Coll. on higher education came into force in June 1950 and remained in force, with later modifications, until 1990 (*Zákon č. 58/1950 Sb., 1950*). Contemporary and retrospective analyses describe it as a fundamental break with earlier university self-government, placing universities under direct state control and reorganising their structure

according to Soviet models (*Šutajová, 2023*). One study of communist ideological implementation in Slovak universities states that university self-government institutions ceased to exist, university property was transferred to the state, and management was carried by the Ministry of Schools, Sciences and Arts (*Ferenčuhová, 2016*). Another account of communist education policy notes that rectors and deans were no longer democratically elected by academic bodies but appointed by the minister, thereby becoming effectively ministerial officials (*Kudláčová, 2024*). These changes mattered directly for Charles University because they altered the meaning of its autonomy before ČSAV even began to operate. The university could no longer defend its research role through the older language of corporate academic independence. It now belonged to the socialist educational apparatus. ČSAV, meanwhile, was founded two years later as a separate and higher research authority, which meant that the state had already prepared the institutional ground for a division between teaching-oriented universities and research-oriented academy institutes.

The founding law of ČSAV made this shift explicit. Act No. 52/1952 Coll. defined the Academy as the highest scientific institution of the republic and gave it responsibility for research work in all fields, supreme coordination in basic research and economically significant scientific tasks, the application of research results in practice, and advisory service to the government in fundamental scientific questions (*Zákon č. 52/1952 Sb., 1952*). Such language could not help but affect Charles University. If the Academy was the "highest" scientific institution and the supreme coordinator of basic research, then the university could no longer claim an uncontested position at the summit of research life. This did not mean that research disappeared from Charles University. It meant that the official hierarchy had changed. The state now placed the Academy above the university in the organisation of research, while the university was increasingly defined by teaching, training, ideological education, and the preparation of professional cadres. This created competition over prestige because both institutions dealt with science, scholars, and advanced training. It also created cooperation because the Academy could not reproduce itself without university graduates, and the university could not remain intellectually serious without contact with active research. The two institutions were therefore locked into a relationship of dependence and rivalry from the beginning.

Charles University's historical prestige made this rivalry especially sensitive. It was not one university among many; it was the central symbolic university of the Czech lands. Its medieval foundation, its role in Czech national history, its division into Czech and German universities in the 19th century, its closure under Nazi occupation, and its post-war reopening all gave it a public authority that could not be replaced by a newly established Academy overnight (*Charles University, n.d.*). ČSAV could claim legal supremacy in science, but it could not claim the same historical depth. This meant that the Academy needed Charles University even when it competed with it. Many senior scientists, including figures important for the Academy's foundation and early leadership, had been formed in the university world or continued to be connected with it. Zdeněk Nejedlý himself had been a professor associated with Charles University's Faculty of Arts before becoming a major political-cultural figure and the first president of ČSAV. Other scholars moved between university faculties, state institutes, learned societies, and Academy workplaces. The Academy's founding elite was therefore not external to the university tradition. It emerged from it, appropriated it, and then reorganised its authority under a new institutional form.

The competition between the two institutions was clearest in the question of where advanced research should be located. The older Central European academic ideal had linked teaching and research inside the university. Professors were not merely instructors; they were scholars whose seminars, laboratories, clinics, and institutes trained students through participation in research. The Sovietised model adopted in Czechoslovakia weakened that unity. Universities were increasingly directed towards mass education, ideological formation, and professional training, while Academy institutes became the privileged centres of full-time research. This was not a purely artificial distinction, because modern science did require specialised infrastructure beyond what many faculties could provide. Laboratories, research libraries, archives, field stations, technical equipment, and long-term teams often needed stable institutional bases. Yet the political context turned a modernising argument into an administrative hierarchy. Research concentration in ČSAV strengthened the Academy and reduced the university's claim to be the primary home of scholarly discovery. Charles University remained indispensable, but it had to operate in a system where the Academy occupied the research summit. This was the root of their structural competition.

At the same time, cooperation was built into the very same arrangement. ČSAV needed students trained by Charles University, especially in fields where rigorous disciplinary formation could not be produced quickly inside research institutes alone. Mathematics, physics, chemistry, biology, medicine, philology, history, archaeology, and philosophy all depended on university education at the early stages. The Academy could employ researchers, organise aspirantura, and award scientific degrees, but it could not replace the university as the main entry point into intellectual formation. Charles University, for its part, needed Academy researchers because advanced research increasingly took place in Academy institutes. Professors and students benefited from access to Academy laboratories, libraries, archives, collections, and specialised seminars. In many fields, the same individuals taught at the university and worked with Academy institutes, or supervised students who later became Academy researchers. This overlap softened institutional competition and made cooperation unavoidable. The socialist state had separated the functions of teaching and research more sharply than before, but the intellectual life of disciplines continually reconnected them.

The existence of current historical research projects devoted specifically to the relationship between Charles University and ČSAV confirms how central this relationship was. The Institute of the History of Charles University and Archive of Charles University notes that it is, together with the Masaryk Institute and Archive of the Czech Academy of Sciences, beneficiary of a Czech Science Foundation project entitled "Charles University and the Czechoslovak Academy of Sciences. Institutions of Science and Academic Education in Changing Political and Social Circumstances of 1945–1968" (*Institute of the History of Charles University and Archive of Charles University, n.d.*). The title of this project is revealing. It does not treat the university and the Academy as isolated institutions, but as a paired problem in the political and social transformation of science and academic education. The dates 1945–1968 are equally significant because they cover the post-war restoration, communist takeover, foundation of ČSAV, Stalinist consolidation, de-Stalinisation, and the reform atmosphere leading towards the Prague Spring. The relationship between the two institutions was therefore not a marginal administrative matter; it was one of the main axes of post-war Czech scientific history. It shaped how knowledge was taught, researched, credentialled, planned, and publicly legitimised.

In the natural sciences, the competition-cooperation pattern was particularly visible. Charles University's Faculty of Science had been founded in 1920 and developed strong traditions in mathematics, biology, geology, chemistry, and related fields. After the war it reopened, but after 1948 it faced Sovietised educational policy and ideological interventions. A historical overview of the Faculty of Science notes that after the Communist Party took power, the Soviet model of education and science was implemented and doctrines such as Lysenkoism were forced into the academic sphere for ideological reasons (*Faculty of Science, Charles University, n.d.*). This affected university teaching and research, especially in biology and genetics. At the same time, ČSAV developed or absorbed institutes in mathematics, physics, biology, chemistry, geology, astronomy, polarography, nuclear physics, and later technical fields. University faculties trained the students who could enter these institutes, while Academy institutes offered research conditions that faculties often lacked. Cooperation was therefore professionally necessary. Competition arose because Academy institutes could attract talented researchers away from university posts and could claim higher status in research. The natural sciences thus show how the dual system could both strengthen and fragment scientific life.

Mathematics offers a good example of this duality. Czech mathematics had strong university traditions, but after 1947 it also developed through the Mathematical Institute of the Czech Academy of Sciences and Arts, later reorganised and incorporated into ČSAV. The MacTutor history of the Czech Academy records that the Mathematical Institute was established in 1947, reorganised as the Central Mathematical Institute in 1950, and incorporated into the Czechoslovak Academy after its foundation (*O'Connor & Robertson, n.d.*). Such institutional movement did not mean that Charles University ceased to matter for mathematics. On the contrary, mathematical talent still had to be educated through university lectures, seminars, and examinations. Yet the Academy institute became a major centre for research and publication. This could create productive circulation between university teaching and Academy research. It could also produce tensions over where the most prestigious mathematical work belonged. The Academy's ability to employ full-time researchers gave it a structural advantage. The university's ability to form students gave it a different but equally indispensable role.

The humanities displayed another version of the same relationship. Charles University's Faculty of Arts had long been a centre of history, philology, philosophy, literary studies, and cultural scholarship. Many of the scholars involved in older state institutes and learned societies were connected with the Faculty of Arts or with its disciplinary traditions. For example, Macková notes that after 1945 the new administration of the Institute of Slavonic Studies was led by Albert Pražák, a literary historian and professor at the Faculty of Arts of Charles University (*Jůnová Macková, 2017*). This shows that the Academy's inherited institutes were deeply entangled with university personnel. When such institutes entered ČSAV, they did not become intellectually unrelated to the university; rather, they transferred part of the university-linked scholarly world into a new institutional frame. Cooperation remained necessary because university teaching supplied students and disciplinary reproduction. Competition emerged because institutes such as the Institute for Czech Literature, the Institute of History, the Oriental Institute, and the Institute of Slavonic Studies could claim specialised research authority in fields traditionally associated with university faculties. The humanities therefore experienced the Academy not only as a research opportunity, but also as a displacement of older faculty-based authority.

The ideological pressures on the humanities made the relationship even more complex. Charles University was a major site of ideological transformation after 1948, because teaching history, philosophy, literature, law, and social sciences meant shaping the worldview of future professionals and intellectuals. ČSAV's humanities institutes, however, were expected to produce research that would support the official interpretation of national culture, class development, Slavic orientation, and socialist progress. Thus the university and the Academy shared the same ideological environment, but they occupied different functions within it. The university transmitted authorised knowledge to students; the Academy produced, edited, archived, and systematised knowledge at the research level. This could create cooperation in textbooks, source editions, scholarly journals, conferences, and personnel formation. It could also create competition over interpretive authority. Who had the right to define Czech literary history, national history, philosophical doctrine, or Slavonic studies: the university chair, the Academy institute, or the party-approved cultural apparatus? In the early 1950s, the answer increasingly favoured institutions aligned with central planning, and ČSAV was better positioned than the university in that respect.

The Academy's right to organise scientific aspirantura and award scientific degrees added another source of competition. Act No. 52/1952 gave ČSAV the right to award the degrees of candidate of sciences and doctor of sciences and to train scientific aspirants (*Zákon č. 52/1952 Sb., 1952*). This was a major change in the ecology of advanced qualification. Traditionally, universities had been the central institutions for degrees, habilitation, and professorial formation. Under the Sovietised system, the Academy became a major institution of postgraduate scientific training. Charles University continued to train students and scholars, but it no longer monopolised the pathway to advanced scientific recognition. The Academy could shape young researchers through institute-based supervision, research plans, and scientific councils. Cooperation was unavoidable because many aspirants had university backgrounds and some Academy scientists taught university students. Competition emerged because advanced qualification was no longer exclusively university-centred. This shifted academic prestige towards the Academy and strengthened the non-university research career.

The personnel overlap between Charles University and ČSAV made the rivalry less open than it might otherwise have been. Many Academy members had university posts, university backgrounds, or continuing teaching duties. Many university scholars depended on Academy publications, institutes, or research contacts. This overlap created a professional world in which institutional boundaries were porous at the level of individual careers, even when they were sharper at the level of state policy. A scientist might lecture at Charles University, supervise students, participate in Academy committees, publish through Academy channels, and direct or collaborate with an Academy institute. Such careers softened the institutional divide but also intensified competition for authority. A scholar's prestige could now depend on his or her position in both worlds. University affiliation supplied teaching legitimacy and historical continuity; Academy affiliation supplied research status, access to resources, and proximity to state scientific planning. The most successful figures could use both. Those confined to one institution could feel the imbalance more sharply.

The case of Zdeněk Nejedlý illustrates this overlap at the symbolic level. He had been a university professor, a historian and musicologist rooted in the academic world, but he became the first president of ČSAV and a major political figure in the communist transformation of education and culture. His career shows that the Academy's early leadership was not external to Charles University's tradition. It came partly from that tradition and reinterpreted it. The

same was true, in different ways, of many scholars who moved from university-linked institutes into the Academy structure. This created a paradox. ČSAV competed with Charles University for the leadership of research, but it did so using people, methods, and reputations formed by the university. The Academy's claim to scientific authority therefore depended on the very institution whose research centrality it partially displaced. This dependency explains why the relationship could never be purely antagonistic. The Academy needed the university's human capital and symbolic capital even when it claimed a higher place in the socialist research hierarchy.

The Academy's material resources intensified the competitive dimension. ČSAV could offer full-time research posts, institute budgets, laboratories, collections, libraries, administrative support, publication platforms, and, in some fields, better access to international scientific exchange. Universities, burdened by teaching, political screening, and curricular control, often had fewer possibilities for sustained research work. This did not mean that university research stopped, but it did mean that the Academy could attract researchers who wanted to escape heavy teaching obligations or unstable faculty conditions. The Academy's institutes were especially attractive to younger scholars and scientists because they offered a professional identity centred on research rather than teaching. Yet this also meant that Charles University risked losing some of its strongest research personnel to Academy workplaces, or at least sharing them under unequal conditions. The competition was therefore not only symbolic. It concerned salaries, time, equipment, students, publications, travel, and control over research agendas. In a planned system, these material questions were also political questions.

International contacts formed another field of both competition and cooperation. The founding law made ČSAV the supreme representative of Czechoslovak science in international scientific relations, especially with the Soviet Union and the people's democracies (*Zákon č. 52/1952 Sb., 1952*). This gave the Academy an institutional advantage. University scholars could maintain international contacts, but the Academy occupied the official channel of high scientific representation. In practice, Academy affiliation could improve access to delegations, exchanges, conferences, and foreign academies, particularly within the socialist bloc. At the same time, many university disciplines still depended on international scholarly literature and contact. Cooperation was therefore needed because Charles University could not function intellectually in isolation, and Academy institutes often relied on university specialists with international reputations. Competition arose because the Academy became the more privileged mediator of scientific internationalism. This changed the prestige economy of Prague scholarship. The university remained historically international, but the Academy became officially international in the socialist state's eyes.

The relationship was particularly delicate in medicine. Charles University's medical faculties had long traditions of clinical teaching, hospital practice, and biomedical research. ČSAV, however, developed institutes and sections connected with biological, physiological, and medical sciences. Vilém Laufberger, one of the early deputy presidents of the Academy, represented physiological and biomedical authority within the Academy leadership. This meant that the Academy could not ignore university medicine, but it also sought to coordinate research in fields that overlapped with medical faculties. Clinical work, hospital-based teaching, laboratory research, physiology, biochemistry, and public health did not fit neatly into a simple division between university and Academy. Cooperation was necessary because medical research often required clinical settings and student training. Competition appeared when laboratory-based biomedical research found more stable support in Academy institutes

than in university faculties. The medical field therefore reveals the limits of the teaching-research separation. Some forms of knowledge required both institutions simultaneously.

The Academy and Charles University also competed in the symbolic production of national memory. Charles University had been a major bearer of Czech historical identity, especially because of its medieval origins, its role in the national revival, the 1882 division into Czech and German universities, and the trauma of Nazi closure in 1939. ČSAV, however, inherited the prestige of the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and specialised national research institutes. It also claimed the right to coordinate historical, linguistic, literary, archaeological, and ethnographic scholarship. Both institutions could therefore present themselves as guardians of Czech scholarly and national memory. The difference lay in their official function after 1952. Charles University embodied educational continuity; ČSAV embodied research centralisation and state-recognised scientific authority. Their cooperation in history, philology, archaeology, and literary studies was substantial, because scholars, archives, students, and publications crossed institutional boundaries. Their competition lay in the question of who spoke with greater authority about the nation's scholarly past and cultural inheritance.

One should not assume, however, that Charles University became passive after 1952. Even under ideological control, universities remained intellectually important because research traditions cannot be moved entirely by law. Faculties retained teachers, seminars, student cohorts, disciplinary curricula, libraries, laboratories, and scholarly habits. Students loyal to traditions of academic freedom would later play major roles in 1989, but even in earlier decades the university remained a space where intellectual formation continued under constraint (*Charles University, n.d.*). The Academy could dominate research infrastructure, but it could not replace the formative experience of university study. For this reason, cooperation with Charles University remained necessary for the Academy's long-term survival. Without students, there would be no future researchers. Without teachers, there would be no disciplinary reproduction. Without university curricula, Academy institutes would receive candidates without proper foundations. The Academy's research strength therefore depended on the university's educational strength. This dependency limited the logic of competition.

At the same time, the university depended on the Academy for access to the highest level of specialised research. In fields where Academy institutes controlled major laboratories, collections, archives, or journals, Charles University scholars and students could not remain isolated from ČSAV. Academy researchers could lecture, supervise, examine, or collaborate with university departments. University students could enter Academy institutes as aspirants or researchers. Joint projects, informal seminars, and shared disciplinary communities helped repair the artificial separation between teaching and research. This cooperation was often more practical than ideological. Scientists and scholars needed one another because disciplines are not naturally divided according to administrative law. A mathematician's theorem, a chemist's experiment, a historian's source edition, or a linguist's dictionary could not be confined neatly to one institution. The Academy and Charles University therefore developed a working interdependence beneath the official hierarchy. The state separated them structurally, but scholarly practice continually reconnected them.

The competition between the two institutions was also shaped by the broader hierarchy of Prague scientific life. Prague concentrated the main Academy headquarters, Charles University, the Czech Technical University, libraries, archives, museums, and many

specialised institutes. This concentration meant that institutional rivalry often occurred within the same urban intellectual space. Scholars could move physically between faculty buildings, Academy offices, libraries, and institutes. The Academy's seat on Národní Street and the university's historical buildings carried different symbolic geographies of science. The university represented medieval and national continuity; the Academy represented modern socialist research administration housed in inherited urban prestige. This spatial proximity intensified cooperation because contact was easy and networks overlapped. It also intensified competition because status differences were visible. Prague became the place where the old and new centres of science stood beside one another. The relationship between Charles University and ČSAV was therefore not abstract; it was lived in the daily geography of Prague scholarship.

The Sovietised structure of Czechoslovak science made the competition with Charles University different from competition between independent institutions in a liberal academic system. In a plural system, competition might occur through grants, students, publications, appointments, and reputation. In early socialist Czechoslovakia, competition was mediated by the state. Budgets, appointments, institutional missions, international contacts, and research plans were politically regulated. This meant that Charles University and ČSAV were not simply free actors negotiating their own relationship. Their roles were assigned and adjusted by ministries, party bodies, legal acts, and Academy leadership. The university could not openly contest the Academy's status as the highest scientific institution. The Academy could not ignore the university's role in training because state planning itself required trained cadres. Thus competition was contained within a controlled system. It did not take the form of open institutional pluralism. It took the form of negotiated hierarchy inside socialist governance.

The Academy's comparative autonomy relative to universities is an important nuance. The official historical overview of the Czech Academy notes that, compared with universities completely Sovietised by the 1950 Higher Education Act, the scientific community at ČSAV retained at least formally a greater degree of decision-making autonomy, even though the decision-making mechanisms were still subjected to the totalitarian regime (*Akademie věd České republiky, n.d.*). This statement helps explain why some scholars might have found Academy institutes preferable to university faculties. The Academy was politically controlled, but it could sometimes offer more room for specialised research than universities burdened by teaching and ideological instruction. This does not mean that ČSAV was free. It means that unfreedom was distributed unevenly across institutions. In some fields, the Academy could be both a state instrument and a partial refuge for serious scholarship. Charles University, by contrast, was more directly exposed to the ideological disciplining of students and curricula. The competition between them therefore included competition over relative intellectual breathing space.

The cooperation between the Academy and Charles University also had a long afterlife. Although the present chapter concerns the foundational period, later developments show that the dual structure did not disappear. In contemporary Czech science, cooperation between Charles University and the Czech Academy of Sciences remains significant, especially in doctoral studies and joint research training. A 2025 report notes that Charles University and the Czech Academy of Sciences extended an agreement on cooperation in doctoral programmes originally signed in 2018, with the aim of giving PhD students access to cutting-edge research and professional guidance (*ScienceBusiness, 2025*). This present-day cooperation belongs to a democratic and legally different system, but it reveals the durability

of the structural issue created in the socialist period: universities educate students, while Academy institutes often provide advanced research environments. The meaning has changed, because today such cooperation is framed by academic freedom and institutional partnership rather than socialist centralism. Yet the underlying complementarity remains. The post-1952 division between university education and academy research left a long institutional memory.

For the foundational decade, however, the relationship should be read primarily through the tension between historical legitimacy and new research power. Charles University had the authority of age, tradition, teaching, and intellectual formation. ČSAV had the authority of law, state support, research institutes, planning, and government advisory function. Charles University trained the young; ČSAV employed and organised many of the advanced researchers. Charles University preserved disciplinary communities; ČSAV concentrated disciplinary infrastructure. Charles University carried the memory of academic freedom; ČSAV offered, in some contexts, better material conditions for research. Neither could replace the other, yet neither could ignore the other's claims. Their relationship was therefore one of structured interdependence. Competition arose from overlapping authority. Cooperation arose from functional necessity. This combination became one of the defining features of Czechoslovak science in the 1950s.

The institutional balance between Charles University and ČSAV also illuminates the broader character of socialist modernisation. The state did not simply suppress the university and elevate the Academy. It rearranged the whole scientific field so that different institutions served different functions within a planned order. Universities were to educate, ideologically form, and professionalise large cohorts of students. Academy institutes were to conduct and coordinate research, train aspirants, publish results, and advise the state. This arrangement made sense within the logic of planned socialism, but it departed from the older model of university-centred scholarship. Its practical results were mixed. It created strong research institutes and gave Czechoslovak science durable infrastructure. It also weakened the organic unity of research and teaching and made both universities and institutes dependent on political authority. Charles University and ČSAV therefore represented not two separate stories, but two sides of the same institutional transformation. Their competition and cooperation were symptoms of a larger reorganisation of knowledge under socialism.

Thus, the relationship between the Czechoslovak Academy of Sciences and Charles University after 1952 was defined by a paradoxical combination of rivalry and mutual dependence. Charles University remained the historic centre of Czech higher learning, the primary site of student formation, and a carrier of national academic memory. ČSAV became the state-designated highest scientific institution, the organiser of institute-based research, the coordinator of basic research, and a privileged channel for scientific planning and international representation. Competition emerged because both institutions claimed authority over science, advanced training, disciplinary prestige, and intellectual leadership. Cooperation emerged because the Academy needed university-trained students and disciplinary traditions, while the university needed access to Academy research, institutes, publications, and scientific infrastructure. The socialist state sharpened this relationship by separating teaching and research more strongly than before, subordinating universities through the 1950 Higher Education Act, and empowering the Academy through the 1952 founding law. The result was a dual system that modernised research capacity but weakened the older unity of teaching and inquiry. In the foundational decade of ČSAV, Charles University was therefore neither

displaced completely nor left untouched. It became the Academy's indispensable partner, historical predecessor in scholarly authority, and structural competitor in the new hierarchy of Czechoslovak science.

2. The Division of Labour between Teaching and Research

The division of labour between teaching and research became one of the defining structural consequences of the creation of the Czechoslovak Academy of Sciences. It was not invented in a single moment, nor can it be explained only by bureaucratic convenience. It resulted from the collision of three historical forces: the older Central European idea of the university as a unity of teaching and research, the post-war need for specialised research infrastructure, and the Sovietised socialist model that separated mass higher education from institute-based scientific production. Before the communist reorganisation of higher education, the university professor was expected to teach, supervise, publish, cultivate a disciplinary school, and contribute to the self-government of the academic community. After 1950–1952, this older model was not abolished in every practical detail, but it was institutionally weakened. Universities were increasingly assigned the function of training professional and ideological cadres, while ČSAV was given the status of the supreme research institution and coordinator of basic research. The result was a dual scientific system in which the university remained indispensable for education, but the Academy became the privileged site of organised research. This new division produced genuine benefits, especially for full-time research and institute building. Yet it also weakened the organic circulation between students, teachers, and advanced research that had long been central to the Humboldtian academic tradition.

The older university ideal against which this transformation occurred had strong roots in Central European academic culture. In the broad Humboldtian understanding, the university was not merely a school for professional instruction, but a community in which teaching and research were internally connected. Lukáš Fasora and Anna Pečinková describe the autonomy of the university within state administration and the consistency of teaching and research as the main pillars of the Humboldtian concept (*Fasora & Pečinková, 2021*). This model had never existed in a pure form, and interwar Czechoslovakia already witnessed debates about its limits. Yet it remained a powerful normative point of reference for academic self-understanding. A university's dignity came from the idea that students were taught by scholars engaged in living research, not only by instructors transmitting fixed knowledge. The seminar, laboratory, clinic, archive, and professorial chair formed a single pedagogical-research environment. The socialist reorganisation did not simply add another research institution to this environment. It altered the balance of functions inside the whole system. Teaching and research became more administratively separable than they had been in the older academic imagination.

This separation began with the political transformation of higher education after February 1948. The Higher Education Act of 1950 became the first major legal instrument of the new order, and Šutajová describes it as the first unifying factor in Czech and Slovak communist policy on tertiary education (*Šutajová, 2023*). The new framework subordinated universities completely to the state, deprived them of academic self-government, and gave the government the power to abolish, merge, or divide universities and faculties (*Šutajová, 2023*). It also transformed the internal organisation of universities according to Soviet models and contributed to the separation of scientific and educational activities, a phenomenon especially marked in Czechoslovakia (*Šutajová, 2023*). This was a crucial precondition for the later role of

ČSAV. Once universities were reorganised primarily as state-controlled institutions for education and ideological formation, advanced research could be relocated more plausibly to a separate academy structure. The university did not lose all research activity, but it lost the institutional claim to be the main centre of scientific organisation. Teaching became its most visible state function. Research, in turn, was increasingly concentrated in Academy institutes.

The law establishing ČSAV completed the other side of this division. Act No. 52/1952 defined the Academy as the highest scientific institution of the Czechoslovak Republic, gathering the most important scientific workers of the state and arising through the reconstruction of the older learned bodies (*Zákon č. 52/1952 Sb., 1952*). Its main tasks included research work in all fields, supreme coordination in basic research and scientific tasks of key economic importance, and cooperation in transferring research results into practice (*Zákon č. 52/1952 Sb., 1952*). It was also named adviser to the government in all fundamental scientific questions (*Zákon č. 52/1952 Sb., 1952*). These provisions placed the Academy above universities in the formal hierarchy of research governance. The university could continue to educate and even conduct research, but the Academy became the institution through which research was planned, coordinated, and represented at the state level. This legal architecture did not merely describe an existing division; it actively produced it. From 1952 onward, teaching and research belonged to overlapping but increasingly differentiated institutional worlds.

The Academy's right to create and direct its own research workplaces made this division practical. Act No. 52/1952 stated that ČSAV would establish and direct its own scientific workplaces and prepare short-term and long-term plans for its research activity (*Zákon č. 52/1952 Sb., 1952*). This meant that research could now be organised through institutes whose primary purpose was not undergraduate teaching, but systematic investigation. Laboratories, archives, libraries, editorial teams, field stations, and technical workshops could be developed around research tasks rather than around student timetables. This was a genuine modernising advantage, especially in fields requiring expensive equipment, long-term data collection, specialist staff, or collective projects. Mathematics, physics, chemistry, archaeology, linguistics, literary studies, nuclear research, and later electronics could all benefit from full-time research environments. Yet this also produced a structural gap. Students remained primarily in universities, while many of the most advanced research resources moved to Academy institutes. The older unity of the research seminar and the teaching chair was therefore weakened by institutional design.

The Academy was also authorised to participate directly in scientific training. The same founding law gave ČSAV the right to award the scientific degrees of candidate of sciences and doctor of sciences and established scientific aspirantura as one means of systematic training and qualification of Academy workers (*Zákon č. 52/1952 Sb., 1952*). This was one of the most important mechanisms through which the Academy crossed the boundary between research and education. On paper, universities were responsible for higher education, while the Academy was responsible for research. In practice, aspirantura made the Academy a postgraduate training institution. Young researchers could be formed inside institutes, under the supervision of Academy scientists, through research plans and specialised projects. This gave ČSAV a role that had once belonged more naturally to universities. It did not replace undergraduate education, but it did compete with the university's traditional authority over advanced scholarly formation. The division of labour was therefore never clean. It separated teaching and research at one level, while reconnecting them through postgraduate research training at another.

The Academy's coordinating powers also extended beyond its own institutes. Act No. 52/1952 empowered ČSAV to prepare proposals for long-term programmes for the development of Czechoslovak science, draft state-wide plans for key scientific research work, monitor fulfilment of these plans, and contribute to the coordination of scientific education (*Zákon č. 52/1952 Sb., 1952*). It could request information from state and other bodies, identify shortcomings, inspect scientific workplaces not incorporated into the Academy, and establish advisory commissions including representatives of academies, universities, central offices, production, and social organisations (*Zákon č. 52/1952 Sb., 1952*). This placed universities inside a wider research-coordination field governed by the Academy. The university was no longer an autonomous generator of research priorities; it could become one participant in Academy-led coordination. This did not mean that university scholars had no influence, because many were members, collaborators, or committee participants. But the institutional hierarchy had changed. The Academy became the place where teaching institutions, research institutes, ministries, and production sectors could be drawn into a single scientific plan.

The division of labour was therefore not simply functional; it was political. In a neutral administrative sense, one could argue that universities teach and institutes research, each according to its strengths. In early socialist Czechoslovakia, however, this division was embedded in ideological governance. The university was expected to educate socialist specialists and politically reliable graduates, while the Academy was expected to organise research for socialist construction. Šutajová notes that the 1950 reform defined the role of higher education institutions in socialist society as ideological reconstruction of science and education under "scientific socialism", intense orientation towards Soviet science, and political education of students (*Šutajová, 2023*). This gave teaching a strong ideological charge. The Academy's research function was also ideological, but it had a different form: planning, coordination, institute work, government advice, and practical application. Thus, the state did not merely separate two academic functions. It assigned them different roles in the construction of socialist society. The university was to form minds and cadres; the Academy was to form research programmes and scientific authority.

This arrangement had certain advantages for research. The Academy could employ researchers full time, free them from heavy teaching loads, and concentrate them in institutes with specialised equipment and technical staff. It could sustain long-term projects that would have been difficult for university faculties alone: dictionaries, source editions, archaeological surveys, mathematical journals, nuclear physics laboratories, chemical synthesis programmes, and large-scale natural-science research. The official history of the Czech Academy notes that before the foundation of ČSAV, specialised departments of the Czech Academy of Sciences and Arts had already begun to transform into institutes, and seven central research institutes centred on biology, chemistry, physics, geology, mathematics, astronomy, and polarography were gradually built within the Scientific Research Centre founded in 1949 (*Akademie věd České republiky, n.d.*). This institutional momentum gave the Academy a strong research base from the start. Such workplaces were less constrained by the rhythms of university teaching. For many disciplines, that was a real gain. The problem was that institutional freedom from teaching was not equivalent to intellectual freedom from political planning.

The same arrangement had costs for education. If the strongest research increasingly concentrated in Academy institutes, students could be separated from the living centre of advanced inquiry. A university education risks becoming more school-like when research

moves elsewhere. Lectures may continue, examinations may be rigorous, and curricula may remain extensive, but the student's direct contact with frontier research can weaken. This was not inevitable, because many Academy researchers continued to teach, supervise, or collaborate with university departments. Yet the structure encouraged a division between those who taught large cohorts and those who conducted full-time research. The burden of ideological education also fell heavily on universities, which could make their intellectual atmosphere more constrained than that of some Academy institutes. The official Academy history later observed that, compared with universities completely Sovietised by the 1950 Higher Education Act, ČSAV retained at least formally a greater degree of decision-making autonomy and could even provide asylum to some researchers expelled from universities for ideological reasons (*Akademie věd České republiky, n.d.*). This statement reveals the paradox of the system. The institution created by socialist centralisation could sometimes offer more room for research than the universities that had historically embodied academic freedom.

The Academy's relative sheltering function did not remove its dependence on the regime. The same official historical overview immediately notes that decision-making mechanisms remained fully under the control of the totalitarian regime (*Akademie věd České republiky, n.d.*). This nuance is essential. ČSAV could be less directly burdened by mass ideological teaching than universities, and it could employ scholars whose university careers were blocked. Yet its institutes, plans, budgets, appointments, and international contacts were still embedded in a political system. The division of labour therefore produced uneven zones of constraint rather than a simple opposition between free Academy and controlled university. Universities were controlled through curricula, admissions, ideological instruction, and faculty administration. The Academy was controlled through planning, leadership selection, institute governance, and state responsibility. Both institutions were subordinated, but in different ways. Their cooperation often depended on navigating these differences. Their competition often arose from the fact that each could offer what the other lacked: students and teaching on one side, research infrastructure and relative specialist space on the other.

Scientific careers were reshaped by this division. The older academic career typically moved through university study, assistantship, doctorate, habilitation, teaching, publication, and eventual professorship. The new system added a strong non-university research path through Academy institutes, aspirantura, candidate and doctor of sciences degrees, institute employment, and Academy membership. A study of astronomy behind the Iron Curtain notes that the Higher Education Act of 1950 and the Act on the Czechoslovak Academy of Sciences of 1952 altered the usual career paths of scientists (*Pavlíček, 2023*). This was not a marginal change. A young scientist could now imagine a future not as a university teacher who also researched, but as a full-time institute researcher who might teach only occasionally or indirectly. This changed the social identity of the scholar. The "Academy researcher" became a distinct figure in Czechoslovak science. The division of labour therefore produced not only new institutions, but new biographies.

This new career path could be attractive for younger researchers. Academy institutes could offer salaries, laboratories, libraries, technical support, research collectives, and access to publication channels. They could also offer distance from the heavy teaching and ideological duties imposed on university staff. For a mathematician, chemist, physicist, linguist, historian, or literary scholar, an Academy post might mean time for research that university life could no longer provide. Yet it also meant dependence on institute directors, Academy plans, political reliability, and the administrative hierarchy of ČSAV. The research career became more

professional, but also more bureaucratic. Its success depended not only on intellectual ability, but on institutional placement. In this way, the separation of teaching and research transformed scientific labour into a more specialised occupation. It also redistributed academic power from university faculties to Academy institutes.

The effect varied by discipline. In mathematics and theoretical physics, the Academy model could provide research concentration while leaving much of the internal logic of the discipline intact. Proof, calculation, theoretical modelling, and international standards did not easily bend to ideological rewriting. In chemistry, physics, geology, and nuclear science, institutes could create laboratories and teams that university faculties might not have been able to sustain alone. In linguistics, literary studies, history, and archaeology, Academy institutes could support long-term source work, dictionaries, editions, archives, and bibliographies. But in humanities and social sciences, the political meaning of research was more direct, and the Academy's planning functions could become ideological supervision. Biology and genetics also showed that natural science was not immune to doctrine, especially where Soviet ideological campaigns such as Lysenkoism entered the field. Thus, the division of labour did not affect all disciplines equally. It created research capacity across fields, but the intellectual freedom attached to that capacity varied greatly.

The Academy's institute system also changed the role of university professors. Some professors retained strong research authority through university chairs, but others became increasingly dependent on collaboration with Academy institutes. Some held dual roles, taught at universities while leading or working with Academy workplaces, and supervised students who would later enter ČSAV. This overlap prevented a total break between teaching and research. Yet it also produced an unequal circulation of prestige. The professor who had an Academy connection could access research resources and institutional recognition more easily than one who remained confined to a faculty. Academy membership, institute leadership, or participation in Academy commissions could become a mark of higher scientific status. This changed the internal hierarchy of university faculties. The boundary between university and Academy ran not only between institutions, but through individual careers. Scholars who could inhabit both worlds became especially influential.

The student experience was also affected. Students still encountered disciplines through university courses, examinations, laboratories, and seminars. But the most advanced research might be located in an institute outside the faculty. Talented students therefore had to move, formally or informally, towards Academy networks if they wished to pursue a research career. Aspirantura provided one such route. Another route was through professors or lecturers who had Academy affiliations and could introduce students to institute projects. This created a two-stage intellectual formation: broad academic education at the university, followed by specialised research socialisation in the Academy. Such a structure could be efficient, especially for fields requiring high-level technical or archival training. But it could also make university education less research-intensive and make access to elite research dependent on institutional gatekeepers. The division of labour therefore shaped not only institutions, but the path by which a young person became a scientist.

The Academy's relationship with teaching was further complicated by its role in scientific education generally. Act No. 52/1952 required ČSAV to help secure a high theoretical level of all scientific disciplines and contribute to the coordination of scientific education (*Zákon č. 52/1952 Sb., 1952*). This provision meant that the Academy was not indifferent to teaching. It

could influence curricula, training standards, research qualifications, and postgraduate preparation. The boundary between university education and Academy research was therefore porous at the policy level. ČSAV did not run undergraduate education in the ordinary sense, but it could affect what counted as advanced scientific education. This gave the Academy authority over the intellectual content of fields beyond its own institutes. It also reinforced the subordinate position of universities in research training. The university taught, but the Academy could help define the theoretical standards towards which teaching should lead.

The division of labour also changed the meaning of scientific publication. Universities traditionally produced research through faculty journals, habilitation theses, monographs, and seminar traditions. ČSAV, however, was authorised to publish journals and non-periodical works and to establish a publishing enterprise for that purpose (*Zákon č. 52/1952 Sb., 1952*). Academy publications could therefore become major channels of recognised research. This strengthened the Academy's research identity and gave its institutes control over disciplinary visibility. University scholars could publish through Academy channels, but this often meant entering the Academy's institutional orbit. Publication was not only dissemination; it was a mechanism of authority. Fields whose leading journals or source editions were Academy-based naturally gravitated towards ČSAV. The teaching university remained intellectually important, but the Academy increasingly controlled the printed surface of research.

In historical and philological fields, this publication function was particularly significant. Source editions, dictionaries, bibliographies, literary histories, and archival series often require stable editorial teams and long-term funding. Academy institutes could provide these conditions more effectively than university seminars alone. The Institute of History, the Institute for Czech Literature, the Czech Language Institute, the Oriental Institute, and the Institute of Slavonic Studies all show how research infrastructure could migrate from a mixed university-learned-society environment into ČSAV. This did not eliminate university scholarship, but it re-centred the most durable projects. A professor could teach medieval history or Czech literature at Charles University, while the major editorial or bibliographic project in that field might be organised by an Academy institute. This created cooperation because students and faculty needed those resources. It created competition because the institute could claim research leadership. The division of labour therefore worked through concrete scholarly products as much as through laws.

In experimental sciences, the division was even more materially visible. A university laboratory attached to a faculty had to serve teaching and research simultaneously. An Academy institute could be designed primarily for research, with staff and equipment arranged around projects rather than courses. This mattered for chemistry, physics, polarography, nuclear research, electronics, and later automation. The Academy's official history lists the central research institutes founded around 1949 and integrated into ČSAV in 1952, while also noting later scientific achievements and distinguished figures such as Jaroslav Heyrovský, Otto Wichterle, Eduard Čech, Václav Votruba, Vít Kárník, Vilém Laufberger, and Jan Patočka (*Akademie věd České republiky, n.d.*). Such names illustrate the breadth of Academy research across fields. The university remained crucial for educating scientists, but Academy laboratories could become the sites where the most concentrated experimental work occurred. The division between teaching and research was therefore inscribed in instruments, buildings, workshops, and research time.

The separation also affected the moral economy of academic work. Teaching carries a public and generational responsibility: the teacher forms students, transmits methods, and sustains a discipline's continuity. Research carries another responsibility: discovery, interpretation, experiment, theory, and publication. In the older university model, these responsibilities were ideally united in one academic vocation. In the ČSAV system, they were increasingly distributed across institutions. This distribution could relieve scholars from overload, but it could also narrow their vocation. The Academy researcher might become detached from undergraduate teaching and from the formative questions posed by students. The university teacher might become overloaded with instruction and ideological duties while losing contact with the most advanced research. Both sides could suffer from the separation. The best cases were those in which individuals, seminars, or institutes maintained bridges between the two worlds.

These bridges were often informal or personal. A distinguished Academy scientist might lecture at Charles University, supervise doctoral or candidate-level work, examine students, or invite talented graduates into an institute. A university professor might collaborate with an Academy institute, publish in Academy series, or participate in Academy commissions. Such arrangements mitigated the structural separation, but they also made cooperation dependent on personal networks. Students with access to influential teachers could enter Academy research more easily than those without such connections. Institute directors could shape the flow of talent from universities into research workplaces. The division of labour therefore produced new forms of patronage. Instead of a faculty alone controlling a student's path, Academy institutes increasingly became gatekeepers of research careers. This altered the sociology of academic reproduction.

The ideological burden of teaching made the university side of the division especially vulnerable. Students were a politically sensitive group, and universities were expected to shape their worldview. Marxism-Leninism, political education, Russian language instruction, and loyalty to Soviet science became part of the broader educational atmosphere. Šutajová emphasises that the 1950 reform promoted political education and an intense orientation towards Soviet science (*Šutajová, 2023*). Academy institutes were not free from ideology, but they were less directly organised around mass ideological instruction. This difference partly explains why some researchers might have preferred Academy workplaces. Research planning could be oppressive, but everyday teaching under ideological curricula could be equally or more burdensome. The division of labour therefore redistributed ideological pressure unevenly. Universities educated the socialist intelligentsia; the Academy organised socialist science.

The Academy's ability to shelter some scholars expelled from universities was one of the most striking consequences of this unevenness. The official Academy history gives examples of researchers such as Václav Černý, Jan Patočka, and later Otto Wichterle, who could find space in or around the Academy after ideological exclusion from university contexts (*Akademie věd České republiky, n.d.*). This did not make the Academy an opposition institution. It remained under totalitarian control. Yet it shows that the division between teaching and research could produce unexpected protective niches. A scholar removed from teaching might still be useful as a researcher, editor, translator, laboratory scientist, or specialist. The Academy's institute structure sometimes made such survival possible. This was one of the paradoxes of socialist scientific organisation. A centralised institution created for control could also preserve intellectual capacity that the university purge damaged.

The division of labour also shaped the Academy's authority over scientific standards. Because ČSAV coordinated research plans and awarded scientific degrees, it could define what counted as advanced research. Universities continued to grant education and train students, but the Academy increasingly influenced the highest levels of scientific evaluation. Candidate and doctor of sciences degrees, aspirantura, institute reports, Academy publications, and Academy membership created a hierarchy parallel to university degrees and titles. This system moved Czechoslovakia closer to the Soviet model of scientific qualification. The older habilitation-centred route did not disappear immediately, but it lost some of its exclusive authority. Scientific excellence became measured through Academy-related categories as well as university ones. The result was a plural but hierarchical credential system. In practical terms, the Academy could shape the careers of researchers who might never become traditional university professors.

The relationship between teaching and research also had a national dimension. In Slovakia, the reorganisation of higher education and the transformation of the Slovak Academy of Sciences and Arts into the Slovak Academy of Sciences created another layer of the same problem. Šutajová notes that after the war the Slovak Academy of Sciences and Arts retained autonomy as a scientific institution until 1952, when it was replaced by the Slovak Academy of Sciences (*Šutajová, 2023*). The Czechoslovak system therefore had to balance Czech and Slovak universities with Czech and Slovak Academy structures. The division of labour was not only between university and academy, but also between Prague-centred research authority and Slovak scientific development. The official history of the Czech Academy describes the Slovak Academy of Sciences with its research institutes as an autonomous part of the overarching institute (*Akademie věd České republiky, n.d.*). This arrangement shows how the research-teaching division intersected with the national structure of the state. Centralisation had to manage both disciplinary and territorial differentiation.

The longer-term durability of the institute-based research model shows that the division created in the early socialist period was not simply erased after political change. The present Czech Academy of Sciences still describes itself, through its statutes, as a body with institutes, sections, research degrees, cooperation with universities, and responsibilities related to science policy, though within a fundamentally different democratic and legal framework (*Akademie věd České republiky, n.d.*). The contemporary statutes explicitly include the promotion of cooperation with universities and other institutions among Academy functions (*Akademie věd České republiky, n.d.*). This does not mean that the socialist division of labour survives unchanged. The ideological mission has been removed, and universities have regained autonomy in the post-1989 system. Nevertheless, the institutional memory of a strong non-university research academy remains central to Czech science. The post-socialist system had to transform rather than simply abolish the research-institute model. The separation between university teaching and academy research therefore became a long historical structure, not only a Stalinist episode.

In the foundational period, however, the division remained inseparable from political power. The state created the university as an institution of socialist education and the Academy as an institution of socialist research. This arrangement produced a rational division of tasks at one level, but a politically governed hierarchy at another. Teaching was not merely teaching; it was the formation of socialist professionals. Research was not merely research; it was planned inquiry serving science, technology, economic tasks, and socialist construction. Cooperation between universities and Academy institutes could therefore be productive, but it always

occurred within the limits of the planned state. Competition could be muted, because open institutional conflict was politically undesirable. Yet the competition existed beneath the surface, in struggles over prestige, students, posts, equipment, publications, and disciplinary authority. The division of labour was therefore a mechanism of organisation and a field of tension at the same time.

This arrangement deeply affected Charles University. Its historical prestige could not be abolished, but its role was narrowed by the new institutional hierarchy. It remained the place where students entered disciplines, encountered great teachers, and received foundational training. Yet many advanced research opportunities increasingly lay outside its faculties, in Academy institutes. Some scholars could work across both institutions, preserving the link between teaching and inquiry. Others found themselves confined to teaching or displaced from university life altogether. For Charles University, the division of labour meant a partial loss of research centrality. For ČSAV, it meant dependence on university education despite formal research supremacy. The two institutions therefore became mutually incomplete. Each needed the other to fulfil the whole cycle of scientific life.

The division also had consequences for the intellectual culture of disciplines. Where teaching and research are united, students can challenge researchers, and research can continually refresh teaching. Where they are separated, teaching may become more codified, and research may become more insulated. In socialist Czechoslovakia, this risk was intensified by ideological curricula and planning bureaucracy. Yet the separation could also protect research time and allow large projects to develop beyond the limitations of the classroom. The outcome depended on field, institute, leadership, and period. In some cases, the Academy's research concentration produced outstanding work. In others, the separation from teaching and the pressure of planning weakened intellectual vitality. The division of labour was therefore neither wholly destructive nor wholly beneficial. It was a structural compromise created under authoritarian conditions.

The problem can be stated most simply as follows: the Academy strengthened research by removing it from the university, but this strengthening also deprived research of some of the university's pedagogical and autonomous traditions. The university retained teaching, but teaching without strong research infrastructure risked becoming more instrumental and ideological. The best scholars tried to restore the link through dual appointments, seminars, supervision, collaboration, and publication. The worst effects appeared where institutions became closed: universities reduced to instruction, institutes reduced to plans. The history of the first decade of ČSAV is full of attempts to manage this tension. Its institutes needed young people, and those young people came from universities. Its research needed legitimacy, and that legitimacy still depended partly on the older academic culture of teaching and scholarship. The division of labour therefore never fully became separation. It remained a controlled but porous boundary.

Thus, the division of labour between teaching and research after the foundation of ČSAV was one of the central institutional transformations of Czechoslovak science. The 1950 Higher Education Act subordinated universities to the state and pushed them towards education, ideological formation, and cadre training, while the 1952 law on ČSAV created a supreme academy responsible for research, coordination, scientific planning, postgraduate qualification, publication, and government advice. This division gave Czechoslovak science a powerful institute-based research infrastructure, full-time research careers, and the capacity

to sustain long-term projects. At the same time, it weakened the older unity of teaching and research, shifted prestige from university faculties to Academy institutes, and made scientific careers dependent on state-controlled structures. Charles University remained indispensable as the historic centre of higher learning and the main source of trained students, but ČSAV became the privileged centre of organised research. Cooperation was therefore unavoidable, while competition over authority, resources, and prestige was built into the system. The foundational paradox was clear: research gained institutional strength by moving away from the university, but in doing so it lost part of the academic ecology that had traditionally connected discovery, teaching, and intellectual formation.

3. The Rise of Non-University Research in Czechoslovakia

The rise of non-university research in Czechoslovakia was one of the most consequential transformations of the scientific system after 1945. It changed not only the location of research, but also the social identity of the researcher, the meaning of scientific authority, the relationship between knowledge and the state, and the long-term structure of Czech and Slovak academic life. Before the war, research had existed in several institutional forms: universities, learned societies, museums, archives, professional associations, state institutes, technical laboratories, agricultural stations, and private or semi-private foundations. After 1952, this varied landscape did not disappear completely, but its centre of gravity shifted decisively towards non-university institutes gathered under the Czechoslovak Academy of Sciences and related sectoral research structures. The university remained indispensable for education, but it no longer stood as the uncontested centre of advanced research. ČSAV became the privileged research complex of the socialist state, legally defined as the highest scientific institution of the republic and tasked with research, coordination, planning, publication, government advice, and postgraduate scientific training (*Zákon č. 52/1952 Sb., 1952*). This was not a minor administrative adjustment. It was the emergence of a new research regime. The scientist could now be imagined not primarily as a university professor, but as a full-time employee of an institute, a member of a research team, a participant in a plan, and a contributor to state-defined scientific priorities. The non-university institute became the central unit of modern socialist research.

This development had pre-socialist roots, and it is important not to describe it as a simple Soviet imposition on an otherwise university-centred world. Even before 1948, Czechoslovakia had possessed a significant layer of non-university scientific institutions. The Czech Academy's historical overview names the Czech Academy of Sciences and Arts, the Royal Czech Society of Sciences, the Masaryk Academy of Labour, the Czechoslovak National Research Council, and autonomous state institutes such as the Slavonic, Oriental, and Archaeological Institutes as important components of the interwar scientific landscape (*Akademie věd České republiky, n.d.*). These bodies already showed that research could be organised outside universities when particular tasks required continuity, collections, public funding, technical specialisation, international mediation, or national-cultural work. The State Historical Publishing Institute, for instance, had been founded in 1921 to publish sources on Czech and European history and was later integrated into ČSAV in 1952 (*Historický ústav AV ČR, n.d.*). The Oriental Institute and the Institute of Slavonic Studies also developed as specialised institutions with research, publication, teaching, cultural, and practical functions (*Jůnová Macková, 2017*). The rise of non-university research therefore did not begin in 1952.

What changed in 1952 was the principle of organisation: scattered and semi-autonomous institutions were gathered into a centralised academy system under socialist state authority.

The older non-university institutions had been plural in function. Some were learned societies, some were advisory bodies, some were institutes attached to ministries, and some were professional or applied research centres. Their relationship with universities was often cooperative rather than competitive. University professors could participate in learned societies, direct state institutes, publish through academies, or use museum and archival collections. The boundaries between university and non-university research were porous. After 1948, however, the political meaning of this plurality changed. The communist state regarded fragmented institutional authority as inefficient and potentially unreliable. Research was to be concentrated, financed, planned, and made accountable. This did not mean that every inherited institution was abolished in a crude way; many were absorbed, renamed, reorganised, or placed under new leadership. Yet their earlier autonomy was transformed. The rise of non-university research thus became a process of centralisation. Existing research capacities were preserved, but their governance was redefined.

The creation of ČSAV gave this process its principal institutional form. Act No. 52/1952 Coll. established the Academy as the highest scientific institution of the Czechoslovak Republic and assigned it responsibility for research work in all fields, coordination of basic research and economically significant scientific tasks, cooperation in applying research results, and advisory service to the government (*Zákon č. 52/1952 Sb., 1952*). The law also authorised the Academy to create and direct scientific workplaces, prepare research plans, publish scholarly works, award scientific degrees, and organise scientific aspirantura. This legal architecture made non-university research an official state priority rather than a supplementary academic activity. The Academy was not merely a learned society with honorary members; it was a complex of institutes and common facilities. A contemporary summary of the history of ČSAV notes that, after the communist regime came to power, non-university scientific institutions and learned societies were replaced by the Czechoslovak Academy of Sciences, which comprised both a complex of research institutes and a learned society (*Czechoslovak Academy of Sciences, n.d.*). Although such compressed descriptions can simplify the process, they capture its structural meaning: research was reorganised around institute-based non-university science.

The term “non-university” should not be misunderstood as meaning anti-university. ČSAV depended heavily on universities for the education of future researchers, for disciplinary traditions, and for the authority of established scholars. Many Academy researchers had university backgrounds, taught at universities, supervised students, or collaborated with university departments. Nevertheless, the institutional location of research changed. A university faculty was primarily responsible for teaching, curricula, examinations, ideological education, and professional training. An Academy institute could be organised around a specific research agenda, laboratory, archive, collection, journal, or long-term project. This made the non-university institute attractive, especially in fields requiring concentrated infrastructure. It could employ researchers whose main work was research rather than teaching. It could organise large teams and maintain projects over many years. It could also be more directly planned and inspected by the state. The same institutional form therefore carried both research advantages and political risks.

The Higher Education Act of 1950 prepared the ground for this shift by transforming universities into more directly state-controlled institutions. Earlier academic self-government was weakened, university property and administration were reorganised, and higher education was assigned the task of forming socialist specialists. The university was increasingly expected to serve ideological formation and professional training, while advanced research was concentrated in academy institutes. This separation was especially compatible with the Soviet model of science, in which universities played a smaller research role than the Academy and sectoral institutes. Comparative research on the Soviet legacy in higher education and research describes the Soviet model as one based on a large network of research institutes affiliated with academies and ministries, while universities had a comparatively minor role in research (*Lovakov, Chankseliani, & Panova, 2022*). Czechoslovakia did not copy this model mechanically, because it had its own institutional traditions. Yet the direction was clear: research moved towards a non-university institute complex. Teaching and research remained connected through people, but were increasingly separated through institutions.

The rise of non-university research was strongest where research required permanent infrastructure beyond the ordinary capacity of university faculties. The official history of the Czech Academy notes that seven central research institutes focused on biology, chemistry, physics, geology, mathematics, astronomy, and polarography were gradually built as part of the Scientific Research Centre founded in 1949 (*Akademie věd České republiky, n.d.*). These institutes provided the material and organisational base for the later Academy. Their fields were not chosen randomly. They represented disciplines associated with modernity, industry, technology, natural resources, medicine, and international scientific prestige. Mathematics and astronomy carried strong theoretical authority; physics and chemistry were central to modern scientific power; geology had economic and strategic significance; polarography represented a distinctive Czech contribution to world science through Jaroslav Heyrovský's work. By integrating such institutes into ČSAV, the state created a non-university research sector capable of representing Czechoslovak science at a high level. This was one of the reasons the Academy could quickly become more than a ceremonial body.

The Mathematical Institute provides a clear example of this process. It had been established within the older Czech Academy of Sciences and Arts in 1947, reorganised as the Central Mathematical Institute in 1950, and incorporated into the Czechoslovak Academy after its foundation, with incorporation taking place in 1953 (*O'Connor & Robertson, n.d.*). This trajectory shows how a discipline could move step by step from learned-society support into a central research institute. Mathematics was less directly exposed to ideological rewriting than history, philosophy, or biology, but its institutional environment still changed decisively. Academy status gave mathematical research a stable workplace, publication infrastructure, and a position in the national research hierarchy. At the same time, it shifted research authority away from the university as the sole or primary institutional home. Czech mathematics continued to depend on university education, but its professional research base increasingly included the Academy institute. This was characteristic of the non-university research model. It did not erase universities; it created an additional and often higher-status research pole.

Physics and related technical disciplines show the same development in a more material form. The Institute of Physics states that the Central Institute of Physics became one of the seven founding institutes of ČSAV in 1952 and was renamed the Institute of Technical Physics after the establishment of the Academy (*Fyzikální ústav AV ČR, n.d.*). The Institute of Photonics and Electronics traces its foundation to the period when non-university research institutes were

merged into a single organisation, ČSAV, in 1952, while also noting that completely new institutes were established at that time (*Ústav fotoniky a elektroniky AV ČR, n.d.*). Such examples reveal that the Academy did not merely inherit older institutions; it actively created new research fields. The rise of radio engineering, electronics, optics, and later information-related disciplines reflected Cold War technological priorities. Universities could teach the relevant theory, but specialised institutes could build laboratories, employ teams, and respond to state technological ambitions. Non-university research therefore became an instrument of scientific modernisation. It was also a mechanism through which the state could connect basic science with strategic technologies.

Nuclear research made the non-university turn still more visible. Nuclear physics required instruments, safety regimes, specialised sites, state investment, international cooperation, and political supervision. It could not easily be developed as a normal university department alone. The Nuclear Physics Institute in Řež traces its foundation to 1955 as a basic Czechoslovak institution in nuclear fields, while the broader history of Řež describes government decisions of the mid-1950s concerning nuclear research and the peaceful use of atomic energy (*Ústav jaderné fyziky AV ČR, n.d.*; *ÚJV Řež, n.d.*). This development belonged to the first decade after the Academy's foundation and demonstrates that the rise of non-university research was not complete in 1952. It continued through the creation of new strategic institutes. Nuclear science also shows why the state favoured non-university research structures. Such work required central control, heavy investment, and political reliability. The Academy and related institutes could provide a framework in which scientific ambition and state oversight were joined. Non-university research thus became the natural form for fields at the frontier of Cold War modernity.

Chemistry offers another strong case because it shows that institute-based research could emerge from domestic scientific experience as well as Soviet planning. Martin Franc's study of the Institute of Organic Chemistry and Biochemistry shows that the institute's origins reached back to the Second World War, when the closure of Czech universities in November 1939 forced lecturers and students to seek other opportunities, including industrial research and development (*Franc, 2024*). Those wartime and post-war experiences later shaped methods of collective, team-based, practically oriented research. After the foundation of ČSAV, the institute formed part of the Academy from the beginning and received generous support from the state budget in its early years (*Franc, 2024*). František Šorm's role demonstrates how a politically loyal and scientifically strong organiser could use the Academy system to build a major research workplace. In this case, non-university research did not simply mean bureaucratic control. It meant the possibility of forming large research teams, sustaining laboratory programmes, and building international scientific visibility. The political framework was restrictive, but the institutional result could be scientifically productive.

The humanities also became part of non-university research, although their transformation had a different logic. Institutes of history, literature, language, archaeology, Oriental studies, Slavonic studies, and ethnography did not require particle accelerators or chemical laboratories, but they required archives, libraries, long-term editorial projects, bibliographies, dictionaries, field collections, and specialised teams. The Institute of History's continuity from the State Historical Publishing Institute shows how source publication could be transformed into an Academy research mission (*Historický ústav AV ČR, n.d.*). The Institute for Czech Literature, whose pre-Academy formation began in the late 1940s, was incorporated into ČSAV from 1 January 1953 and began recruiting research assistants already in the autumn of 1952

(*Ústav pro českou literaturu AV ČR, n.d.*). These developments show that non-university research was not only a natural-science phenomenon. It also professionalised national-cultural scholarship. Yet in the humanities, the non-university institute was especially exposed to ideological interpretation. Research into history, literature, and language could preserve scholarly infrastructure while also serving official narratives of progressive national and socialist culture.

The Oriental Institute and the Institute of Slavonic Studies reveal how non-university research changed the social role of specialised knowledge. Before incorporation into ČSAV, these institutions had performed broader functions: scholarly publication, language teaching, international cultural mediation, and, in some cases, practical information for trade and foreign relations. Jůnová Macková shows that the Oriental Institute had acted as a platform supporting scholars with or without university posts and had published the internationally respected *Archiv Orientální*; after communist reorganisation and Academy incorporation, it moved towards a full-time research institute model (*Jůnová Macková, 2017*). The Institute of Slavonic Studies likewise moved from a broad cultural and scholarly platform towards a more departmentalised research institution under Academy authority (*Jůnová Macková, 2017*). This transformation brought stability, employees, and research focus. It also narrowed older hybrid functions that did not fit the planned institute model. The non-university institute became more professional but less socially flexible. Its work had to be legible to Academy sections, research plans, and ideological expectations.

Agricultural research shows that the rise of non-university research was not confined to ČSAV. The agricultural sector developed its own network of institutes and stations, reflecting the importance of food production, collectivisation, land use, animal husbandry, crop science, forestry, veterinary medicine, and rural transformation. The history of the Czech Academy of Agricultural Sciences records that between 1945 and 1950 the Union of Agricultural Research Institutes assembled 76 research institutes and 46 research stations before being closed in 1950 (*Czech Academy of Agricultural Sciences, n.d.*). This figure is important because it shows the enormous scale of sectoral non-university research even before ČSAV's consolidation. Agriculture required applied research close to production, field conditions, and state economic policy. The later creation and transformation of agricultural scientific bodies reflected the same general tendency: research was to be organised in institutes rather than left to universities alone. Agricultural science also shows the ideological risks of the period, because biology and genetics could be affected by Soviet doctrines such as Lysenkoism. Non-university research was therefore both practical and politically sensitive.

The rise of non-university research also included branch and ministerial institutes beyond the Academy's direct structure. Socialist economies required sectoral research in metallurgy, engineering, transport, agriculture, construction, medicine, education, industrial relations, and other applied fields. Not all of this research was placed in ČSAV. Some belonged to ministries, enterprises, production branches, or specialised advisory bodies. This means that ČSAV was the leading non-university research institution, but not the only one. The broader Czechoslovak research system became a layered structure: universities taught and conducted some research; ČSAV organised basic and strategic research; branch institutes served production ministries and sectors; agricultural institutes addressed rural and food-production needs; medical and technical institutes linked research with public services and industry. Such differentiation was characteristic of a planned economy. Knowledge was distributed according

to state functions. The non-university turn therefore produced a complex research ecology, not a single Academy monopoly.

The advantage of this ecology was specialisation. A branch institute could focus on production problems; an Academy institute could pursue more fundamental research; a university faculty could educate students; a museum or archive could preserve collections; a ministry could define applied needs. In principle, such a system could generate a rational division of labour. In practice, it also produced bureaucratic boundaries, duplication, competition for resources, and tensions between basic and applied research. ČSAV was supposed to coordinate significant scientific tasks, but ministries and branch institutes had their own priorities. Universities had educational missions, but also retained research ambitions. Sectoral institutes could be closer to practice, but sometimes lacked deeper theoretical capacity. Academy institutes could produce strong basic research, but sometimes struggled to connect results to production. The rise of non-university research therefore did not automatically solve the coordination problem. It created new forms of coordination and new forms of institutional friction.

The socialist state justified non-university research through the language of planning. Research was no longer expected to develop simply through individual initiative, departmental tradition, or academic curiosity. It had to enter plans, programmes, sections, and state priorities. The Academy's founding law gave it the task of preparing long-term programmes for Czechoslovak science and state-wide plans for key scientific research work (*Zákon č. 52/1952 Sb., 1952*). In non-university institutes, this planning logic could be implemented more easily than in universities. Institutes had directors, employees, budgets, annual reports, thematic plans, and defined tasks. They were research workplaces in the administrative sense. This gave them organisational clarity and made them attractive to planners. It also risked reducing open inquiry to plan fulfilment. The institute form therefore became the preferred container for socialist research because it was simultaneously productive and governable.

The new system created a distinct professional identity: the research employee. In the older academic model, a scholar might be a professor, lecturer, curator, archivist, schoolteacher, civil servant, or member of a learned society who conducted research as part of a wider vocation. In the Academy model, research itself became a salaried occupation. A scientist could be employed in an institute, assigned to a research team, evaluated through outputs, trained through aspirantura, and advanced through scientific degrees. This professionalisation was one of the most important consequences of non-university research. It gave many scholars time and conditions for work that university teaching could not provide. It also made scientific careers dependent on institute hierarchy, state budgets, and political reliability. The rise of non-university research therefore changed the social structure of science. It made the research worker a central figure in Czechoslovak intellectual life. This was one of ČSAV's most durable legacies.

The creation of scientific aspirantura strengthened this professional identity. ČSAV was authorised to train scientific aspirants and award scientific degrees, including candidate of sciences and doctor of sciences (*Zákon č. 52/1952 Sb., 1952*). This meant that research training no longer belonged exclusively to universities. The Academy could form young specialists inside institutes, under the guidance of active researchers and within planned research agendas. For the non-university sector, this was crucial. Institutes could reproduce themselves by recruiting graduates and training them in specialised research environments.

For universities, it meant a partial loss of monopoly over advanced qualification. For young researchers, it created a new pathway into science. The institute could become not only a workplace, but a school of research. The non-university research system thus developed its own mechanisms of generational reproduction.

The rise of non-university research also altered the geography of science. Prague remained dominant because it concentrated universities, older academies, archives, museums, libraries, and many newly integrated institutes. Yet the institute system could create important research sites outside the traditional university centre. Řež became a nuclear research site; Brno retained and developed scientific workplaces; Ondřejov had astronomical significance; agricultural and branch research stations spread across the country. The present-day Academy's list of institutes, while reflecting later developments, still shows the legacy of a geographically distributed non-university research system with institutes in Prague, Brno, České Budějovice, Ondřejov, Řež, and other locations (*Akademie věd České republiky, 2026*). This spatial distribution began from the socialist-era principle that research workplaces could be created according to disciplinary and technical needs rather than only university locations. The geography of research therefore followed laboratories, observatories, field sites, collections, and state priorities. This was another way in which the institute model departed from the older university-centred order.

The rise of non-university research also reshaped publication and scholarly communication. Learned societies had long published journals and monographs, but Academy institutes and Academy publishing gave this function a new scale. Act No. 52/1952 authorised ČSAV to publish journals and non-periodical works and to establish a publishing enterprise (*Zákon č. 52/1952 Sb., 1952*). In an institute-based system, publication became linked to planned research outputs, disciplinary representation, and institutional prestige. A journal could consolidate a field around an Academy institute. A monograph series could make an institute's research visible. Source editions, dictionaries, reports, and proceedings could demonstrate the fulfilment of long-term projects. This strengthened non-university research by giving it its own channels of authority. It also made publication subject to the ideological and administrative expectations of the Academy system. The printed surface of science became another area in which research was both supported and governed.

International contacts were also reorganised around non-university research. The Academy was legally assigned the role of representing Czechoslovak science in international relations, especially with the Soviet Union and the people's democracies (*Zákon č. 52/1952 Sb., 1952*). This gave Academy institutes a privileged position in scientific exchange, delegation, and cooperation. University scholars remained internationally important, but the official channels of high-level scientific representation increasingly passed through ČSAV. In some fields this gave Academy researchers better access to travel, exchange, and foreign contacts than their university colleagues. In others, especially where Western equipment and literature were essential, the Academy had to manage the contradiction between official socialist orientation and practical dependence on wider international science. Franc's study of the Institute of Organic Chemistry and Biochemistry shows that Western currency shortages and state foreign-trade mechanisms shaped access to instruments and cooperation (*Franc, 2024*). Non-university research therefore became international, but under state-mediated conditions. The Academy represented science abroad while also controlling the routes through which scientists could reach the world.

The relation between non-university research and universities remained ambivalent throughout the foundational period. On one hand, the institute system could appear to compete with universities by attracting researchers, controlling research resources, and shaping advanced qualification. On the other hand, it depended on universities to educate future scientists and maintain basic disciplinary formation. The best scientific environments often emerged where university teaching and Academy research remained connected through personal networks, joint seminars, supervision, and shared publication. The worst effects appeared where the separation became rigid: universities reduced to mass teaching and ideological instruction, institutes reduced to bureaucratic plan fulfilment. In practice, the boundary was porous. Many researchers moved between institutions or maintained dual affiliations. Non-university research rose not by eliminating universities, but by redefining their place. Universities became entry points into science; Academy institutes became privileged research workplaces.

The political context made this redefinition particularly sharp. In a democratic research system, non-university institutes can coexist with autonomous universities as complementary institutions. In Stalinist and early socialist Czechoslovakia, the rise of non-university research occurred under conditions of party control, Soviet orientation, ideological screening, and state planning. This does not mean that all institute-based research was ideologically determined. Many fields produced serious work, and some institutes achieved high scientific standards. But the institutional conditions were not neutral. Research priorities had to be justified in relation to socialist construction, economic utility, ideological reliability, or national-cultural service. The institute form made such justification easier to administer. Directors could report to Academy leadership; institutes could be evaluated through plans; research teams could be reorganised; publications could be monitored. The rise of non-university research was therefore inseparable from the rise of a governable research apparatus.

The humanities reveal this governability especially clearly. An institute of history, literature, language, or ethnography could preserve archives, produce editions, and train specialists more effectively than a scattered university structure. Yet it could also be used to define approved interpretations of national history, literature, and culture. The Institute for Czech Literature's incorporation into ČSAV, for instance, enabled systematic literary-historical research and training of new specialists, but it also placed the discipline inside the cultural politics of socialist realism, class interpretation, and canon reorganisation (*Ústav pro českou literaturu AV ČR, n.d.*). The Institute of History preserved source-based scholarship, but it also operated in a period when Marxist-Leninist historical interpretation was expected. Non-university research in the humanities was therefore both conservation and transformation. It preserved scholarly infrastructure while changing the interpretive regime. This dual character is central to the early Academy's history.

The natural sciences had their own ambivalences. Institute-based research made possible better laboratories, larger teams, and more stable programmes. Chemistry, physics, polarography, mathematics, and nuclear science benefited from concentrated resources. Yet biology and genetics showed that non-university research could be damaged when ideological doctrines entered scientific decision-making. Lysenkoism demonstrated that a planned and politically governed research system could elevate false doctrine when it was backed by Soviet prestige and ideological authority. Thus, the protection offered by the institute was uneven. Fields with strong technical indispensability and internationally verifiable methods often had more room for serious work. Fields tied to ideology, agriculture, society, or culture were more

vulnerable. The rise of non-university research therefore did not produce a single scientific condition. It produced different degrees of opportunity and constraint across disciplines.

Sectoral research further complicated the picture. A socialist economy needed research tied to production branches, ministries, and applied tasks. Agricultural institutes, industrial laboratories, technical branch institutes, medical research centres, and planning-related expert bodies formed a wider non-university research landscape. This meant that ČSAV was part of a broader movement rather than the whole movement. The Academy's role was especially strong in basic research and high-prestige disciplines, but applied research often remained closer to ministries and enterprises. The result was a dual non-university research system: academy institutes for fundamental and strategic research, branch institutes for production and applied problems. Coordination between these layers was difficult. The state wanted scientific knowledge to move into practice, but institutional boundaries could slow that movement. The rise of non-university research thus raised the problem of how to connect discovery, application, and production.

The long-term legacy of this system is visible in the contemporary Czech research landscape. The present Czech Academy of Sciences describes itself as the leading non-university public research institution in the Czech Republic, conducting fundamental and strategic applied research (*Czech Academy of Sciences, n.d.*). This present-day definition belongs to a democratic post-1989 institutional order, not to the Stalinist system of the 1950s. Yet the phrase "leading non-university public research institution" reveals the persistence of the institute-based academy model. The Academy's current structure of research institutes, sections, public research institutions, and cooperation with universities descends historically from the non-university research complex that ČSAV created and consolidated. The political meaning has changed profoundly. The institutional form has endured. This is one of the most important historical consequences of the foundational period. A system born under socialist centralisation later became a major component of democratic Czech science.

This legacy should not lead to retrospective simplification. The rise of non-university research was neither wholly emancipatory nor wholly oppressive. It gave Czechoslovak science laboratories, institutes, full-time careers, publications, research teams, and long-term projects. It also separated research from teaching, weakened university centrality, subjected science to planning, and placed research careers under political and administrative control. Some scholars benefited from the Academy's relative protection compared with ideologically burdened universities. Others suffered from political exclusion, doctrinal pressure, or the loss of institutional autonomy. Some institutes became centres of excellence. Others became bureaucratic or ideologically constrained. The non-university model was therefore historically ambivalent. It modernised research while binding it to the socialist state.

The rise of non-university research also transformed public expectations of science. Science was no longer seen primarily as the activity of professors, learned gentlemen, or university faculties. It became a state-supported productive force, organised in workplaces, connected with economic plans, and represented through the Academy. This changed how society imagined the scientist. The scientist became a worker of knowledge, a specialist employed in an institute, a participant in collective projects, and a contributor to national development. This image fitted the socialist language of labour and planning. It also corresponded to real changes in 20th-century science, where collective laboratories and specialised institutes became increasingly important internationally. The Czechoslovak case combined this general modern

trend with the specific political structure of a Sovietised state. The result was a research system that was modern in form and authoritarian in governance. That combination defined the early decades of ČSAV.

The non-university turn also had consequences for academic memory. Older institutions such as the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts were not simply forgotten; they were reinterpreted as predecessors of the new Academy. Their collections, libraries, publications, and members were absorbed into the Academy system. This gave ČSAV historical depth, but it also obscured the loss of freely elected scholarly representation. The Academy could claim continuity with centuries of learned culture while operating according to a very different institutional logic. Non-university research therefore rose through a politics of inheritance. The state did not merely create new institutes; it appropriated older scholarly capital and reorganised it. This is why the history of ČSAV must be written as both continuity and rupture. The institute-based system inherited much from the past, but it changed the rules under which that inheritance could function.

By the early 1960s, non-university research had become a defining feature of Czechoslovak science. The Academy had consolidated its institutes, expanded into new fields, trained researchers, published scholarly work, and acquired authority over research planning. Sectoral institutes and applied research networks had also grown in importance. Universities remained central to education, but they no longer monopolised research legitimacy. A researcher's career could now unfold primarily in an institute, not in a faculty. This was one of the deepest institutional changes of the post-war period. It affected disciplinary hierarchies, career paths, scientific communication, international relations, and relations between science and the state. The first decade of ČSAV therefore marked not only the foundation of one Academy, but the formation of a new scientific order. Non-university research became one of the pillars of that order.

Thus, the rise of non-university research in Czechoslovakia was the structural counterpart of the foundation of ČSAV and the Sovietisation of higher education. Universities remained essential for teaching and intellectual formation, but the central research role moved increasingly towards Academy institutes and other state or sectoral research bodies. This shift had older domestic roots in learned societies, state institutes, agricultural stations, archives, museums, and technical bodies, but after 1952 these forms were reorganised into a planned socialist research system. The Academy's institutes created new possibilities for full-time research, large teams, laboratory work, long-term humanities projects, postgraduate training, scientific publication, and international representation. At the same time, they made research more dependent on state budgets, political approval, ideological frameworks, and administrative planning. The rise of non-university research therefore modernised Czechoslovak science while changing its autonomy, social structure, and institutional culture. It produced the Academy researcher as a central figure of scientific life and turned the institute into the basic unit of organised knowledge. The resulting system was durable, productive, and compromised at the same time. Its legacy would continue long after the Stalinist moment had passed, shaping both the achievements and the tensions of Czech and Slovak science in the later socialist decades and beyond.

Scientific Achievements of the Foundational Period

1. Natural Sciences, Mathematics, and Technical Disciplines

The achievements of the foundational period of the Czechoslovak Academy of Sciences in the natural sciences, mathematics, and technical disciplines should be understood first as institutional achievements and only then as a sequence of individual discoveries. This distinction is important because ČSAV did not inherit a fully mature central research system in 1952. It inherited a mixed landscape of older learned societies, university traditions, state institutes, ministry workplaces, emerging central research institutes, and groups of scientists who had learned during the war and post-war years how necessary organised research had become. The new Academy's greatest early achievement was to convert this fragmented landscape into a durable non-university research infrastructure. It gathered laboratories, libraries, research teams, publishing channels, scientific degrees, and institute administration under a central authority. That centralisation came with ideological and political costs, but it also created the material conditions for strong research in fields that required long-term planning and collective work. Natural sciences and technical disciplines especially benefited from this because they required instruments, workshops, stable teams, and state investment. Mathematics benefited differently, through seminars, journals, institutional continuity, and the concentration of high-level theoretical work. The foundational decade therefore cannot be judged only by the political language of the founding law. It must also be judged by the scientific capacity that the new Academy managed to create.

The official historical overview of the Czech Academy of Sciences makes clear that, before and during the creation of ČSAV, several central research institutes had already been built or prepared in biology, chemistry, physics, geology, mathematics, astronomy, and polarography. These institutes developed out of the Scientific Research Centre founded in 1949 and were integrated into the new Academy in 1952 (*Akademie věd České republiky, n.d.*). This list is revealing because it shows the strategic hierarchy of early socialist science. The state wished to support fields that could contribute to industrialisation, public health, energy, natural resources, measurement, technology, and international prestige. It also wished to give basic research a stable institutional base, although always under the language of planning and social usefulness. The new Academy therefore did not simply preserve pre-war scholarship; it reorganised the scientific field around disciplines seen as essential for a modern socialist state. Biology, chemistry, physics, geology, mathematics, astronomy, and polarography formed a kind of foundational scientific core. Through them, ČSAV could present itself not only as a continuation of learned societies, but as an engine of scientific modernity. This core also established the long-term pattern of the Academy as a network of specialised institutes rather than a single central office.

The legal framework of ČSAV reinforced this orientation. Act No. 52/1952 Coll. defined the Academy as the highest scientific institution of the republic and assigned it responsibility for research in all fields, supreme coordination of basic research, economically significant scientific tasks, and cooperation in applying research results to practice (*Zákon č. 52/1952 Sb., 1952*). This meant that scientific achievement was expected to occur inside a planned relationship between theory and application. Basic research was not rejected, but it had to be justified as the foundation of technological, economic, or social development. The Academy's natural-science institutes were therefore judged not only by intellectual originality, but by their

capacity to serve national development. Such a framework could distort inquiry when political expectations became too rigid. Yet it could also protect basic research by making it a recognised state priority. The early Academy thus created a contradictory but productive environment: science was politically subordinated, but also materially supported. In the natural and technical fields, this support was often decisive.

Polarography became the most internationally visible achievement of the foundational period. Jaroslav Heyrovský had discovered the polarographic method in 1922 and spent decades developing it into a major branch of electrochemistry (*Nobel Prize, n.d.*). His Polarographic Institute was established in 1950 and incorporated into the Czechoslovak Academy of Sciences after 1952 (*Nobel Prize, n.d.*). In 1959, Heyrovský received the Nobel Prize in Chemistry for the discovery and development of polarography, which became the first Nobel Prize in science associated with Czech research. The award had symbolic significance far beyond one discipline. It allowed the Academy and the socialist state to claim that Czechoslovak science could achieve world-level recognition. At the same time, the achievement itself had older roots in university and interwar scientific culture, not only in the post-1952 Academy system. This is precisely why polarography is so important for understanding ČSAV's early history. The Academy did not create Heyrovský's discovery, but it institutionalised and represented the research tradition that grew from it.

Heyrovský's Nobel Prize also shows how the Academy converted individual scientific prestige into institutional legitimacy. Polarography was a method for analysing substances in solution through electrical measurements, especially by means of a dropping mercury electrode, and it became a foundation for later electroanalytical techniques (*Nobel Prize, n.d.*; *Akademie věd České republiky, 2022*). The prize therefore honoured a concrete scientific method, not an ideological programme. Yet in the public culture of late 1950s Czechoslovakia it inevitably acquired ideological resonance. It demonstrated that a small socialist country could participate in global science at the highest level. It also strengthened the position of physical chemistry and analytical chemistry within the Academy's hierarchy. The Jaroslav Heyrovský Institute later described the 1959 Nobel Prize as an important stimulus for the Institute and encouragement for the whole scientific community (*J. Heyrovský Institute of Physical Chemistry, n.d.*). Such language captures the broader effect of the award. It did not only reward a past discovery; it helped consolidate confidence in the Academy's scientific mission.

Chemistry was perhaps the field in which the early Academy most clearly demonstrated the benefits of institute-based research. The Institute of Organic Chemistry, later the Institute of Organic Chemistry and Biochemistry, was formally founded in 1953 under the leadership of František Šorm (*Ústav organické chemie a biochemie AV ČR, n.d.*). Martin Franc describes this institute as one of the most successful institutes of ČSAV and emphasises that its origins reached back to wartime and post-war research groups formed after the closure of Czech universities in 1939 (*Franc, 2024*). This continuity is important because it shows that Academy success did not arise only from central planning. It also arose from the survival and reorganisation of real scientific communities. Šorm and his collaborators had learned to work in teams, often with practical industrial horizons, and this style fitted the Academy's demand for collective research. The institute received strong state support in its early years, which allowed it to build laboratories, recruit researchers, and develop a research culture oriented towards both basic organic chemistry and practical relevance. Chemistry therefore became a showcase of what ČSAV could do well: concentrate talent, stabilise research groups, and provide resources unavailable in the older fragmented system.

Šorm's role also demonstrates the importance of scientific organisers in the early Academy. He was not only a chemist, but an institutional entrepreneur who understood how to use the socialist Academy system to build a powerful research workplace. Franc notes that the Institute of Organic Chemistry and Biochemistry formed part of the Academy from the very beginning and that its privileged position enabled Šorm to protect it even during later pressures for savings (*Franc, 2024*). This reveals a recurrent pattern of the foundational decade. Strong disciplines needed strong mediators who could speak both scientific and political-administrative languages. Such figures could turn state planning into a resource rather than only a restriction. They could obtain equipment, staff, buildings, and publication opportunities while presenting their work as useful for socialist development. This did not make the system free, but it made it workable for certain fields. In chemistry, the combination of disciplinary strength, political acceptability, and institute organisation generated real achievements. The early Academy's scientific success was therefore inseparable from the personal authority of organisers such as Šorm.

Macromolecular chemistry became another major field of early Academy strength. The Institute of Macromolecular Chemistry was established within ČSAV in 1959, with Otto Wichterle as its first director (*Ústav makromolekulární chemie AV ČR, n.d.*). The Institute's own historical overview links its creation to two important events: the industrial production of polycaprolactam, known as Silon, and the success of the 1957 IUPAC International Symposium on Macromolecules in Prague (*Ústav makromolekulární chemie AV ČR, n.d.*). These details are significant because they show how scientific achievement, industrial application, and international recognition came together. Macromolecular chemistry was not an isolated theoretical field. It connected polymer science, synthetic fibres, biomedical materials, industrial chemistry, and global scientific exchange. Its institutionalisation inside ČSAV therefore fitted the Academy's legal mission especially well. It linked basic research with application, state priorities with scientific prestige, and local expertise with international visibility. In this sense, the founding of the Institute of Macromolecular Chemistry was one of the clearest achievements of the late foundational period.

Otto Wichterle's work on hydrogels and soft contact lenses illustrates how the Academy's scientific achievements could reach beyond the narrow academic world. Wichterle and Drahoslav Lím developed poly(2-hydroxyethyl methacrylate), or pHEMA, a hydrophilic gel suitable for biological use, and Wichterle later produced the first successful hydrogel contact lenses in 1961 using a home-made apparatus (*Kyle & Shampo, 2016*; *Czech Centres New York, n.d.*). The decisive experiments famously took place outside the finished institutional building, but they belonged intellectually and organisationally to the emerging macromolecular research environment created under ČSAV. This case shows both the strength and irony of socialist science. A major biomedical-materials innovation emerged in a system that could create a dedicated institute for macromolecular chemistry, but also one in which bureaucracy, political interference, and delays complicated research life. Wichterle's achievement should therefore be read as a triumph of scientific ingenuity within, and sometimes despite, the institutional conditions of the period. It also reveals the practical power of basic polymer chemistry. Research into hydrophilic gels became a technology that changed everyday life across the world.

Mathematics was another field in which the foundational Academy produced durable institutional achievement. The Mathematical Institute had begun work in 1947 as a body of the Czech Academy of Sciences and Arts, largely through the efforts of Eduard Čech, and it was

later reorganised and incorporated into the Academy system (*Křížek, 2002*). Čech himself became one of the central figures of post-war Czech mathematics, known internationally for work in topology and differential geometry, including concepts associated with Čech cohomology and the Stone–Čech compactification (*MacTutor, n.d.*). A biographical study notes that in 1952 the Central Mathematical Institute was incorporated into the Mathematical Institute of the Czechoslovak Academy of Sciences, with Čech as its first director, while he also returned to Charles University to head its newly founded Mathematical Institute (*Gray, n.d.*). This double role captures the institutional logic of the period. Mathematics remained deeply connected with university teaching, but its research organisation increasingly depended on Academy structures. The Academy gave mathematical research a stable institutional base, while the university continued to supply students and seminars. The field thus illustrates both the rise of non-university research and the continued necessity of university cooperation.

The achievement of mathematics in this period was not only the production of specific theorems, but the creation of a durable mathematical community. The Mathematical Institute organised lectures and seminars for university teachers, graduate students, and other interested specialists, and helped strengthen the post-war infrastructure of Czech mathematics (*Křížek, 2002*). This mattered because mathematical culture depends heavily on schools, seminars, journals, translation of problems, and the transmission of methods. The Academy provided a setting in which such a culture could become more systematic. It also helped connect older mathematical traditions with younger researchers. Čech's own activity in the 1950s, including his later work in differential geometry, shows that the institute did not merely administer the field; it participated in its intellectual development (*Gray, n.d.*). Mathematics was therefore one of the areas where Academy centralisation could be scientifically fruitful without requiring heavy ideological reinterpretation. It was not politically untouched, but its internal standards gave it more protection than many humanities or biological fields. This relative protection allowed the Academy's mathematical infrastructure to become one of its genuine successes.

Physics developed in a more materially demanding environment. The Central Institute of Physics became one of the seven founding institutes of ČSAV in 1952 and was renamed the Institute of Technical Physics after the Academy's creation (*Fyzikální ústav AV ČR, n.d.*). This institutional history reflects a broader shift from faculty-based laboratories towards specialised research institutes. Physics required equipment, technical staff, experimental space, and close links with emerging technologies. The Academy model was well suited to this because it could support full-time research teams and centralised investment. At the same time, physics was strategically important in the Cold War, which made it both privileged and politically watched. Its achievements during the foundational period should therefore be measured not only by immediate discoveries, but by the establishment of institute capacity. The creation and stabilisation of physics institutes under ČSAV gave Czechoslovakia a platform for later work in solid-state physics, optics, nuclear physics, plasma physics, and related technical fields. The early 1950s built the institutional foundation on which later achievements depended.

Technical disciplines also expanded through new Academy institutes. The Institute of Photonics and Electronics traces its origins to the early ČSAV period, noting that non-university research institutes were merged into a single organisation in 1952 and that new institutes were also established at that time (*Ústav fotoniky a elektroniky AV ČR, n.d.*). The Presidium decided in 1953 to establish the Institute of Theoretical Radio Engineering, its activity began in 1954,

and its official foundation date was 1 January 1955 (*Ústav fotoniky a elektroniky AV ČR, n.d.*). This development is important because it shows that ČSAV was not only preserving older branches of science. It was building capacity in technologies central to mid-20th-century modernity: radio engineering, electronics, electromagnetic propagation, precision measurement, and later information-related fields. Such disciplines were strongly connected with industrial, military, communication, and scientific-instrumentation needs. They embodied the Academy's mission to link basic research and technical application. Their creation also shows how research planning could identify strategic fields and give them institutional form. The technical institutes of the foundational period therefore anticipated the later importance of electronics and cybernetics in Czechoslovak science.

Nuclear science represented the most dramatic example of state-supported technical and physical research. The Nuclear Physics Institute in Řež traces its foundation to 1955 as a basic Czechoslovak institution in nuclear fields (*Ústav jaderné fyziky AV ČR, n.d.*). The broader history of nuclear research in Řež records that the Czechoslovak government decided in June 1955 to establish a nuclear research institute and a government committee for research and peaceful use of atomic energy, with Soviet support (*ÚJV Řež, n.d.*). This was a new scale of scientific organisation. Nuclear research required specialised sites, large equipment, trained personnel, safety procedures, international cooperation, and high-level political supervision. It could not be developed as an ordinary university activity. Its institutionalisation under Academy and state structures demonstrates why non-university research became so central in the 1950s. It also shows how deeply science was linked to geopolitical and technological ambition. The phrase "peaceful use of atomic energy" expressed both scientific hope and Cold War political language. Nuclear research therefore became one of the clearest symbols of the Academy's modernising role.

Astronomy and geosciences also belonged to the early natural-science profile of the Academy. Their significance lay in the fact that they required observatories, field stations, long-term measurement series, cartographic and geological data, and stable institutional support. The inclusion of astronomy and geology among the central research institutes built around 1949 shows that the Academy's natural-science vision was broad, not limited to laboratory chemistry and physics (*Akademie věd České republiky, n.d.*). Astronomy had a long Czech tradition, including university and observatory work, but modern astronomical research required institutional continuity and technical support. Geology had direct economic importance because it connected science with mineral resources, construction, water, energy, and industrial planning. In both fields, ČSAV could provide a stable non-university framework for cumulative research. These disciplines were less publicly spectacular than the Nobel Prize in polarography or the later soft contact lens, but they were essential to the Academy's scientific infrastructure. They also show how the Academy combined pure observation, applied relevance, and national resource knowledge. In this respect, geology and astronomy represent the quieter achievements of the foundational period.

Biology occupied a more ambivalent position. On the one hand, the Academy's inclusion of biological research among its central scientific fields reflected the importance of life sciences for medicine, agriculture, physiology, public health, and theoretical knowledge. On the other hand, biology in the early socialist period was vulnerable to ideological intervention, especially through Lysenkoism and the pressure placed on genetics. This meant that institutional support for biological research did not automatically translate into scientific freedom. The Academy could create biological institutes and provide researchers with workplaces, but doctrine could

distort research directions when political authority favoured Soviet ideological biology. The history of early ČSAV biology therefore must be read differently from the history of mathematics or physical chemistry. It included real institutional growth, but also serious intellectual constraints. This contrast is crucial for evaluating the natural sciences as a whole. The Academy did not have one uniform scientific condition; it contained fields with different levels of protection, vulnerability, and achievement.

The technical and natural-science achievements of the first decade also depended on publication and international representation. The Academy had the right to publish journals and non-periodical works, and its institutes became centres of scientific communication. This mattered in mathematics, chemistry, polarography, physics, and other fields because international science depends on visible publication channels. Heyrovský's polarographic school, Čech's mathematical work, and Šorm's chemical institute all required communication beyond the borders of Czechoslovakia. At the same time, international contacts were filtered through Cold War politics and official preference for cooperation with the Soviet Union and the people's democracies. The Academy therefore had to perform a delicate balancing act. It had to present Czechoslovak science as socialist and Soviet-oriented, while also participating in global disciplinary standards. In fields such as chemistry, mathematics, and polarography, global recognition remained indispensable. The Nobel Prize of 1959 made this especially obvious.

The achievements of early ČSAV should also be seen as achievements of research organisation. In the older university model, scientific work often depended on individual professors and their laboratories or seminars. In the Academy model, research became a collective institutional process. Institutes had directors, departments, plans, technical staff, aspirants, journals, budgets, and common facilities. This allowed more sustained research in fields where long-term continuity mattered. It also allowed the Academy to develop scientific schools around powerful organisers. The weakness was that such organisation could become bureaucratic or politically dependent. Yet in several natural and technical fields, the organisational benefits were real. Research teams could accumulate expertise over time, and younger scientists could be trained within specialised environments. The Academy's early natural-science success was therefore not only intellectual; it was sociological and administrative.

One of the central features of this period was the emergence of the full-time Academy researcher. This figure differed from the university professor whose time was divided between teaching, administration, and research. The Academy researcher could spend most of his or her professional life inside a research institute, attached to a project, laboratory, or theoretical programme. Such a career was especially important in experimental sciences, where continuity of laboratory practice is essential. It also mattered in mathematics and humanities, where long-term projects and seminars could be maintained. The Academy's aspirantura and scientific degrees strengthened this new career model. Young researchers could be trained through institute work rather than only through university teaching. This created a new social structure of Czechoslovak science. In the natural and technical disciplines, the result was a more professional research labour force.

The state's support for natural and technical sciences was also connected with the ideology of modernisation. Socialist Czechoslovakia wanted to demonstrate that it was not a backward or purely ideological society, but a modern industrial country capable of advanced science.

Chemistry, physics, nuclear research, electronics, mathematics, and polarography were ideal for this purpose. They offered measurable results, international comparison, industrial relevance, and visible symbols of progress. The Academy therefore became a stage on which the regime could display scientific modernity. This display was not wholly false, because real research was being done. Yet the political use of scientific achievement should not be ignored. Successes in polarography, chemistry, or polymer science could be presented as evidence of the superiority of socialist organisation. The Academy's natural-science achievements were therefore both scientific facts and political symbols.

The relationship between individual genius and institutional support is especially visible in this period. Heyrovský's polarography, Čech's mathematics, Šorm's chemistry, and Wichterle's polymer science were not products of the Academy in the same way. Some achievements had roots before ČSAV; others developed inside its first decade; still others were institutionalised by the Academy after beginning elsewhere. Yet ČSAV provided a structure in which these figures could be represented as part of a national scientific system. It gave them institutes, publication channels, research teams, and symbolic placement. The Academy therefore converted individual careers into institutional narratives. This was one of its greatest strengths. It allowed Czechoslovak science to appear not as a collection of isolated talents, but as an organised research culture. At the same time, this institutional narrative sometimes concealed the older university and interwar roots of many achievements. A balanced interpretation must therefore recognise both the Academy's contribution and the deeper continuity of Czech scientific traditions.

The first decade also demonstrated that technical achievement often depended on hybrid relations between Academy institutes, universities, industry, and state planning. Polymer chemistry required industrial production and biomedical application. Nuclear research required government committees and Soviet cooperation. Electronics required connections with communication and instrumentation needs. Chemistry drew on wartime industrial research traditions. Mathematics depended on universities for training and on Academy institutes for research coordination. The achievements of the foundational period therefore cannot be assigned to ČSAV alone in a narrow institutional sense. They arose from a broader scientific ecosystem in which the Academy increasingly occupied the centre. This centrality was real, but it was not absolute. The Academy organised and represented research, while other institutions supplied education, industrial demand, technical implementation, and professional continuity. The success of natural and technical disciplines depended on this wider network.

It is also necessary to remember that not all fields advanced at the same pace. Some institutes quickly became strong because they had capable leaders, clear agendas, and state support. Others struggled with ideological constraints, staffing problems, insufficient equipment, or unclear missions. The Academy's official structure could suggest a unified scientific machine, but the reality was uneven. Chemistry and polarography achieved international visibility. Mathematics maintained strong intellectual continuity. Nuclear research and electronics built important infrastructure. Biology suffered in parts from ideological pressure. Geology, astronomy, and technical disciplines developed more quietly, often without the public symbolism attached to Nobel Prizes or famous inventions. The foundational period was therefore not a uniform golden age of science. It was a period of uneven institutional consolidation, with significant successes and serious distortions.

The achievements of natural sciences, mathematics, and technical disciplines during the foundational period also prepared later developments. The Academy's first decade built institutes that would continue to shape Czechoslovak and later Czech science for decades. The Institute of Organic Chemistry and Biochemistry, the Institute of Macromolecular Chemistry, the Mathematical Institute, the Institute of Physics, the Heyrovský Institute, nuclear research facilities, and technical-electronic institutes became part of the durable infrastructure of research. Some later achievements, including major work in polymer science, physical chemistry, electronics, and theoretical disciplines, rested on the foundations laid in the 1950s. This is why the period 1952–1962 should not be viewed only as an ideologically rigid decade. It was also a decade of institution building whose effects outlasted Stalinism. The Academy created research capacities that later scientists could use, reform, criticise, or redirect. Its early achievements were therefore infrastructural as much as immediate.

This does not remove the moral and intellectual ambiguities of the period. Scientific success occurred under a regime that restricted academic freedom, controlled international contacts, imposed ideological language, and damaged certain fields. The same Academy that supported Heyrovský's institute and Šorm's chemistry also operated within a system that could marginalise scholars, distort biology, and subordinate research agendas to political planning. Natural and technical sciences were more protected than many humanities and social sciences, but they were not outside the political order. Travel, equipment purchases, publications, appointments, and institutional plans all depended on state structures. The early Academy's scientific achievements must therefore be evaluated without triumphalism. They were real achievements achieved under compromised conditions. Their reality and their compromised context both matter.

Thus, the foundational period of ČSAV produced significant achievements in natural sciences, mathematics, and technical disciplines primarily by creating a stable, institute-based research infrastructure. Polarography achieved global recognition through Jaroslav Heyrovský's 1959 Nobel Prize; organic chemistry and biochemistry developed under František Šorm into one of the Academy's strongest fields; macromolecular chemistry gained institutional form in 1959 and soon produced internationally important work through Otto Wichterle's hydrogels and soft contact lenses; mathematics consolidated around the legacy and organisational work of Eduard Čech; physics, electronics, radio engineering, nuclear research, astronomy, geology, and other technical fields acquired specialised workplaces and long-term programmes. These achievements were not simply gifts of socialist planning, because many had roots in older Czech scientific traditions, university culture, wartime research experience, and individual creativity. Yet the Academy gave them institutional scale, material support, and public representation. The paradox of the period is therefore clear. ČSAV strengthened Czechoslovak science in many natural and technical fields while embedding that science in a politically controlled system. Its foundational decade created both a productive research infrastructure and a lasting tension between scientific achievement and ideological governance.

2. Humanities and Social Sciences under Ideological Pressure

The humanities and social sciences occupied the most vulnerable position within the foundational period of the Czechoslovak Academy of Sciences. Unlike mathematics, physics, chemistry, or technical research, they dealt directly with history, society, culture, nationhood, language, philosophy, law, literature, religion, class, ideology, and political legitimacy. These

were not neutral objects in the eyes of the post-1948 communist state. They were the very fields through which the regime explained itself, educated citizens, legitimised power, and rewrote the relationship between the Czech and Slovak past and the socialist future. For that reason, the humanities and social sciences were both needed and distrusted. They were needed because the new Academy had to inherit and organise long-standing scholarly traditions in history, philology, literary studies, archaeology, ethnography, philosophy, Oriental studies, and Slavonic studies. They were distrusted because their methods, archives, interpretations, and conceptual languages could preserve intellectual memories and analytical habits not fully compatible with Marxism-Leninism. The Czechoslovak Academy of Sciences therefore became a place where humanistic scholarship was both protected institutionally and disciplined ideologically. Its institutes could offer archives, libraries, paid research positions, journals, and long-term projects; at the same time, they embedded scholarship in a political order that demanded "progressive" interpretation, socialist usefulness, and loyalty to state-defined historical meaning. This double condition defines the whole story of humanities and social sciences in the early ČSAV.

The ideological pressure on these fields had already been prepared before the formal establishment of the Academy. The post-war reorganisation of science did not begin in 1952, and the humanities were deeply involved in the earlier debates about what a new academy should be. Jůnová Macková shows that from 1946 to 1951 new research institutes were formed and older representative institutions were reorganised into state-financed institutes with paid researchers, all intended to become part of the future centralised Academy (*Jůnová Macková, 2017*). This process included not only natural-science institutes, but also the Institute of the Czech Language, the Czech Literary Institute, the Oriental Institute, the Institute of Slavonic Studies, the State Historical Publishing Institute, the State Institute of Archaeology, and ethnographic initiatives. Thus the humanities were not peripheral to the Academy's formation. They were among its building blocks. Yet the same reorganisation that gave them institutional support also placed them under a new order of legitimacy. Their previous learned, national, philological, and archival missions now had to be translated into the language of socialist society. The incorporation of these institutes into ČSAV therefore reveals the centralisation of scholarship according to the Soviet model, not merely the technical strengthening of research.

The legal foundation of ČSAV codified this condition. Act No. 52/1952 Coll. declared the Academy the highest scientific institution of the Czechoslovak Republic and assigned it research work in all fields, coordination of basic research, responsibility for economically significant scientific tasks, and cooperation in the practical use of research results (*Zákon č. 52/1952 Sb., 1952*). For the humanities and social sciences, the phrase "all fields" was crucial. It meant that history, philosophy, linguistics, literary studies, archaeology, art history, Oriental studies, Slavonic studies, ethnography, and legal or social research were to be included in the state's central scientific organisation. But the same law linked the Academy's activity to the building of socialism and the welfare of the people. This link altered the meaning of scholarly work. A historical edition, philosophical essay, literary interpretation, ethnographic survey, or linguistic dictionary could no longer be justified only as an act of scholarship. It had to be legible as part of the ideological and cultural construction of socialist society. The humanities thus entered ČSAV as recognised sciences, but they entered under a political obligation more direct than that imposed on many natural-science fields.

The Academy's official retrospective account captures the paradox well. It notes that, compared with universities completely Sovietised by the Higher Education Act of 18 May 1950,

the scientific community at ČSAV retained at least formally a greater degree of decision-making autonomy and could even provide asylum to researchers expelled from universities for ideological reasons, including the literary scholar Václav Černý and the philosopher Jan Patočka. The same account immediately adds that decision-making mechanisms were fully controlled by the totalitarian regime (*Akademie věd České republiky, n.d.*). This double statement is essential for understanding the humanities. ČSAV could sometimes shelter scholars who had become unacceptable in the university environment, because research institutes could use their expertise without exposing students directly to their teaching. Yet the Academy was not a free island. Its institutes, plans, appointments, journals, and interpretive frameworks remained politically constrained. The humanities could survive there, but often as a disciplined survival. Scholarship was preserved, but its public voice was regulated.

History was one of the most ideologically exposed disciplines. Historical scholarship had long been central to Czech national identity, and after 1948 it became a strategic field for the regime's interpretation of national development. Marxist-Leninist historiography was expected to organise the past around class struggle, progressive traditions, social conflict, anti-feudal movements, anti-German resistance, the role of the people, and the eventual historical necessity of socialism. The Institute of History's later account notes that it built on the Czechoslovak State Historical Publishing Institute, founded in 1921 to publish sources on Czech and European history, and that this institute was integrated into ČSAV in 1952 (*Historický ústav AV ČR, n.d.*). This continuity mattered because source publication, archival scholarship, and documentary editing required stability and long-term institutional support. Yet the interpretive environment had changed profoundly. The same archival infrastructure that preserved professional historical craft also operated under pressure to serve a new political narrative. Thus, historical science within ČSAV was neither destroyed nor free. It became a field where rigorous documentary work coexisted with ideological selection, where the archive could preserve complexity but public synthesis was expected to confirm a progressive socialist line.

Archaeology had a related but distinct position. It dealt with material evidence, deep time, settlement, ethnicity, social formation, and national territory. These themes could easily be drawn into political narratives of people, land, Slavic continuity, social development, and historical legitimacy. The State Institute of Archaeology was among the institutions integrated into ČSAV in 1952, making archaeology part of the Academy's central research structure (*Akademie věd České republiky, n.d.*). On one hand, Academy incorporation could strengthen fieldwork, collections, conservation, publication, and interdisciplinary cooperation. On the other hand, archaeological interpretation was expected to harmonise with Marxist concepts of social stages, production relations, and collective life. Later scholarship on archaeology under communism in Czechoslovakia has stressed that Marxism became an official interpretive framework, though its quality, depth, and actual methodological use varied considerably (*Krekovič, 2014*). Archaeology therefore shows how ideological pressure did not always operate through crude censorship. It could operate through preferred explanatory schemes, conference language, institutional priorities, and expectations about what kinds of past were politically meaningful. The result was a discipline that could produce valuable empirical work while being framed by authorised social theory.

Literary studies were equally vulnerable because literature was central to the formation of national consciousness and socialist culture. The Institute for Czech Literature had been prepared already in the late 1940s and was transferred to the newly established ČSAV in 1953,

with Jan Mukařovský as one of the leading figures associated with the institution (*Ústav pro českou literaturu AV ČR, n.d.*). Its incorporation gave Czech literary scholarship a strong institutional home for archives, bibliographies, editions, literary history, and theoretical work. But literary studies after 1948 also faced intense pressure from socialist realism, Marxist aesthetics, class interpretation, and the demand to reinterpret the Czech literary canon according to progressive and popular lines. Mukařovský's own position symbolises this tension. As a leading figure of Czech structuralism, he represented one of the most sophisticated interwar theoretical traditions; after 1948, structuralism had to negotiate with, yield to, or be rephrased through Marxist categories. Research on Czech structuralism at the end of the 1950s describes the period as one of ideological conflict and gradual re-emergence after Stalinist repression (*Česká literatura, 2020s*). Literary scholarship under ČSAV therefore became a site where older theoretical resources survived, but often in transformed, cautious, or partially repressed forms.

The Institute for Czech Literature also illustrates a broader institutional paradox. Its creation and incorporation into ČSAV allowed literary scholarship to become professionalised as a non-university research field. It could recruit assistants, train younger scholars, preserve literary archives, and undertake long-term bibliographical and historical projects. This was a genuine institutional achievement. Yet the content of literary history was politically sensitive at almost every point. Questions of realism, modernism, decadence, Catholic literature, avant-garde, émigré writing, democratic humanism, and interwar pluralism could not be treated freely. The canon had to be reorganised in relation to class, people, progressive tradition, and socialist cultural policy. Thus the Institute could accumulate scholarly capital while its interpretive horizon was narrowed. This was not simply hypocrisy; it was a daily scholarly dilemma. Researchers could preserve documents and produce careful work, but the public framing of that work often had to obey ideological expectations.

Linguistics and language studies occupied a somewhat different but still politicised position. The Czech Language Institute, founded in 1946 and later incorporated into the Academy system, carried forward long-standing work on Czech lexicography, grammar, language cultivation, terminology, and standard usage (*Akademie věd České republiky, n.d.*). Because language had been central to Czech national revival and cultural self-understanding, the Institute possessed strong symbolic legitimacy. Its work could be defended as national-cultural service, education, and practical support for public communication. At the same time, linguistics was affected by ideological debates, especially where structuralist methods were criticised as formalist or insufficiently Marxist. The Prague Linguistic Circle and related traditions had been among the most important European intellectual currents of the interwar period, but after 1948 structuralism became politically suspect in many contexts. The pressure was not always identical across subfields. Lexicography and language codification could proceed with relative stability, while theoretical linguistics and semiotics faced greater ideological scrutiny. The Academy therefore preserved Czech language scholarship, but did so within a climate in which method itself could become politically charged.

Philosophy was perhaps the most openly ideological discipline in the early Academy. It was not allowed to be merely a plural field of metaphysics, phenomenology, logic, ethics, history of philosophy, and theory of knowledge. It was expected to articulate, defend, and develop Marxist-Leninist thought. *Filosofický časopis* began publication in 1953 and has remained closely connected with the Academy of Sciences; its current journal information describes it as the oldest Czech journal devoted to philosophical disciplines still being published

(*Filosofický časopis, n.d.*). Catalogue and historical records indicate that it was issued by the Cabinet for Philosophy at ČSAV from 1953 and by the Philosophical Institute from 1957 (*Filosofický časopis, 1953–*). The history of the journal is telling: philosophy received an Academy journal immediately after the Academy's foundation, but the journal's early role was framed within the official philosophical culture of the socialist state. Philosophy had institutional space, yet that space was defined by Marxism-Leninism. Unlike mathematics, philosophy could not defend itself by appealing to politically neutral technical standards. Its very vocabulary was under ideological inspection.

The institutional development of philosophy inside ČSAV confirms this pattern. A Cabinet for Philosophy existed in the Academy from 1953 and became the Philosophical Institute in 1957, according to contemporary and bibliographical accounts (*Lobkowicz, 1961*; *Filosofický časopis, 1953–*). The Philosophical Library itself traces its origins to 1953 as the reference library of the Cabinet for Philosophy and notes that on 1 January 1957 it became the library of the Philosophical Institute of ČSAV (*Filosofická knihovna, n.d.*). These dates show that philosophy was institutionally recognised early, but also gradually formalised under Academy control. The discipline's central journal and library were therefore built inside the socialist academy system. That could support professional scholarship, translations, reviews, bibliographies, and international awareness. But the intellectual boundaries remained narrow in the 1950s. Phenomenology, religious philosophy, liberal humanism, personalism, and non-Marxist metaphysics were marginalised or forced into silence. Marxist philosophy itself could later become more internally diverse, especially during the thaw and reform period, but the foundational decade was dominated by doctrinal expectations.

Jan Patočka's position reveals the paradox of philosophy under ČSAV. He had been removed from university teaching for ideological reasons, yet the Academy could provide a limited institutional shelter for him, as the official Academy history explicitly notes (*Akademie věd České republiky, n.d.*). This did not mean that Patočka could teach phenomenology freely or shape public philosophical life in the way he might have done in an autonomous university. It meant that the Academy could use his scholarly competence in a more controlled research environment. Such cases demonstrate the ambiguity of the Academy's relative autonomy. It could preserve intellectual figures whom universities could not employ, but it could not restore the public freedom of their thought. In the long run, this mattered deeply for Czech philosophy. Patočka's later role as a dissident and Charter 77 spokesman would make him one of the central moral figures of Czech intellectual history, but in the 1950s he existed within a constrained scholarly space. The Academy thus preserved a thinker whose thought the regime could not fully accept.

Václav Černý represents a similar case in literary scholarship. The Academy's official history names him together with Patočka as a researcher who could find asylum at ČSAV after ideological exclusion from the university environment (*Akademie věd České republiky, n.d.*). Černý's literary-critical and comparative work stood in tension with the official cultural line, particularly where democratic, humanistic, comparative, and non-socialist traditions were concerned. The fact that he could work within Academy structures does not mean that ideological pressure disappeared. It means that the Academy could sometimes preserve scholarly expertise in forms less public than university teaching. Such preservation was valuable, but it was also partial. A scholar could be employed, but not necessarily heard in the full intellectual sense. In the humanities, this distinction was crucial. Institutional survival did not equal intellectual freedom.

Sociology suffered more severely than many other social sciences during the 1950s. Czech empirical social research had developed important traditions before the communist takeover, including interwar surveys and the post-war Czechoslovak Institute for Public Opinion Research founded in 1946. Krejčí's account of Czech social survey data states that the communist regime had a disastrous impact on the social sciences; in the 1950s sociology was considered a bourgeois pseudo-science, and anything reminiscent of sociological research was abolished, though some sample surveys continued within official statistics (*Krejčí, 2002*). This is one of the clearest examples of ideological repression within the social sciences. Sociology was dangerous because it could produce empirical knowledge about society that did not necessarily coincide with the regime's official self-description. A socialist state claiming scientific knowledge of society had little tolerance for an autonomous discipline investigating social stratification, attitudes, mobility, class, religion, family, or political opinion independently. The later establishment of the Institute of Sociology of ČSAV in 1965 belonged to the political thaw, not to the foundational decade (*Krejčí, 2002*). Thus, in 1952–1962 sociology was largely absent as an autonomous Academy discipline precisely because society was too politically sensitive to be studied freely.

The suppression of sociology also illuminates the difference between "social sciences" and "Marxist social knowledge" in the early Academy. The regime did not reject knowledge about society in general. It produced political economy, historical materialism, legal theory, statistics, planning studies, pedagogy, and ideological analysis. What it distrusted was plural empirical sociology and theoretical sociology outside Marxist-Leninist control. Skovajsa and Balon's history of Czech sociology describes the post-war and communist trajectory of the discipline as one marked by destruction, later revival, and renewed institutionalisation, with the 1950–1969 period framed as sociology's attempt to become a counsellor to socialist power (*Skovajsa & Balon, 2017*). The foundational decade therefore created a gap. The Academy could build philosophy, history, law, and economics within Marxist frameworks, but sociology as an empirical and interpretive discipline remained suspect. This absence is as significant as the presence of other institutes. It shows that the early Academy did not organise all fields equally. Fields that could serve ideological explanation were supported; fields that might independently measure society were suppressed or postponed.

Economics and legal studies were also heavily constrained, though in different ways. Economics had to operate within the assumptions of political economy, planning, nationalisation, socialist industrialisation, and the critique of capitalism. Legal scholarship had to interpret law within the framework of people's democracy and socialist legality rather than liberal constitutionalism. These fields could not easily develop as autonomous social sciences because their central objects — property, state power, rights, markets, class, labour, and institutions — were directly political. The Academy and related research structures could support economic and legal analysis, but the acceptable conceptual language was narrow. Empirical work could be conducted where it served planning or administration, but critical theory of the state or economy was politically dangerous. The social sciences were therefore divided between useful administrative expertise and restricted independent analysis. This division would later become highly important in the reform debates of the 1960s, when economists, sociologists, and legal theorists began to participate more actively in discussions about socialist reform. In the foundational period, however, such possibilities were limited.

Ethnography occupied a special place because it could be presented as the study of "the people", national culture, and social transformation. Jůnová Macková's account of the

formation of the Department of Ethnography shows that a second national ethnographic conference in Prague in 1952 proposed an Ethnographic Institute within the Academy, with offices in Prague and Brno, and set research aims centred on analysing national culture in the past and present, including manifestations of contemporary social transformation (*Jůnová Macková, 2017*). This language made ethnography ideologically useful. It could document folk culture, rural traditions, customs, music, and everyday life, but it could also interpret them through socialist categories of people, labour, class, and transformation. The field therefore benefited institutionally from Academy support while being redirected conceptually. Ethnography could no longer be only preservation of tradition; it had to show how tradition fitted into the socialist present. This made it both a scholarly and political discipline.

Oriental studies and Slavonic studies reveal another kind of ideological pressure: geopolitical orientation. The Oriental Institute and the Institute of Slavonic Studies had rich pre-war and interwar traditions that included scholarship, language teaching, international cultural mediation, and, in some cases, practical knowledge useful for diplomacy and trade. Under ČSAV, these institutes were transformed into full-time research institutions and placed within the planned Academy structure. Jůnová Macková shows that the Oriental Institute was significantly transformed after 1948 into a "working research institute", with altered membership and reoriented activities, while the Institute of Slavonic Studies accepted affiliation with the future Academy and was reorganised into history, philology, and literary-studies sections with a Brno office (*Jůnová Macková, 2017*). In these fields, ideology operated not only through Marxist method, but through Cold War geography. Slavonic studies were expected to harmonise with Soviet friendship and socialist internationalism. Oriental studies were increasingly framed by anti-imperial, geopolitical, and socialist-bloc perspectives. The scholarship could be serious, but its institutional mission had changed.

The humanities were also affected by the transformation of scholarly generations. Older scholars had been formed in the First Republic or even earlier, often in traditions of philology, positivist history, structuralism, comparative literature, phenomenology, archival research, and European intellectual exchange. Younger scholars entered the field after 1948 through Marxist-Leninist training, political screening, Soviet-oriented language, and new Academy research posts. Jůnová Macková notes that younger researchers often saw Academy affiliation and new subsidies as opportunities to develop institutional legacies, while older scholars established at universities had less need to seek such opportunities (*Jůnová Macková, 2017*). This generational contrast mattered especially in the humanities. Younger Marxist scholars could gain influence in institutes undergoing reorganisation, while older authorities might be retained for expertise but politically constrained. The Academy thus became a site of generational recomposition. It did not simply replace all old scholars with new cadres, but it altered the balance of authority. The result was often a difficult coexistence between inherited methods and ideological enthusiasm.

The concept of "progressive tradition" was one of the main tools by which this coexistence was managed. The founding law of ČSAV claimed that the Academy followed the progressive traditions of Czech and Slovak science (*Zákon č. 52/1952 Sb., 1952*). In the humanities, this phrase performed enormous ideological work. It allowed the regime to select certain elements of the past — Hussitism, national revival, popular culture, anti-feudal struggle, democratic radicalism, realist literature, Slavic solidarity, labour movements — and reinterpret them as steps towards socialism. At the same time, it allowed other traditions to be marginalised as bourgeois, clerical, cosmopolitan, formalist, decadent, nationalist in the wrong sense, or

reactionary. Historians, literary scholars, philosophers, and ethnographers were therefore not only studying the past; they were sorting it into politically acceptable and unacceptable inheritances. This process was especially associated with the symbolic politics of Zdeněk Nejedlý, whose idea of communists as heirs to the great Czech national traditions supplied an influential national-communist narrative (*Nejedlý, 1950*; *Kopeček, 2016*). The humanities were thus mobilised to create continuity for a regime that had in fact broken much institutional autonomy.

The ideological pressure on humanities and social sciences also operated through journals and publishing. The Academy had the right to publish journals and monographs, and this was crucial for the institutional life of philosophy, history, literary studies, linguistics, and social thought. But journals were not neutral containers. *Filosofický časopis*, founded in 1953 and connected from the beginning with the Academy, became a central philosophical periodical under conditions in which Marxist-Leninist philosophy defined the acceptable public framework (*Filosofický časopis, n.d.*). Literary, historical, and linguistic journals likewise had to negotiate with ideological expectations. Publication channels could support serious scholarship, reviews, bibliographies, and debates, but they also defined what could appear as legitimate knowledge. The Academy's publishing system therefore strengthened disciplines while disciplining them. In fields where public interpretation mattered, the editorial process became part of ideological governance. This was one of the less visible but most powerful forms of pressure.

The pressure was not always identical across the foundational decade. The early 1950s were the most rigid Stalinist years, marked by sharp ideological policing, political trials, and a strongly doctrinal public language. After Stalin's death and especially in the later 1950s, certain intellectual openings gradually appeared, although they remained limited. Structuralism, sociology, philosophy, and historical interpretation began slowly to regain more complex forms in some contexts, and the 1960s would bring a much broader reform and revival. Yet the institutions created in the foundational period carried the marks of their birth. The Academy's humanities institutes had been established or reorganised under Stalinist assumptions, and their leadership, staffing, plans, and journals reflected that origin. Later liberalisation would often occur inside these same institutions, not outside them. This is important because the Academy was not simply a prison of thought. It was also an institutional terrain on which later revision, revival, and reform could occur. The founding decade constrained the humanities, but it also preserved some of the infrastructure through which they would later change.

The Academy's humanities institutes could also accumulate scholarly resources that outlasted ideological regimes. Libraries, archives, bibliographies, dictionaries, source editions, manuscripts, field recordings, catalogues, and collections were not reducible to party doctrine. Even when research plans were ideologically framed, the material work of collecting, editing, cataloguing, and preserving could retain long-term scholarly value. This was especially true in history, literary studies, linguistics, archaeology, ethnography, and Oriental studies. A source edition produced under ideological pressure might still preserve documents for future historians. A dictionary project might continue national language scholarship across regimes. An archive maintained within an Academy institute might later become a resource for freer inquiry. This is one of the most important reasons not to write the history of the early Academy only as repression. The humanities were constrained, but they also stored cultural and scholarly memory. In some cases, the very institutions created under centralisation later became resources for intellectual renewal.

At the same time, the damage was real. Sociology was effectively suppressed in the 1950s; philosophy was narrowed by doctrinal Marxism-Leninism; history was subordinated to progressive teleology; literary studies were disciplined by socialist cultural policy; structuralism was attacked or forced into Marxist reinterpretation; and several individual scholars lost teaching positions, public authority, or publication freedom. The Academy's ability to shelter some figures did not compensate for the broader narrowing of intellectual life. The social sciences especially lost time, methods, data, and institutional continuity. Krejčí's account of empirical social research shows that after the repression of sociology in the 1950s, empirical research revived only during the 1960s thaw, culminating in large-scale survey work such as the 1967 study of social differentiation and mobility (*Krejčí, 2002*). This means that the foundational period created a gap in social-scientific development that later reformers had to overcome. Ideological pressure did not merely shape interpretations; it interrupted disciplines.

The comparison with natural sciences highlights the particular vulnerability of humanities and social sciences. Chemistry, mathematics, physics, and technical fields could often defend themselves through practical results, formal standards, or international verification. Their work could be politicised, but a chemical synthesis or mathematical theorem did not usually depend on an approved view of Czech history or class consciousness. The humanities and social sciences lacked this protection. Their concepts were also political concepts: class, nation, culture, people, value, progress, freedom, law, religion, civilisation, democracy, ideology, and society. The regime therefore watched them more closely because they could produce alternative meanings. Yet it also needed them to construct the official meanings of socialist society. This double relation — dependence and suspicion — explains the intensity of pressure. The humanities were not marginalised because they were unimportant. They were controlled because they were too important.

The early Academy's social sciences were therefore characterised by asymmetry. Philosophy existed, but as Marxist philosophy. Sociology was largely absent or condemned, then revived later. Economics existed in forms tied to planning and political economy. Law developed under socialist legality. Psychology, pedagogy, and related fields had to align with ideological and practical educational aims. Ethnography, history, and cultural studies could exist strongly, but under national-progressive and Marxist frameworks. This asymmetry shaped the intellectual map of ČSAV. The Academy did not create a balanced social-science system in the Western sense. It created a hierarchy of acceptable and less acceptable forms of knowledge about human beings, society, and culture. The later emergence of social-scientific reform thinking in the 1960s would partly challenge this hierarchy. But in the foundational period, it remained strong.

The political control of humanities and social sciences also influenced the Academy's later history. The official Academy overview notes that during the normalisation period after 1968, the regime took revenge for the leading role played by groups from the Academy's social-science institutes in the reform efforts of the Prague Spring (*Akademie věd České republiky, n.d.*). Although this lies beyond the chronological centre of the present chapter, it reveals the long-term consequences of the foundational period. The same Academy institutes that had been built under ideological supervision later became, in some cases, centres of reformist expertise, critical thought, and social analysis. This later development was possible because the Academy had preserved professional communities, archives, journals, and research capacities. It was also dangerous because the state understood very well that social-scientific

knowledge could become politically consequential. The foundational decade thus created institutions that the regime both used and feared.

The humanities and social sciences under ČSAV therefore cannot be reduced to a simple narrative of oppression or collaboration. There were committed Marxist scholars, opportunists, cautious professionals, silenced intellectuals, protected specialists, displaced university teachers, ambitious younger researchers, and institute directors trying to secure resources for their fields. Some genuinely believed that Marxism would renew history, philosophy, literary studies, or ethnography. Others used Marxist vocabulary to protect older scholarly work. Some were excluded or broken by the system. Others found institutional opportunity in it. The Academy's humanities were a field of adaptation, conviction, compromise, preservation, and pressure. This complexity is what makes their history difficult but essential. It also explains why the achievements of the humanities during the foundational period are often quieter and more ambiguous than those of chemistry or mathematics.

The main achievement of the humanities in the foundational period was the preservation and institutionalisation of research infrastructure. Institutes were created or incorporated; libraries and archives were maintained; journals were founded or continued; source editions, dictionaries, bibliographies, and disciplinary collections were organised; and postgraduate research careers became possible. The main cost was the ideological narrowing of interpretation and the suppression or deformation of disciplines that could not be easily subordinated to Marxism-Leninism. The humanities gained buildings, staff, salaries, and long-term projects, but lost much of the pluralism that gives such work its full intellectual force. The social sciences, especially sociology, suffered a more direct interruption. Philosophy and history survived institutionally but were doctrinally framed. Literary studies and linguistics preserved strong traditions while negotiating with ideological attack. The result was a foundational decade of controlled continuity.

Thus, humanities and social sciences in the early Czechoslovak Academy of Sciences developed under a paradoxical condition of institutional strengthening and intellectual constraint. ČSAV offered them research institutes, publications, archives, libraries, paid staff, postgraduate training, and a place within the highest scientific institution of the state. At the same time, it subjected them to Marxist-Leninist doctrine, socialist cultural policy, national-progressive historical narratives, political selection, and the expectation that scholarship should contribute to the ideological construction of society. History, literary studies, linguistics, archaeology, ethnography, Oriental and Slavonic studies, and philosophy survived and often developed important scholarly infrastructure, but their public interpretations were narrowed. Sociology and independent empirical social research were damaged most severely, with institutional revival delayed until the 1960s. The Academy could shelter some individuals, such as Václav Černý and Jan Patočka, yet it could not restore full intellectual freedom. The foundational legacy of these fields was therefore ambivalent. They preserved knowledge under pressure, built institutions under control, and carried forward scholarly traditions in forms that were often compromised but not extinguished. This ambivalence would later make them both vulnerable to repression and capable of contributing to reform.

3. The Ambivalent Legacy of Centralised Research Planning

The ambivalent legacy of centralised research planning in the foundational period of the Czechoslovak Academy of Sciences lies in the fact that the same institutional logic which restricted scientific autonomy also created a durable infrastructure for modern research. ČSAV was founded as the highest scientific institution of the Czechoslovak Republic, but it was also legally tasked with planning, coordinating, directing, publishing, advising the government, and connecting research with practice (*Zákon č. 52/1952 Sb., 1952*). This meant that the Academy was never only a learned society, nor merely a symbolic successor to the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts. It was a state research complex designed to make science administratively visible and politically governable. The planned model gave Czechoslovak science institutes, salaries, budgets, laboratories, libraries, publishing channels, common facilities, and long-term research programmes. At the same time, it made these resources dependent on state priorities, ideological loyalty, bureaucratic reporting, and the language of socialist construction. The foundational decade must therefore be read neither as a simple fall of free scholarship into political control nor as a simple triumph of modern scientific organisation. It was both a modernisation and a disciplining of science. This duality explains why ČSAV could produce serious scientific achievements while remaining compromised by the political order that created it. The legacy of planning was thus structurally ambivalent from the beginning.

The first positive effect of centralised planning was concentration. Before 1952, Czech and Czechoslovak research existed in universities, learned societies, state institutes, ministerial bodies, museums, archives, professional associations, and applied research centres. This plurality had intellectual advantages, but it also produced fragmentation, uneven financing, and weak coordination. The Academy gathered many of these elements into a single institutional system. Older learned bodies, central research institutes, and ministry-linked workplaces were integrated into ČSAV, giving the new Academy immediate material and scholarly depth (*Akademie věd České republiky, n.d.*). The State Historical Publishing Institute, Oriental Institute, Institute of Slavonic Studies, State Institute of Archaeology, and central natural-science institutes entered a common research framework. Such integration allowed the state to build a recognisable scientific infrastructure rapidly. It also enabled long-term projects that had been difficult to sustain through scattered funding and voluntary scholarly work. Yet concentration also meant absorption. Institutions that had once possessed specific legal identities, patronage networks, and scholarly cultures became units within a state-academic hierarchy. Planning strengthened research capacity by weakening institutional plurality.

The second positive effect was professionalisation. The planned Academy created the figure of the full-time research worker, employed in an institute, attached to a research agenda, and trained through scientific aspirantura or advanced scientific degrees. This was a profound change in the social structure of science. The older scholar might be a university professor, schoolteacher, curator, archivist, civil servant, or member of a learned society who conducted research alongside other duties. The Academy researcher, by contrast, could spend most of his or her professional life in a specialised workplace. This enabled collective laboratories, long-term editorial projects, mathematical seminars, source editions, chemical programmes, archaeological surveys, and technical research groups. It also gave young researchers new career paths outside the university professoriate. The planned system therefore expanded the social base of professional research, especially in fields where full-time research had been

difficult to maintain. But professionalisation came with dependence. The researcher's career now depended on institute directors, Academy sections, political reliability, state budgets, and plan fulfilment. The Academy researcher became both more professional and more administratively subordinated.

The third effect was the strengthening of basic research, although in a politically reframed form. Act No. 52/1952 Coll. gave ČSAV responsibility for basic research and for scientific tasks of major economic importance (*Zákon č. 52/1952 Sb., 1952*). This pairing was characteristic of socialist research planning. Basic research was recognised as necessary, but its legitimacy was tied to future usefulness, technological progress, socialist construction, or national prestige. Mathematics, physics, chemistry, astronomy, geology, polarography, and later nuclear research benefited from this recognition. The state understood that a modern industrial society required theoretical and experimental science, not only immediate applied problem-solving. At the same time, basic research had to be narrated in the language of plans, tasks, perspectives, and social need. This could protect theoretical work when scientists successfully argued for its long-term importance. It could also distort intellectual priorities when research was forced to promise practical outcomes prematurely. The result was a negotiated space in which basic science survived and often developed, but under a utilitarian and ideological vocabulary. Centralised planning did not destroy basic research; it changed how basic research had to justify itself.

The clearest institutional successes of the planned model appeared in the natural sciences and technical disciplines. Chemistry, polarography, mathematics, physics, nuclear research, radio engineering, electronics, macromolecular chemistry, and related fields all benefited from the creation of specialised workplaces. The Institute of Organic Chemistry and Biochemistry, described by Martin Franc as one of the most successful institutes of ČSAV, formed part of the Academy from the beginning and received significant state support in its early years (*Franc, 2024*). The Institute of Photonics and Electronics traces its origins to the early 1950s, when non-university research institutes were merged into ČSAV and new institutes were also established. Such examples show that planning could convert strategic scientific ambitions into buildings, posts, laboratories, and programmes. It could create conditions for research that neither universities nor older learned societies could provide alone. The Academy's technical and natural-science growth therefore had real substance. Yet even here the achievements depended on capable scientists who could navigate the planned system. Central planning supplied resources, but scientific creativity still came from researchers, schools, methods, and international standards.

The example of organic chemistry shows how planning could be productive when it met strong scientific leadership. František Šorm was not merely an administrator of a state plan; he was a chemist and institutional builder who used the Academy system to develop a major research workplace. His institute's roots reached back to wartime and post-war research groups formed after the closure of Czech universities, where industrial research and collective laboratory methods became important (*Franc, 2024*). This experience fitted well with the Academy's emphasis on team-based and application-aware research. The institute gained stability, personnel, and financial support through ČSAV. At the same time, Šorm's political reliability and institutional authority helped protect the institute during later financial pressures. This case demonstrates that the planned system could be used creatively by scientists who understood both science and politics. Yet it also reveals the inequality of the system. Institutes with powerful and trusted leaders could flourish; weaker or ideologically suspect fields had

fewer protections. Planning therefore did not distribute opportunity evenly. It rewarded those able to translate scientific ambition into politically acceptable institutional language.

Mathematics illustrates another form of ambivalent success. Mathematical research needed less heavy equipment than physics or chemistry, but it required seminars, journals, libraries, concentrated time, and a strong community of researchers. The Mathematical Institute, which had begun before the foundation of ČSAV and was later incorporated into the Academy, benefited from stable institutional support. Mathematics also possessed internal standards that were relatively resistant to ideological rewriting. A proof could not be made true by political decree. This gave mathematicians more intellectual room than historians, philosophers, sociologists, or biologists affected by ideological doctrines. Yet mathematical research was still located inside the planned Academy structure. Its institutes, journals, appointments, and international contacts depended on state conditions. The Academy strengthened Czech mathematics by giving it a durable research base, but it also moved mathematical authority away from the university as the primary institutional centre. The field therefore shows how centralised planning could be scientifically useful without being politically neutral. It created continuity through a structure of dependence.

The humanities and social sciences reveal the darker side of centralised planning more sharply. In these fields, research objects themselves were politically sensitive: history, society, culture, class, nation, law, language, literature, philosophy, religion, and public consciousness. The Academy preserved and strengthened institutes of history, literature, language, archaeology, Oriental studies, Slavonic studies, ethnography, and philosophy. It maintained libraries, archives, source editions, journals, dictionaries, and research staffs. Yet it also required these fields to work within the framework of Marxism-Leninism, progressive national tradition, socialist cultural policy, and ideological reliability. Sociology was especially damaged in the 1950s, when it was treated as a bourgeois pseudo-science and autonomous empirical social research was largely suppressed (*Krejčí, 2002*). Philosophy was institutionalised, but mostly through Marxist-Leninist categories. History and literary studies survived strongly as scholarly crafts, but their public interpretations were narrowed. In the humanities, planning often meant not only organisation, but control over meaning. The Academy protected archives and disciplines while limiting the plurality of interpretation.

The history of the Institute of History demonstrates this double character. The Institute built on the State Historical Publishing Institute founded in 1921, whose primary mission was the publication of sources on Czech and European history; in 1952 it was integrated into ČSAV (*Historický ústav AV ČR, n.d.*). The Academy therefore preserved a major documentary and editorial tradition. Source publication, archival work, and historical editing require precisely the kind of stable long-term framework that an Academy institute could provide. Yet historical interpretation in the early 1950s was strongly shaped by Marxist-Leninist expectations and the regime's need to present Czech and Slovak history as a progressive path towards socialism. This meant that the same institute could be both a custodian of documentary scholarship and an instrument of ideological historical culture. Planning supported the material basis of history while restricting its interpretive horizon. The later fate of the Institute, including political pressure after the Prague Spring, confirms how sensitive social-scientific and historical institutes remained to state power. The foundational legacy was therefore never purely scholarly. It carried political vulnerability inside its institutional strength.

The problem was not only censorship in the narrow sense. Centralised planning changed the way disciplines had to describe themselves. Research agendas needed to be formulated as plans, tasks, priorities, and contributions to socialist development. Olšáková's study of the central model of science planning shows that discussions of planning in the later 1950s treated scientific planning as the determination of major directions of scientific development and the securing of material conditions, not merely the immediate subordination of research to practical tasks (*Olšáková, 2012*). This is important because planning presented itself as rational and forward-looking. It did not always demand crude short-term utility. It claimed to organise science according to the long-term perspective of socialist development. Yet this "perspective" remained politically defined. The language of planning could therefore seem intellectually expansive while still excluding questions, methods, and interpretations that did not fit the approved horizon. The plan became the grammar of scientific legitimacy. To be unplanned was to be institutionally fragile.

The planned system also altered scientific time. Research often advances unpredictably, through detours, failures, slow accumulation, and discoveries that cannot be scheduled. Planned science, by contrast, required annual reports, multi-year programmes, fulfilment indicators, institutional accountability, and visible progress. This tension affected all disciplines, but in different ways. A chemical laboratory might divide work into experimental stages; a dictionary project might organise entries and volumes; a mathematical school might schedule seminars and publications; a historical edition might produce archival outputs. Yet genuine discovery or interpretation could not be fully predicted. Scientists therefore learned to translate open-ended work into administrative language. This translation could protect research by making it legible to the state. It could also encourage formalism, inflated reporting, and avoidance of risky topics. The planned system made science more secure materially, but more vulnerable intellectually to bureaucratic rhythms. In this sense, the legacy of planning was also a legacy of double speech: actual research on one level, planned fulfilment on another.

The separation of research from university teaching was another major legacy. ČSAV became the privileged site of organised research, while universities increasingly carried the burden of mass education, ideological instruction, and professional training after the 1950 Higher Education Act. This produced a new division of labour. Academy institutes could employ full-time researchers and sustain large projects, while universities trained the students who would later enter those institutes. The arrangement could work productively when Academy researchers taught, supervised, or collaborated with university departments. It could become damaging when the two spheres drifted apart. Students risked being separated from frontier research, while researchers risked losing contact with teaching and the formative energy of younger generations. The Academy thus strengthened research by removing it from some constraints of university life, but also weakened the older unity of teaching and inquiry. This was one of the deepest structural consequences of centralised research planning. It shaped Czech science far beyond the first decade of ČSAV.

The planned Academy also changed the geography of scientific authority. Prague remained the central seat of ČSAV and the symbolic heart of Czech science, but institutes and research facilities expanded beyond the traditional university setting. Řež became associated with nuclear research, Brno remained important in several fields, and specialised workplaces developed according to scientific and technical requirements rather than only historical academic prestige. This was a genuine modernising advantage. Large-scale technical and

natural-science research often requires specific sites, laboratories, observatories, field stations, and safety conditions. Yet the geography of planning also reproduced central hierarchies. Prague retained extraordinary authority because the Academy Presidium, central offices, major libraries, and many key institutes were concentrated there. Slovak science had to find its place within a Czechoslovak academy system whose centre of gravity remained Czech and Prague-based. Centralised planning therefore created a national research network while also preserving asymmetries. The Academy's geography was expansive, but not egalitarian. It distributed research capacity through a hierarchy of centres.

The Slovak dimension is essential to the ambivalent legacy. ČSAV was a Czechoslovak Academy, but its inherited institutional base was much stronger in the Czech lands. The Slovak Academy of Sciences had its own history and was eventually related to the Czechoslovak structure in a way that reflected both autonomy and subordination. The problem was not only administrative. It concerned how a centralised academy could represent a multi-national state without reproducing the dominance of Prague's scientific institutions. Central planning promised national integration, but it could also centralise authority away from Slovak centres. This tension would continue beyond the foundational decade. It shows that the legacy of ČSAV was not only a matter of science policy, but of Czechoslovak state structure. Research planning was also a way of managing national plurality. Its achievements and inequalities must be read together.

The Academy's relationship with the Soviet model also remained ambivalent. On one hand, Soviet influence helped justify investment in large research institutes, long-term planning, scientific degrees, aspirantura, and the concentration of research outside universities. On the other hand, Sovietisation brought ideological rigidity, political dependence, distortions in fields such as biology, and a hierarchy of international relations that privileged Soviet and socialist-bloc contacts. Comparative work on the Soviet legacy in higher education and research describes the Soviet model as one built around large networks of research institutes connected to academies and ministries, with universities playing a smaller role in research (*Lovakov, Chankseliani, & Panova, 2022*). Czechoslovakia adapted this model to its own scientific traditions, but the consequences were similar in structure. Research became more institute-based, more planned, and more state-dependent. The Academy gained resources partly because it accepted this model. Yet the same model made scientific autonomy structurally fragile. Sovietisation was therefore not merely an external influence; it became embedded in the organisation of Czech and Slovak science.

One should also note the relation between central planning and international science. The Academy was legally responsible for representing Czechoslovak science internationally, especially in relations with the Soviet Union and the people's democracies. This gave ČSAV a privileged position in scientific diplomacy. It could organise exchanges, delegations, publications, and contacts through official channels. Yet advanced research in chemistry, physics, mathematics, medicine, and technical fields still required engagement with global science, including Western literature, instruments, standards, and conferences. The Cold War made this engagement politically sensitive. Academy institutes had to perform socialist loyalty while pursuing internationally valid research. This contradiction was visible in fields that required Western equipment or international recognition. The Academy thus became both a gatekeeper and a mediator of international science. Planning organised contacts, but also filtered them.

The successes of Heyrovský, Šorm, Čech, Wichterle, and other major figures show that international standards could still be reached. Yet their success should not be attributed mechanically to planning. Heyrovský's polarography had pre-Academy roots; Čech's mathematical authority was formed within older university and European traditions; Wichterle's creativity often exceeded institutional routines; Šorm's institute-building depended on personal scientific and political skill. The Academy provided the institutional stage, but the actors carried deeper traditions and individual capacities. This matters because planned systems often claim credit for everything produced within them. A balanced interpretation must distinguish between what planning enabled, what it appropriated, and what scientists achieved despite its limits. ČSAV did create material conditions that mattered. It did not create scientific creativity by decree. Its achievements were real, but their origins were more complex than the official narrative suggested. The legacy of planning is therefore also a legacy of institutional appropriation of older scientific capital.

Centralised planning also changed the moral economy of scientific life. To secure resources, scientists had to present their work in terms acceptable to the Academy and the state. Some did so sincerely, believing that socialism could modernise science and society. Others used official language pragmatically to protect research. Some became active ideological enforcers, while others withdrew into technical or archival work. The planned system rewarded conformity, but it also created spaces for tactical survival. This was especially visible in the humanities, where scholars might preserve sources, teach quietly, or publish cautiously under ideological cover. In natural sciences, researchers could frame basic work as future application. The system therefore encouraged a complex spectrum of behaviour, from conviction to compromise. The ambivalent legacy of planning is also a human legacy: careers were shaped by loyalty, caution, courage, ambition, and adaptation.

The centralised model produced durable common facilities and administrative mechanisms. Libraries, archives, publishing houses, laboratories, technical workshops, and scientific councils created connective tissue between institutes. The collective history of ČSAV's first decade emphasises not only the development of members and leadership, but also selected key scientific institutions and common facilities (*Dvořáčková & Franc, 2019*). This is important because a research system is not made only of famous institutes. It depends on shared infrastructure. The Academy could centralise expensive or specialised resources and make them available to multiple fields. It could also standardise procedures and publications. Yet common facilities also strengthened central control. The same library, publishing, or administrative structure that supported research could regulate access, visibility, and priority. Infrastructure was never purely technical. It was also a means of governance.

The legacy of centralised planning became especially visible after the foundational period. In the 1960s, some Academy institutes, especially in the social sciences and humanities, became important sites of reformist thinking. This later development would have been impossible without the institutional communities, libraries, journals, and research capacities built in the 1950s. Yet the same institutes were later vulnerable to repression after 1968 because the state understood their intellectual and political significance. The official Academy history notes that after the Prague Spring, the regime took revenge on social-science institutes that had played an important role in reform efforts (*Akademie věd České republiky, n.d.*). This later trajectory reveals the long-term ambiguity of the planned Academy. It created institutions that could serve power, but also institutions that could produce expertise, critique, and reform. Centralised planning made knowledge governable, but it also unintentionally preserved

concentrated communities capable of intellectual renewal. The foundational decade thus planted both obedience and future dissent.

The ambivalent legacy also explains why the Academy survived after the fall of communism rather than being simply abolished. The political mission of ČSAV was discredited after 1989, but the institute-based research infrastructure remained valuable. The present Czech Academy of Sciences continues to function as a leading non-university public research institution, now under democratic statutes and with a different understanding of scientific freedom, international cooperation, and public responsibility (*Akademie věd České republiky, n.d.*). This continuity is historically striking. An institution created under Stalinist centralisation later became a major component of democratic Czech science. The survival of the institute model shows that not everything produced by socialist research planning was merely ideological. Laboratories, libraries, archives, schools, journals, and research cultures could be transformed and reused. Yet the post-1989 need for reform also shows that the political legacy of centralised planning could not simply be inherited unchanged. The Academy's later history is therefore a history of institutional purification and redefinition.

The foundational decade of ČSAV should therefore be evaluated through several simultaneous criteria. Institutionally, it succeeded in creating a powerful non-university research complex. Scientifically, it supported major achievements in chemistry, polarography, mathematics, physics, nuclear research, and technical fields, while preserving important humanities infrastructure. Socially, it created a new professional group of Academy researchers and new pathways of postgraduate training. Politically, it subordinated science to the party-state and embedded research in the ideology of socialist construction. Intellectually, it protected some forms of inquiry while suppressing or distorting others. Culturally, it appropriated older Czech and Slovak scholarly traditions under the language of progressive inheritance. Administratively, it stabilised research while bureaucratising it. These criteria do not lead to one simple verdict. They show why the legacy of centralised planning remains historically complex. The Academy was a product of domination and a generator of knowledge at the same time.

The most serious weakness of the planned model was its suspicion of autonomous judgement. Scientific communities need criticism, disagreement, disciplinary self-correction, international exchange, and methodological pluralism. Centralised planning tended to prefer coherence, approval, hierarchy, and ideological alignment. This could produce order, but it could also suppress the very uncertainty through which science advances. In fields where political doctrine claimed scientific authority, such as Lysenkoist biology, the consequences were damaging. In social sciences, the consequences included the interruption of sociology and the narrowing of empirical research. In humanities, the consequences included teleological history, ideological literary criticism, and the marginalisation of non-Marxist philosophy. Even in more protected fields, the system encouraged caution and reporting formalism. The planned model could build institutes, but it could not fully plan truth. This is perhaps its deepest contradiction.

The strongest achievement of the planned model was its recognition that modern research requires institutional permanence. A small or medium-sized country cannot sustain advanced science only through isolated professors, scattered societies, and unstable subsidies. It needs laboratories, archives, libraries, long-term teams, doctoral or postgraduate training, publications, and international representation. ČSAV provided these on a scale that earlier

Czech institutions had only partially achieved. It transformed research from a fragile learned activity into a stable public profession. This achievement should not be dismissed simply because it occurred under authoritarian conditions. The problem is that the conditions shaped the achievement. The Academy's permanence came at the price of dependence. Its strength came through centralisation. Its resources came with ideological obligations. This is why its legacy remains ambivalent rather than simply negative or positive.

The ambivalence is also visible in the relation between continuity and rupture. ČSAV claimed to inherit the progressive traditions of Czech and Slovak science, and in one sense it really did inherit them. It absorbed older societies, institutes, libraries, collections, staff, journals, and scholarly projects. Yet it changed the rules of inheritance. Traditions were accepted only insofar as they could be interpreted as progressive, socially useful, or compatible with socialist construction. The Academy therefore preserved the past selectively. It turned continuity into an argument for transformation. This allowed it to claim historical legitimacy while breaking the autonomy of older institutions. The foundational chapter of ČSAV is consequently a history of controlled inheritance. Older science did not disappear; it was reorganised under new authority.

The ambivalent legacy of research planning also affected the very language of scientific value. Terms such as "major questions", "basic research", "economic significance", "application in practice", "socialist construction", "welfare of the people", and "progressive tradition" became part of institutional self-description. These terms could express real concerns. Science should address important problems, contribute to society, and maintain public responsibility. But under Stalinist and early socialist governance they became tools of political alignment. A research programme had to be not only good, but properly framed. A scholar had to be not only competent, but institutionally acceptable. A discipline had to be not only coherent, but socially useful according to the state's categories. Planning therefore reshaped the evaluative vocabulary of science. It did not merely decide budgets; it changed how scientists had to speak about their work. This linguistic legacy persisted long after the first decade.

By the end of the foundational period in 1962, ČSAV had become a real scientific institution, not only a political project. It possessed institutes, sections, common facilities, research plans, publications, academicians, corresponding members, postgraduate structures, international contacts, and a growing professional identity. It had produced or institutionalised achievements that gave Czechoslovak science international visibility. It had also normalised a model in which science was expected to be planned from above and aligned with state priorities. The death of Zdeněk Nejedlý in 1962 and the rise of František Šorm as president symbolised a shift from founding cultural-political legitimacy towards more technocratic scientific management. Yet the structure created in the 1950s remained. The Academy entered the 1960s with both resources and constraints. Its future reforms, achievements, conflicts, and crises would all develop from this inherited structure. The first decade had set the terms.

Thus, the ambivalent legacy of centralised research planning in the Czechoslovak Academy of Sciences consisted in the inseparable union of scientific modernisation and political subordination. Planning concentrated resources, created institutes, professionalised research careers, supported basic and strategic research, enabled major achievements in natural sciences and technical fields, and preserved significant humanities infrastructure. At the same time, it weakened academic autonomy, subordinated priorities to the party-state,

separated research from university teaching, imposed ideological frameworks on the humanities and social sciences, damaged disciplines such as sociology and genetics, and bureaucratised intellectual life. The Academy was neither a mere instrument of propaganda nor a free institution accidentally placed under socialism. It was a powerful research system created by socialist centralisation and filled with genuine scientists whose work often exceeded the limits of the ideology that governed them. Its foundational decade therefore left a double inheritance: laboratories and plans, archives and censorship, research careers and political screening, international achievements and restricted internationalism, institutional permanence and lost autonomy. This double inheritance would shape the whole later history of ČSAV. It explains why the Academy became one of the most important institutions of Czechoslovak science and, at the same time, one of the clearest examples of how modern research can be strengthened and constrained by the same centralising state.

References:

Akademie věd České republiky. (2022). *One hundred years of polarography*. CAS.

Akademie věd České republiky. (2026). *Research institutes*. CAS.

Akademie věd České republiky. (n.d.). *Headquarters of the CAS*. CAS.

Akademie věd České republiky. (n.d.). *History overview*.CAS.

Akademie věd České republiky. (n.d.). *Představitelé AV ČR a jejích předchůdců* [Representatives of the Czech Academy of Sciences and its predecessors]. CAS.

Akademie věd České republiky. (n.d.). *Representatives of the CAS and its predecessors*. CAS.

Akademie věd České republiky. (n.d.). *Scientific societies*. CAS.

Akademie věd České republiky. (n.d.). *Statutes of the Czech Academy of Sciences*. CAS.

Beneš, Z. (2016). *Akademické milieu v časech prověrek — vysoké školy v letech 1948–1956. Poválečná reforma českého vysokého školství a její kořeny* [The academic milieu in times of communist vetting: Higher education in 1948–1956. The post-war reform of Czech higher education and its origins]. Univerzita Karlova, Filozofická fakulta.

Beran, J. (2005). Vytváření členské základny ČSAV v roce 1952 [The formation of the membership base of the Czechoslovak Academy of Sciences in 1952]. *Soudobé dějiny, 12*(1), 102–139.

Česká literatura. (2020s). *Czech structuralism at the end of the 1950s: An ideological conflict*. Czech Literature / Institute of Czech Literature, Czech Academy of Sciences.

Československá akademie věd. (1953). *Zdeňku Nejedlému Československá akademie věd* [The Czechoslovak Academy of Sciences to Zdeněk Nejedlý]. Československá akademie věd.

Československá akademie věd. (1968). *Členové Československé akademie věd a členové českých národních vědeckých institucí, na něž ČSAV navazuje ve své činnosti* [Members of the Czechoslovak Academy of Sciences and members of Czech national scientific institutions on whose work ČSAV continues]. ČSAV.

Charles University. (n.d.). *History*. Charles University.

Connelly, J. (2000). *Captive university: The Sovietization of East German, Czech, and Polish higher education, 1945–1956*. University of North Carolina Press.

Czech Academy of Agricultural Sciences. (n.d.). *History of the Czech Academy of Agricultural Sciences*.

Czech Academy of Sciences. (n.d.). *Czech Academy of Sciences*. InterAcademy Partnership.

Czech Centres New York. (n.d.). *Eye opener: The Otto Wichterle story*. Czech Centres.

Dvořáčková, V., & Franc, M. (Eds.). (2019). *Dějiny Československé akademie věd I (1952–1962)* [History of the Czechoslovak Academy of Sciences I (1952–1962)]. Academia; Masarykův ústav a Archiv AV ČR.

Dvořáčková, V., & Franc, M. (Eds.). (2020). *Dějiny Československé akademie věd I (1952–1962)* [History of the Czechoslovak Academy of Sciences I (1952–1962)]. Academia; Masarykův ústav a Archiv AV ČR.

Faculty of Science, Charles University. (n.d.). *History of the Faculty of Science*. Charles University.

Fasora, L., & Pečinková, A. (2021). Adieu Humboldt: A change in the academic community's view of Czechoslovak university autonomy during the interwar period. *CIAN-Revista de Historia de las Universidades, 24*(2), 5–36.

Ferenčuhová, B. (2016). Implementation of ideology of the Communist Party of Czechoslovakia into activities of Slovak universities after February 1948. *Individual and Society, 19*(3), 18–34.

Filosofická knihovna. (n.d.). *Historie knihovny* [History of the library]. Filosofický ústav AV ČR.

Filosofický časopis. (1953–). *Filosofický časopis* [Philosophical journal]. Czechoslovak Academy of Sciences; Filosofický ústav ČSAV.

Filosofický časopis. (n.d.). *Hlavní strana* [Home page]. Filosofický ústav AV ČR.

Franc, M. (2024). The showcase of Czechoslovak science. In M. Franc & M. Kopeček (Eds.), *Knowledge and socialism: Scientific life in socialist Czechoslovakia*. Springer.

Franc, M. (2024). The showcase of Czechoslovak science: The Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Science. In M. Franc & M. Kopeček (Eds.), *Knowledge and socialism: Scientific life in socialist Czechoslovakia*. Springer.

Fyzikální ústav AV ČR. (n.d.). *Brief history of FZU* [Brief history of the Institute of Physics]. Institute of Physics of the Czech Academy of Sciences.

Graham, L. R. (1975). The formation of Soviet research institutes: A combination of revolutionary innovation and international borrowing. *Social Studies of Science, 5*(3), 303–329.

Gray, J. J. (n.d.). *About Eduard Čech*. Czech Digital Mathematics Library.

Historický ústav AV ČR. (n.d.). *History of the institute and specialization*. Institute of History of the Czech Academy of Sciences.

Institute of the History of Charles University and Archive of Charles University. (n.d.). *Science and publications*. Charles University.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *Brief history of the Institute*. J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences.

Jůnová Macková, A. (2017). State institutes and the Czechoslovak Academy of Sciences, 1948–1953. *Studia Historiae Scientiarum*, *16*, 241–267.

Kaplan, K. (1993). *Sovětští poradci v Československu 1949–1956* [Soviet advisers in Czechoslovakia, 1949–1956]. Ústav pro soudobé dějiny AV ČR.

Kopeček, M. (2016). Čeští komunističtí intelektuálové a "národní cesta k socialism": Zdeněk Nejedlý a Karel Kosík, 1945–1968 [Czech communist intellectuals and the "national road to socialism": Zdeněk Nejedlý and Karel Kosík, 1945–1968]. *Soudobé dějiny, 23*(1–2), 57–85.

Krejčí, J. (2002). Access to Czech social survey data. *Sociologický časopis / Czech Sociological Review, 38*(6), 809–826.

Krekovič, E. (2014). Marxism, communism and Czechoslovak archaeology. *Anthropologie, 52*(2), 261–270.

Křesťan, J. (2005). "Poslední husita" odchází: Zdeněk Nejedlý v osidlech kulturní politiky KSČ po roce 1945 ["The last Hussite" departs: Zdeněk Nejedlý in the snares of the cultural policy of the Communist Party of Czechoslovakia after 1945]. *Soudobé dějiny, 12*(1), 9–44.

Křesťan, J. (2012). *Zdeněk Nejedlý: Politik a vědec v osamění* [Zdeněk Nejedlý: A politician and scholar in solitude]. Paseka; Národní archiv.

Křížek, M. (2002). The Mathematical Institute of the Academy of Sciences of the Czech Republic. *European Mathematical Society Newsletter*, 45, 15–18.

Kudláčová, B. (2024). Education as a political tool of the communist regime in Czechoslovakia. *Paměť a dějiny, 18*(4), 72–83.

Kyle, R. A., & Shampo, M. A. (2016). Otto Wichterle: Inventor of the first soft contact lenses. *Mayo Clinic Proceedings, 91*(3), e35–e36.

Lobkowicz, N. (1961). Marxism-Leninism in Czechoslovakia. *Problems of Communism, 10*(1), 19–27.

Locke, B. S. (2006). *Opera and ideology in Prague: Polemics and practice at the National Theatre, 1900–1938*. University of Rochester Press.

Lovakov, A., Chankseliani, M., & Panova, A. (2022). Universities vs. research institutes? Overcoming the Soviet legacy of higher education and research. *Scientometrics, 127*, 6293–6313.

Lukášová, A. (2007). Eduard Čech. In J. Bečvář & M. Bečvářová (Eds.), *Matematika v proměnách věků IV* [Mathematics in the transformations of the ages IV]. Matfyzpress.

Macková, A. J. (2017). State institutes and the Czechoslovak Academy of Sciences. *Studia Historiae Scientiarum*, 16, 159–178.

MacTutor. (n.d.). *Eduard Čech*. MacTutor History of Mathematics Archive, University of St Andrews.

Mervart, J. (2017). Czech communist intellectuals and the "national road to socialism": Zdeněk Nejedlý and Karel Kosík, 1945–1968. In M. Kopeček & P. Wciślik (Eds.), *Thinking through transition: Liberal democracy, authoritarian pasts, and intellectual history in East Central Europe after 1989*. Central European University Press.

Nejedlý, Z. (1950). *Komunisté, dědici velikých tradic českého národa* [The communists, heirs to the great traditions of the Czech nation] (3rd ed.). Československý spisovatel. Original work published 1946.

Nobel Prize. (n.d.). *Jaroslav Heyrovsky — Biographical*. NobelPrize.org.

Nobel Prize. (n.d.). *Jaroslav Heyrovsky — Facts*. NobelPrize.org.

O'Connor, J. J., & Robertson, E. F. (n.d.). *Czech Academy of Sciences*. MacTutor History of Mathematics Archive, University of St Andrews.

Olšáková, D. (2012). *Československá věda a výzkum a centrální model plánování vědy v letech 1958–1959* [Czechoslovak science and research and the central model of science planning in 1958–1959]. *Dějiny věd a techniky, 45*(3), 167–181.

Orel, V. (1992). Jaroslav Kříženecký (1896–1964), tragic victim of Lysenkoism in Czechoslovakia. *The Quarterly Review of Biology*, *67*(4), 487–494.

Pavlíček, T. W. (2023). *Astronomers behind the Iron Curtain: The institutional and political history of Czechoslovak astronomy, 1945–1968*. MatfyzPress.

Pokorná, M. (2006). The Royal Bohemian Society of Learning. *Učená společnost České republiky*.

ScienceBusiness. (2025, March 3). *Charles University and the Czech Academy of Sciences expand cooperation in doctoral studies*. ScienceBusiness.

Skovajsa, M., & Balon, J. (2017). *Sociology in the Czech Republic: Between East and West*. Palgrave Macmillan.

Sovětská věda: Historie [Soviet science: History]. (1950). Československo-sovětský institut.

Šutajová, J. (2023). The process of Sovietization in tertiary education in Slovakia, 1945–1956. *Res Gestae*, *16*, 112–133.

ÚJV Řež. (n.d.). *History*. ÚJV Řež.

Ústav fotoniky a elektroniky AV ČR. (n.d.). *History of the Institute*. Institute of Photonics and Electronics of the Czech Academy of Sciences. CAS.

Ústav jaderné fyziky AV ČR. (n.d.). *History*. Nuclear Physics Institute of the Czech Academy of Sciences. CAS.

Ústav makromolekulární chemie AV ČR. (n.d.). *Institute history*. Institute of Macromolecular Chemistry of the Czech Academy of Sciences. CAS.

Ústav organické chemie a biochemie AV ČR. (n.d.). *History*. Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences. CAS.

Ústav pro českou literaturu AV ČR. (n.d.). *History of the Institute of Czech Literature*. Institute of Czech Literature of the Czech Academy of Sciences. CAS.

Ústav pro českou literaturu AV ČR. (n.d.). *Timeline*. Institute of Czech Literature of the Czech Academy of Sciences. CAS.

Valová, S. (2011). *Jaroslav Kříženecký a lysenkismus v Československu v letech 1948–1965* [Jaroslav Kříženecký and Lysenkoism in Czechoslovakia in 1948–1965]. Masarykova univerzita.

Zákon č. 52/1952 Sb., o Československé akademii věd [Act No. 52/1952 Coll., on the Czechoslovak Academy of Sciences]. (1952). *Sbírka zákonů Republiky československé*.

Zákon č. 58/1950 Sb., o vysokých školách [Act No. 58/1950 Coll., on higher education]. (1950). *Sbírka zákonů Republiky československé*.

Part Four.

The Czechoslovak Academy of Sciences in the 1960s: Reform, Internationalisation, and Scientific Dynamism

The Changing Intellectual Climate of the 1960s

1. De-Stalinisation and the Partial Opening of Scientific Life

The 1960s opened a new and ambiguous chapter in the history of the Czechoslovak Academy of Sciences. It was not a sudden liberation, nor was it a clean institutional break with the Stalinist order created after 1948 and consolidated in the early 1950s. Rather, it was a slow, uneven, and politically conditional loosening of a system that had already exhausted many of its own ideological and administrative instruments. The Czechoslovak Academy of Sciences entered this decade as a strongly centralised state institution, created according to the Soviet model, but it also possessed a scientific infrastructure that could not be reduced to political command alone. Laboratories, archives, disciplinary commissions, editorial boards, field stations, and specialised institutes had developed their own professional rhythms, even when they formally remained inside the ideological architecture of the party-state. This double character made the Academy one of the most sensitive institutions of the 1960s: it was both an instrument of socialist science policy and one of the places where the limits of that policy became increasingly visible. The official history of the Czech Academy of Sciences stresses that, despite heavy ideological pressure until 1989, Czech science preserved creative energy in a number of fields and maintained channels toward the world scientific community, although unevenly across disciplines and periods (*Czech Academy of Sciences, n.d.*). That judgement is especially important for the 1960s, because the decade revealed how much scientific work depended on professional networks, methodological competence, and international communication rather than on ideological discipline alone. The partial opening of scientific life therefore did not mean the disappearance of control; it meant that control became less mechanically Stalinist and more negotiated, selective, and unstable. The Academy's scientists began to move in the space between obedience and initiative, between official planning and real research, between Marxist vocabulary and disciplinary modernisation. In this sense, de-Stalinisation was not merely a political background to scientific development. It became one of the internal conditions under which Czechoslovak science could again ask what counted as knowledge, expertise, modernity, and intellectual responsibility.

The specific Czechoslovak path of de-Stalinisation was slower and more hesitant than in several other socialist countries. After Stalin's death and Khrushchev's denunciation of Stalinist crimes, Czechoslovakia did not immediately enter a broad liberalising movement. The political leadership under Antonín Novotný remained comparatively conservative, and the regime preferred limited adjustments to open revision of its own recent past. This mattered deeply for science, because the most damaging Stalinist practices in academic life had not been confined to slogans or ritual declarations. They had affected appointments, ideological vetting, disciplinary hierarchies, university curricula, publishing opportunities, and the legitimacy of whole fields of inquiry. In the early 1950s, the party-state had treated science as a planned sector of socialist construction, yet it had also insisted that scientific interpretation submit to Marxism-Leninism as a supposedly superior epistemological framework. By the early 1960s, this arrangement was increasingly difficult to sustain in its most rigid form. Economic stagnation, technological competition, the need for innovation, and the growing prestige of expert knowledge forced the leadership to rely on specialists whom it could not fully replace by loyal functionaries. The result was a paradox typical of late post-Stalinism: the regime still

feared autonomous intellectual life, but it also needed the very expertise that autonomous intellectual life produced. Galia Golan's classic interpretation of the reform movement rightly locates the decisive acceleration of Czechoslovak de-Stalinisation after the 12th Congress of the Communist Party of Czechoslovakia in December 1962, when reform pressures began to move more visibly through the party and society (*Golan, 1971*). For the Academy, this meant that the political atmosphere of the 1960s was not simply imposed from above; it was also shaped from below by professional groups that had practical reasons to demand competence, debate, and contact with international scholarship.

The partial opening of scientific life was therefore inseparable from a broader crisis of Stalinist governance. In the 1950s, the state had attempted to govern research through a combination of central planning, ideological supervision, and institutional concentration. The Czechoslovak Academy of Sciences, founded in 1952, embodied this model because it absorbed research facilities that had previously belonged to older learned societies, specialised institutes, or the Ministry of Education, Sciences and Arts (*Czech Academy of Sciences, n.d.*). This made the Academy the privileged centre of non-university research, but it also placed it under a heavy burden of political expectation. It had to prove that socialist science was superior, that centralised research planning could generate rapid progress, and that Marxist-Leninist guidance could unify the natural sciences, humanities, and social sciences. By the 1960s, each of these assumptions required qualification. The natural sciences needed international instrumentation, literature, standards, and conference exchange. The humanities could not develop convincingly while being separated from archival complexity, linguistic plurality, and historical debate. The social sciences were expected to serve socialism, yet they increasingly revealed the internal contradictions of the socialist economy, administration, and political culture. This tension did not destroy the Academy; on the contrary, it made the Academy more important. It became a place where the socialist state sought solutions to its own problems, sometimes without recognising that genuine solutions required more intellectual freedom than the system wished to allow. The partial opening of the 1960s thus began as a controlled correction of Stalinism, but it gradually became an arena in which the meaning of socialist modernity itself was contested.

One of the most important features of this period was the distinction between institutional liberalisation and intellectual liberalisation. Institutional liberalisation remained limited, because the Academy continued to operate within the party-state, its leadership was politically monitored, and its research plans were connected to national priorities. Intellectual liberalisation, however, could move more flexibly within laboratories, seminars, editorial projects, expert commissions, and international correspondence. A research institute could formally speak the language of socialist planning while internally adopting more modern methods, reading Western literature, or re-establishing contact with pre-war disciplinary traditions. This did not make the Academy politically free, but it allowed certain fields to breathe. In chemistry, physics, mathematics, biology, geology, and parts of engineering, ideological criteria were often less directly invasive than in philosophy, history, law, economics, sociology, and literary studies. Yet even in the natural sciences, freedom was not absolute, because international travel, equipment imports, publication strategies, and institutional promotion remained politically mediated. The Academy's formal autonomy compared with the universities also mattered. The Czech Academy's historical overview notes that the Czechoslovak Academy of Sciences retained at least a greater formal degree of decision-making autonomy than the fully Sovietised universities and could sometimes provide

refuge for scholars expelled from university life, including figures such as Václav Černý, Jan Patočka, and Otto Wichterle (*Czech Academy of Sciences, n.d.*). This did not mean that the Academy was outside the regime. It meant that its internal complexity created pockets of protection, especially when scientific reputation, international recognition, or technical usefulness gave a scholar or institute bargaining power. In the 1960s, such pockets became more numerous, and their very existence helped reshape the intellectual climate of Czechoslovak science.

The change of leadership in the Academy symbolised this transition. Zdeněk Nejedlý had embodied the ideological and cultural profile of the early communist period, with its fusion of national cultural rhetoric, Marxist orthodoxy, and political loyalty. The rise of František Šorm to the presidency of the Czechoslovak Academy of Sciences in the early 1960s marked a different emphasis. Šorm was not merely an administrator of science; he was an internationally recognised chemist and a figure whose authority was connected to research achievement. The recent collective history of the Academy's 1963–1970 period explicitly treats the years of Šorm's leadership as central to the history of the institution and describes the 1960s as a time of easing political conditions, growth of civil society, increasing openness to Western impulses, and, for many disciplines, a golden era of development (*Franc, Dvořáčková, et al., 2024*). This formulation is valuable because it avoids reducing the decade either to repression or to romanticised freedom. Šorm's Academy did not abolish ideological supervision, but it strengthened the prestige of professional science within the institutional hierarchy. The head of the Academy now represented not only a political-cultural line but also the claim that Czechoslovak research could compete internationally. This mattered for the internal morale of institutes. It also mattered for negotiations with the state, because scientific excellence could be used as an argument for resources, travel, equipment, and professional discretion. Under these conditions, de-Stalinisation acquired a practical meaning: it meant that expertise could sometimes speak with greater authority than ideological ritual.

The opening of scientific life should also be understood through the everyday practices of research. De-Stalinisation was not experienced only through party congresses, public speeches, or changes in censorship policy. It was experienced when a scholar could cite a Western article without immediate suspicion, when an institute library could acquire foreign journals more regularly, when a young researcher could attend a conference, when an editor could publish a more methodologically sophisticated study, or when an interdisciplinary seminar could ask questions that previously would have been denounced as revisionist. Such changes were uneven and fragile, but they accumulated. They also produced a new generational atmosphere. Younger scientists who had been trained after 1948 often did not wish simply to restore the pre-communist academic world; they wanted to modernise socialism, science, and society through expertise. This is one reason why the Czechoslovak reform movement cannot be understood only as a return to liberal democracy from beneath a communist crust. In many academic circles, especially in the Academy's social-scientific and philosophical environment, reform began as an attempt to make socialism rational, humane, scientifically informed, and technologically modern. That aspiration carried internal contradictions, but it also generated serious work. The Academy became a site where the language of socialism and the language of modern scientific civilisation temporarily overlapped. The partial opening of the 1960s therefore had its own positive programme, not merely a negative desire to remove censorship or fear. It sought to redefine the relationship between knowledge and governance.

Economic debate was one of the clearest examples of the new status of expertise. By the early 1960s, Czechoslovakia faced serious economic problems, and the command-administrative model no longer promised convincing growth. The leadership was forced to listen to economists who argued for reforms of planning, incentives, enterprise responsibility, and the relationship between plan and market. Jiří Kosta's analysis of the Czechoslovak economic reform identifies the Economic Institute of the Czechoslovak Academy of Sciences, headed from early 1962 by Ota Šik, as a crucial centre where critical economic proposals were articulated (*Kosta, 1989*). This is essential for understanding the Academy's place in de-Stalinisation. The Academy was not only a passive beneficiary of political softening; in some fields, it became an intellectual workshop of reform. Economists could not openly reject socialism as a system, but they could criticise bureaucratic centralism, irrational indicators, weak innovation, and the absence of meaningful enterprise motivation. Such criticism was politically risky because it touched the practical legitimacy of the regime. Yet it was also needed by the regime because economic stagnation could not be solved by slogans. The Academy's economists therefore occupied a delicate position: they were experts inside socialism, but their expertise pushed socialism toward internal revision. Their work showed that scientific life opened partly because the state's own problems required analytical tools that Stalinist dogma could not provide.

The revival of sociology offers another important example. Sociology had been ideologically marginalised after 1948, when it was often treated as a bourgeois discipline incompatible with Marxist historical materialism. In the 1960s, however, the need to understand modern society, urbanisation, work, youth, public opinion, social stratification, and the everyday effects of socialist transformation made sociological inquiry newly relevant. Czech sociology did not simply reappear as a neutral academic field; it returned in a contested form, often under Marxist labels, but with growing methodological seriousness. Studies of Czech sociology emphasise that its revitalisation began in the mid-1960s, when the first Institute of Sociology was founded under the Czechoslovak Academy of Sciences and when sociological associations and university teaching began to recover (*Skovajsa, 2008*; *Illner, 2011*). This revival was one of the most important signs that the intellectual climate had changed. A regime confident in ideological formulas would not have needed empirical sociology; a regime facing complex social realities did. The Academy thus became a place where society could be studied not only as an object of propaganda but as a differentiated, measurable, changing organism. That change was not innocent, because social research could still serve planning and control. Yet once empirical methods entered public and academic life, they also made possible more critical forms of knowledge. The very act of asking how people lived, worked, believed, consumed, or judged institutions could undermine the official image of a harmoniously unified socialist society.

The humanities and philosophical disciplines also felt the effects of the thaw, although their path was more politically exposed. Historical writing, literary scholarship, philosophy, law, and cultural studies were entangled with questions of legitimacy, memory, national tradition, and political responsibility. De-Stalinisation encouraged a partial return to complexity. Scholars could more cautiously revisit interwar intellectual traditions, the democratic heritage of Czechoslovakia, the cultural importance of previously marginalised authors, and the problem of Stalinist distortion in historiography and literary criticism. The rehabilitation of certain names and questions did not amount to full scholarly freedom, but it weakened the monopoly of schematic Marxist-Leninist interpretation. In intellectual culture more broadly, the Kafka

conference at Liblice in 1963 became an emblem of a new atmosphere, because it suggested that a writer previously condemned as decadent or alienated could be reinterpreted as central to modern European experience. The significance of such events for the Academy was indirect but real. They showed that the language of culture, philosophy, and history could no longer be entirely policed by the old Stalinist vocabulary. Once this happened, academic disciplines gained room to recover their own standards of argument. The Academy's institutes were not isolated from this cultural movement; many of their scholars participated in the same networks of journals, conferences, and debates. The partial opening of scientific life therefore extended beyond laboratories into a broader republic of interpretation, in which the past and present could be discussed with increasing seriousness.

The natural sciences experienced the opening differently. Their development depended less on the public rehabilitation of forbidden authors and more on instruments, laboratories, international comparison, and the ability to publish and travel. In these fields, the Academy's 1960s dynamism was closely connected with the success of institutes whose work could demonstrate measurable achievement. Chemistry, macromolecular science, physical chemistry, polarography, experimental biology, geology, mathematics, and parts of technical research benefited from the combination of state investment and professional ambition. The Institute of Macromolecular Chemistry is a particularly telling example. Its own institutional history records that it was established within the Czechoslovak Academy of Sciences in 1959, that Otto Wichterle was its first director, that its new building was completed in 1963, and that it deliberately balanced polymer chemistry, polymer physics, basic research, and applied implementation (*Institute of Macromolecular Chemistry, n.d.*). The same account links the Institute's international profile to Prague's IUPAC symposia and to the development of hydrophilic polymers that led to soft contact lenses in the 1960s (*Institute of Macromolecular Chemistry, n.d.*). Such cases reveal why the opening of scientific life had a material dimension. Science could not become internationally credible while remaining sealed within national ideological boundaries. The partial thaw made it easier, though still never simple, to connect laboratories to international disciplinary communities. It also showed that applied invention and basic research were not opposites but mutually reinforcing elements of institutional prestige.

International scientific communication became one of the most visible indicators of de-Stalinisation. During the most rigid Stalinist years, contact with Western science was burdened by suspicion, censorship, and administrative obstacles. In the 1960s, the situation changed, although it never became fully open. Scholars could increasingly attend selected conferences, receive foreign guests, publish in foreign languages, and participate in international organisations. Riikka Nisonen-Trnka has described scientific cooperation with the West as one of the most important embodiments, and also one of the great paradoxes, of Czechoslovak liberalisation (*Nisonen-Trnka, 2008*). The paradox lay in the fact that the socialist state wanted international recognition and technological modernisation, but feared ideological contamination and political independence. For the Academy, this paradox was an everyday institutional reality. A successful institute needed Western journals, citations, equipment, and conferences, yet each of these could become politically sensitive. Internationalisation therefore expanded the horizons of Czechoslovak science while reminding scientists that their movement remained conditional. It also produced new standards of comparison. Researchers who saw Western laboratories, editorial practices, grant systems, and disciplinary debates

could no longer accept provincial isolation as normal. This did not automatically make them anti-socialist, but it made them less tolerant of bureaucratic obstruction.

The partial opening also affected the internal hierarchy of disciplines. In the Stalinist model, ideological sciences had claimed a guiding role because Marxism-Leninism was supposed to provide the general worldview for all knowledge. In practice, however, the 1960s strengthened disciplines that could produce specialised expertise. Economists, sociologists, demographers, legal scholars, philosophers of science, systems analysts, chemists, physicists, and biologists all gained new significance because their work addressed problems that could not be solved through ideological declarations. The rise of expertise did not abolish ideology, but it shifted the balance. Ideology increasingly had to present itself as scientifically informed, historically nuanced, economically rational, or technologically modern. This shift was one reason why reformist Marxism became influential among Czechoslovak intellectuals. It allowed scholars to criticise Stalinism without necessarily abandoning socialism. It also gave them a language in which scientific renewal and political reform could be connected. The Academy was well positioned for this transformation because it contained both natural-scientific institutes and social-scientific centres of reform thought. Its institutional diversity made it a miniature map of the broader Czechoslovak search for a post-Stalinist order. In that search, science was not merely a professional activity. It became a model of rationality that reformers hoped could replace arbitrary command.

Radovan Richta and his interdisciplinary team represent one of the most characteristic expressions of this intellectual atmosphere. Their work on the scientific and technological revolution connected philosophy, sociology, economics, technology, and political imagination. *Civilization at the Crossroads* became internationally known because it framed technological change not simply as a matter of production, but as a transformation of social and human conditions (*Richta, 1966/1969*). Later bibliographical and historical accounts identify the project as a major product of Richta's team and as a distinctive Czechoslovak contribution to debates on science, technology, and modern civilisation (*Sommer, 2017*). For the Academy, this kind of work was important because it showed how far the intellectual horizon had moved beyond Stalinist formulae. The question was no longer only how science could serve socialism in a narrow industrial sense. It was how scientific and technological change altered work, culture, education, social structure, and human self-understanding. That question could be asked within Marxist language, but it opened into much wider philosophical territory. It also resonated with the broader reform vocabulary that would later be associated with "socialism with a human face". The Academy thus became one of the places where the future could be imagined not only as greater production, but as a different relationship between knowledge, labour, and human development. This was a decisive sign of methodological and intellectual renewal.

However, the opening of scientific life remained partial because the political system never accepted the principle of independent intellectual authority. The party could tolerate expert debate when it promised useful solutions, but it became suspicious when expertise implied criticism of political monopoly. This contradiction was present throughout the decade. An economist could argue for decentralisation, but only within the limits of socialist planning. A sociologist could study social differentiation, but not in a way that openly delegitimised the ruling party. A historian could revise Stalinist distortions, but not freely examine the foundations of the communist seizure of power. A philosopher could criticise dogmatism, but not deny the official leading role of Marxism-Leninism. A natural scientist could pursue

international cooperation, but not travel or correspond entirely on professional grounds alone. The result was a culture of cautious speech, coded argument, and strategic framing. Scientists learned to advance real research questions while placing them inside acceptable language. This gave the period much of its distinctive tone: energetic, inventive, and intellectually ambitious, yet also careful, indirect, and vulnerable. The Academy's partial autonomy therefore did not eliminate political pressure. It created a space in which pressure could be negotiated, resisted, or temporarily bypassed by professional authority.

The legal and administrative structure of the Academy also helped make this partial opening possible. Compared with universities, which had been deeply transformed after the Higher Education Act of 1950, the Academy's institute-based structure allowed for more concentrated research communities. Institutes could build specialised libraries, long-term projects, technical staff, experimental facilities, and editorial series. The Archives of the Czechoslovak Academy of Sciences, established in 1953 and later renamed the Central Archive of the CSAS in 1966, formed part of this broader institutional infrastructure (*Masaryk Institute and Archives of the CAS, n.d.*). Such developments may appear administrative, but they were intellectually important. Archives, bibliographies, collections, and research documentation preserve the continuity of scholarly work even under political pressure. They make it possible for science to outlast ideological campaigns. In the 1960s, the strengthening of institutional memory also supported the return of more serious historical and disciplinary self-reflection. Scholars could reconnect with older traditions of Czech and Czechoslovak research, not always openly and not always without distortion, but more effectively than before. The Academy's material and documentary infrastructure thus formed the quiet foundation of the thaw. Scientific life opened not only through speeches about reform, but through the rebuilding of the tools that allow knowledge to accumulate.

The relationship between the Academy and the state was consequently marked by mutual dependence. The state funded the Academy, appointed or approved its leadership, set priorities, and expected research to serve socialist construction. The Academy, however, supplied the state with prestige, expertise, innovation, and international legitimacy. This gave leading scientists a limited but real bargaining position. They could argue that excessive ideological interference damaged productivity, international reputation, and technological progress. They could also show that successful research required stable teams, long-term planning, foreign literature, and scientific evaluation by peers rather than by political administrators alone. Such arguments did not turn the Academy into an autonomous university of the Western type. Yet they helped shift the language of governance. By the mid-1960s, it became harder to defend crude ideological intervention in every field, because doing so would make the state appear backward precisely in the domains where it claimed modernity. The Academy benefited from this contradiction. Its scientists did not always need to attack political control directly. They could undermine it indirectly by demonstrating that competence required trust. The partial opening of scientific life was therefore also a professionalisation of institutional argument.

The broader cultural atmosphere of the 1960s intensified these processes. Writers, filmmakers, theatre directors, journalists, economists, philosophers, and students all contributed to a public climate in which inherited formulas lost authority. Britannica's account of the Prague Spring's background notes that by the early 1960s Novotný faced economic difficulties, reformist pressure from economists, Slovak demands, student unrest, and growing cultural dissatisfaction, especially among writers (*Encyclopaedia Britannica, 2026*). The

Academy was not identical with these public movements, but it was connected to them through people, journals, lectures, expert commissions, and informal networks. Scientific life does not develop in isolation from the moral temperature of society. When censorship softens, libraries change. When writers challenge dogmatism, historians and philosophers listen. When students demand better living conditions and more dignity, sociologists and economists gain new questions. When economic crisis becomes undeniable, mathematical models, empirical surveys, and policy analysis acquire political significance. Thus, the Academy's opening was part of a wider social opening, but it had its own institutional rhythm. It translated cultural restlessness into research problems and reform proposals. In this translation, academic life helped turn dissatisfaction into argument.

The Czechoslovak case was distinctive because de-Stalinisation did not simply liberalise science; it also nationalised reform in a particular way. The reform movement increasingly drew on Czech and Slovak historical experiences, democratic memories, interwar intellectual traditions, and the specific problems of a highly industrialised society inside the Soviet bloc. The Academy reflected this specificity. It was not merely importing Soviet post-Stalinist revision or Western scientific fashion. It was trying, within limits, to create a Czechoslovak language of modern socialist expertise. This is why the Academy's 1960s development cannot be reduced to imitation. Its chemists, economists, sociologists, philosophers, historians, and technologists were responding to local institutional histories and practical pressures. The older tradition of Czech learned societies, the interwar memory of international scientific participation, the traumatic break of 1948, and the Stalinist reorganisation of the early 1950s all shaped the form of the thaw. De-Stalinisation therefore had a restorative dimension, but also a creative one. It restored some professional standards, but it also generated new research agendas linked to technology, planning, social change, and reform socialism. The Academy became one of the few institutions capable of holding these different temporal layers together. It carried pre-communist scholarly memory, Stalinist institutional form, post-Stalinist reform energy, and international scientific ambition in one complicated body.

One should not exaggerate the coherence of the opening. The Academy was not a united reform camp, and its institutes did not experience the decade in the same way. Some researchers were genuinely committed Marxist reformers. Others were cautious professionals who wanted less interference but avoided politics. Some functionaries adapted to the new language without abandoning old habits of control. Some disciplines were dynamic; others remained provincial or ideologically stiff. Natural scientists often pursued international recognition with limited interest in political reform, while social scientists and humanists were more directly drawn into debates about public life. Generational differences also mattered. Senior scholars who had survived purges, exclusions, or ideological humiliations often approached the thaw with caution. Younger researchers, formed within socialism but dissatisfied with its dogmatism, could be more reformist and more impatient. These differences made the Academy internally plural. Its partial opening was not a single policy but a shifting field of opportunities, conflicts, and compromises. This pluralism was itself historically significant. It meant that the Academy was becoming less like a monolithic Stalinist institution and more like a complex scientific society under authoritarian conditions.

The partial opening of scientific life was also visible in publication culture. Journals, proceedings, monographs, translations, and conference volumes became instruments through which new ideas circulated. The Academy's publishing activity could still be controlled, but it could also introduce concepts that widened intellectual horizons. Scientific

language is often less dramatic than political rhetoric, yet it can be more durable. When an institute publishes a methodological debate, a translation of a Western theory, a collective study on technological change, or an empirical report on social structure, it changes what can be thought within a discipline. In the 1960s, such changes accumulated across fields. The influence of foreign literature did not always appear as direct citation, because political caution and translation delays shaped reception. Nevertheless, concepts from cybernetics, systems theory, structural linguistics, modern sociology, mathematical economics, and philosophy of science entered the Czechoslovak academic environment more visibly than before. Some of these concepts had been ideologically suspect in earlier years. Their partial rehabilitation marked a genuine methodological shift. The opening of scientific life was therefore not only institutional or political; it was semantic. New terms gave scholars new possibilities of seeing their objects of study.

Cybernetics and systems thinking provide a useful example of this semantic change. In the Stalinist period, cybernetics had often been condemned in the Soviet bloc as a bourgeois pseudo-science. By the 1960s, it became increasingly useful for planning, automation, communication theory, biology, economics, and social analysis. Its rehabilitation symbolised the broader movement from ideological denunciation to selective appropriation of modern scientific methods. Czechoslovak researchers did not simply adopt cybernetics as a technical tool; they connected it with questions of control, information, organisation, and complex systems. These questions were relevant to the economy, to state administration, to technological development, and to philosophy. The Academy's interdisciplinary environment made it possible for such concepts to travel between fields. This did not make the Academy intellectually free in a liberal sense, but it did make it more methodologically modern. The shift from dogmatic rejection to expert adaptation was one of the practical faces of de-Stalinisation. It revealed that Stalinist epistemology had become too narrow for a technologically ambitious state. Once the state accepted that it needed modern methods, it had to tolerate some degree of intellectual openness. That tolerance remained conditional, but it created real scholarly consequences.

The opening was also linked to changing ideas of scientific planning. In the 1950s, planning had often meant administrative allocation, ideological priority-setting, and quantitative targets. By the 1960s, many scientists and reform-minded administrators recognised that research could not be planned like simple industrial output. Discovery required uncertainty, peer judgement, international awareness, and flexibility. This realisation did not abolish planning, but it changed debates about planning. The Academy began to confront questions that would become central in later discussions: how to evaluate research quality, how to balance basic and applied research, how to organise interdisciplinary teams, how to avoid duplication, how to support promising young scholars, and how to connect scientific institutes with industry without reducing them to service offices. These questions appear technical, but in the Czechoslovak context they had political meaning. They challenged the assumption that central command could know in advance what science should produce. They also strengthened the case for professional autonomy. The partial opening of scientific life therefore emerged not only from ideological thaw but from the internal logic of research itself. Science demanded forms of governance that Stalinism could not provide. The Academy became the arena where this demand was most visible.

At the same time, de-Stalinisation remained morally incomplete. The victims of earlier ideological campaigns were not always fully rehabilitated. Careers damaged in the 1950s

could not simply be restored. Entire disciplines had lost continuity, and younger scholars often had to rebuild them with limited access to older teachers. The political language of the 1960s allowed criticism of "dogmatism" and "cult of personality", but it did not always permit direct examination of institutional responsibility. This limitation affected the Academy as well. Its own Stalinist past could not be openly analysed with full archival honesty while the Communist Party still monopolised power. Thus, the thaw created both memory and amnesia. It allowed some names, ideas, and methods to return, but it often avoided the deeper question of how academic institutions had participated in exclusion, conformity, or ideological violence. This moral incompleteness helps explain the fragility of the opening. A scientific community that has not fully examined the mechanisms of its own deformation remains vulnerable to renewed pressure. The events after 1968 would prove this with brutal clarity. Yet in the early and mid-1960s, many scholars understandably focused less on retrospective justice than on immediate possibilities for research, publication, and institutional renewal.

The Academy's partial opening also had a Slovak dimension. The Slovak Academy of Sciences was formally an autonomous part of the overarching Czechoslovak Academy structure, and relations between Czech and Slovak academic institutions reflected broader debates about federalisation, equality, and national representation (*Czech Academy of Sciences, n.d.*). In the 1960s, the Slovak question became increasingly important in Czechoslovak politics, and academic life could not remain untouched by it. Scientific institutions were involved in questions of regional development, language, cultural history, economic planning, and institutional competence. The relationship between the Slovak and Czechoslovak academies included both cooperation and tension, especially as centralising tendencies encountered demands for greater recognition of Slovak autonomy. This added another layer to de-Stalinisation. The opening of scientific life was not only a matter of liberalising Czech intellectual culture in Prague. It was also connected with rethinking the internal structure of the Czechoslovak state and the distribution of scientific authority between its national components. In this respect, the Academy mirrored the constitutional and political questions that would become more explicit during the Prague Spring. Scientific autonomy and national autonomy were not identical, but they intersected within the institutional politics of the decade.

The partial opening of the 1960s also changed the public role of the scientist. Under high Stalinism, the ideal scientist was often presented as a builder of socialism, loyal to the party and devoted to socially useful production. In the 1960s, this image did not disappear, but it was supplemented by another image: the scientist as expert, critic, mediator, and public intellectual. Economists spoke about reform, sociologists about society, philosophers about technology and humanity, historians about memory, and natural scientists about modernisation. This expansion of the scientist's role created new authority but also new danger. The more scientists entered public debate, the more they exposed themselves to political retaliation. The Academy's prestige made its members and institutes influential, but it also made them visible. The regime could tolerate expert authority when it remained technical; it became alarmed when expertise turned into public judgement. In the mid-1960s, however, the boundary between technical and public questions was increasingly difficult to maintain. Economic reform, technological development, education, social research, and cultural policy all required public discussion. The scientist could no longer remain only a laboratory worker or archival specialist. The partial opening of scientific life therefore also produced a new civic identity of knowledge.

This civic identity was still cautious before 1968. The Academy did not become an opposition institution in the early 1960s, and most of its reformist energy remained inside socialist legality. Yet the language of responsibility gradually expanded. Scholars could speak of rational administration, human development, scientific-technological revolution, social needs, cultural maturity, and international standards. Each of these phrases could be accommodated within official socialism, but each also carried a potential criticism of existing practice. This was the characteristic ambiguity of the decade. The regime wanted modern science, but modern science required openness. The regime wanted experts, but experts required judgement. The regime wanted international prestige, but international prestige required contact with intellectual worlds beyond the socialist camp. The regime wanted reform, but reform required criticism. In the Academy, these contradictions were lived as daily institutional practice. Scientists did not always formulate them politically, yet their work made them visible. This is why the Academy would later play such an important role in the reform atmosphere of 1968. The foundations of that role were laid earlier, in the slower and less dramatic opening of scientific life after 1962.

The limits of this opening must be emphasised precisely because the achievements were real. Censorship, party supervision, travel restrictions, cadre policy, ideological reporting, and security surveillance did not disappear. Scholars remained aware that careers could be damaged by political judgement. Foreign contacts could be interpreted suspiciously. Research topics could be discouraged or redirected. Public criticism could still provoke sanctions. The difference from the 1950s was not that fear vanished, but that fear no longer organised every intellectual gesture with the same intensity. The space of possible action widened. Within that wider space, individual courage, institutional protection, disciplinary prestige, and international recognition mattered greatly. Some institutes used the opening boldly; others moved cautiously. Some scholars became reformers; others remained technicians of knowledge. The Academy as a whole became more dynamic because enough of its members recognised that the old model was intellectually exhausted. Partial freedom, though unstable, proved sufficient to generate significant renewal.

By the end of the mid-1960s, the Czechoslovak Academy of Sciences had therefore become one of the central institutional sites of post-Stalinist transformation. It was not outside the socialist state, but it was no longer merely a passive instrument of Stalinist science policy. Its institutes participated in economic reform, sociological revival, technological forecasting, international natural-scientific cooperation, and the gradual rehabilitation of methodological pluralism. The official contemporary remembrance of the Academy's 1963–1970 history describes the decade as one of political relaxation, civil-society development, openness to Western impulses, and disciplinary flourishing (*Franc, Dvořáčková, et al., 2024*). That description should be read with the necessary historical caution: the flourishing was real, but so were the controls; the openness was meaningful, but never secure; the reformist horizon was expanding, but still bounded by the party-state. Precisely for this reason, the 1960s were so important. They showed that even a centrally controlled Academy could generate intellectual dynamism when professional standards, institutional memory, international communication, and social need began to press against ideological rigidity. They also showed that the future of Czechoslovak science depended on more than funding or organisation. It depended on whether knowledge could be trusted to ask inconvenient questions. That question would become unavoidable during the Prague Spring.

Thus, de-Stalinisation and the partial opening of scientific life in the Czechoslovak Academy of Sciences were neither a simple thaw nor a hidden revolution. They formed a gradual, contradictory, and deeply consequential transformation of the relationship between science, state, ideology, and society. The Academy remained inside the political order created after 1948, but its internal life increasingly exceeded the intellectual limits of that order. Research institutes demanded methodological competence, international exchange, professional evaluation, and a more flexible understanding of planning. Economists, sociologists, philosophers, natural scientists, historians, and technologists each contributed in different ways to the erosion of Stalinist rigidity. The result was a scientific culture that could still be disciplined from above, but no longer fully defined from above. Its partial freedoms were fragile, negotiated, and unevenly distributed, yet they were historically decisive because they prepared the intellectual and institutional ground for the reformist debates of the later 1960s. In this sense, the Academy's 1960s opening was not only an episode in the history of Czech and Czechoslovak science. It was one of the major laboratories of post-Stalinist modernity in Central Europe.

2. Methodological Renewal and Disciplinary Development

The methodological renewal of the Czechoslovak Academy of Sciences in the 1960s was not simply a matter of replacing one set of academic techniques with another. It was a deeper change in the very understanding of what scientific work could be under late socialist conditions. The Academy still remained a state institution, formally integrated into the political and ideological order created after 1948, but the intellectual climate of the 1960s allowed its researchers to test the limits of that order with increasing confidence. In many institutes, the older Stalinist expectation that all disciplines should be subordinated to a single ideological vocabulary began to lose practical credibility. Scientific disciplines required their own methods, instruments, languages, archives, laboratories, and international standards, and these could not be fully replaced by declarations about Marxism-Leninism. This did not mean that ideological language disappeared from reports, plans, introductions, or public speeches. It meant that the real centre of gravity in many fields began to move from ritualised orthodoxy towards professional competence. The Academy's own institutional development in the 1963–1970 period has been described as a phase of dynamic transformation, internal reform, greater openness to Western impulses, and, for many disciplines, a kind of golden age of development (*Franc, Dvořáčková, et al., 2025*). That description is especially relevant for methodological change, because the 1960s were marked not only by new topics but by new ways of asking questions. The Academy became a place where scientific modernity could be pursued inside a political system that still feared the full autonomy of thought. This contradiction made the decade unstable, but it also gave it an unusual intellectual intensity.

The first important aspect of methodological renewal was the gradual rehabilitation of disciplinary specificity. During the most rigid Stalinist years, many disciplines had been forced to justify themselves through ideological usefulness, whether as tools of socialist construction, instruments of class analysis, or confirmations of dialectical materialism. In the 1960s, this did not vanish entirely, but it became less sufficient. Chemistry could not advance without molecular models, laboratory experimentation, spectroscopy, polymer science, and international nomenclature. Sociology could not return as a credible discipline without empirical surveys, sampling techniques, comparative analysis, and theoretical debate.

Economics could not respond to stagnation without mathematical models, institutional analysis, and serious attention to incentives and enterprise behaviour. History could not regain scholarly authority without archival research, source criticism, and a more complex view of continuity and rupture. Linguistics, literary studies, philosophy of science, cybernetics, demography, and psychology each required methods that exceeded the older ideological template. In this sense, methodological renewal was inseparable from disciplinary development. A discipline developed when it recovered or created its own criteria of evidence, argument, verification, interpretation, and international comparability. The Academy's strength was that it gathered many such disciplines in one institutional framework. Its weakness was that this framework remained politically supervised. The methodological drama of the 1960s lay in the tension between these two facts.

The second aspect was the shift from doctrinal explanation to problem-oriented research. In the Stalinist model, scientific and scholarly problems were often expected to confirm conclusions already authorised by ideology. The 1960s encouraged a different intellectual movement: researchers increasingly began from problems that could not be reduced to ideological slogans. Why was the Czechoslovak economy slowing down despite industrial capacity? How should automation alter work, education, and management? What social groups and inequalities existed inside a supposedly class-harmonious socialist society? How did modern literature, historical memory, or philosophical anthropology express alienation, responsibility, and freedom? How could basic research be connected to technological innovation without destroying its creative independence? Such questions did not always appear in openly oppositional language, but they changed the relationship between science and politics. They implied that reality had to be investigated before it could be governed. This was a fundamental methodological change. It placed observation, modelling, experimentation, comparison, and interpretation ahead of ready-made doctrinal certainty. The Academy's institutes were particularly important because they could sustain longer research programmes than universities, which remained heavily burdened by teaching, ideological supervision, and cadre control. The institute model allowed research groups to pursue cumulative inquiry, and cumulative inquiry inevitably strengthened methodological self-consciousness.

Natural science played a central role in this transformation, not because it was free of politics, but because its standards were difficult to fake over the long term. An internationally visible chemist, physicist, biologist, or mathematician had to work in relation to global disciplinary communities, not only to national ideological expectations. The Academy's chemical institutes are a clear example. František Šorm's presidency of the Academy symbolised the prestige of experimental science and its capacity to speak with authority inside the socialist state. The rise of macromolecular chemistry, physical chemistry, biochemistry, and electrochemistry showed that Czechoslovak science could compete through laboratory achievement, not merely through institutional rhetoric. The Institute of Macromolecular Chemistry, established within the Academy in 1959, became one of the most visible centres of this transformation. Its history records that Otto Wichterle was its first director, that its building was completed in 1963, and that the Institute worked across polymer chemistry, polymer physics, basic research, and application (*Institute of Macromolecular Chemistry, n.d.*). This combination was methodologically significant because it refused a crude separation between pure and applied science. It also showed that innovation required a continuum from theoretical concept to material experiment, technological testing, industrial cooperation, and international

communication. The Institute's later reputation rested precisely on this capacity to hold together laboratory creativity and practical invention.

Macromolecular chemistry also demonstrates how disciplinary development could produce institutional internationalisation. Prague hosted important IUPAC International Symposia on Macromolecules in 1957, 1965, and 1992, and the Prague Meetings on Macromolecules began in 1967, becoming regular events known in the polymer community (*Institute of Macromolecular Chemistry, n.d.*). These facts matter not only as signs of prestige, but as evidence of methodological integration. Conferences are not ceremonial additions to science; they are mechanisms through which methods, standards, disputes, terminologies, and reputations circulate. A field becomes modern when it is not merely practised locally but tested internationally. The Institute's work on hydrophilic polymers and soft contact lenses likewise showed that methodological renewal included the movement from chemical synthesis to biomedical application. In this sense, Wichterle's environment represented a broader feature of the Academy in the 1960s: research groups could become laboratories of modernity. They connected socialist institutional support with global scientific circulation and applied invention. The regime could celebrate such achievements because they brought prestige, but the achievements themselves depended on forms of openness that the regime could not fully control. Methodological renewal thus became a quiet argument for professional autonomy. The better the science, the harder it became to defend crude ideological interference. This logic did not protect scientists completely, as Wichterle's later career would show, but it did strengthen the internal authority of disciplinary communities.

Electrochemistry and polarography provide another example of how the Academy inherited and transformed strong Czech scientific traditions. Jaroslav Heyrovský's discovery and development of polarography had already given Czech science international distinction, culminating in the Nobel Prize in Chemistry in 1959. The Institute of Polarography, founded in 1950 under Heyrovský's directorship, became part of the newly constituted Czechoslovak Academy of Sciences in 1952 (*J. Heyrovský Institute of Physical Chemistry, n.d.*). Its research focused not only on the theory of polarography but also on physicochemical processes, electrode phenomena, instrumentation, methodology, and analytical applications (*J. Heyrovský Institute of Physical Chemistry, n.d.*). Such an institute illustrates the institutionalisation of method itself. Polarography was not only a discovery; it became a scientific school, a set of instruments, a training environment, and a style of analytical reasoning. In the 1960s, when the Academy sought international recognition, traditions such as Heyrovský's gave Czechoslovak science a historical depth that could not be invented by political decree. They also connected pre-communist scientific culture with socialist institutional structures. This continuity complicates any simple narrative of rupture after 1948. The Academy's scientific development in the 1960s often depended on traditions older than the Academy itself. Methodological renewal was therefore partly a recovery of suppressed or administratively reorganised capacities.

Cybernetics, information theory, and automation marked a different kind of renewal because they introduced new conceptual languages across disciplinary boundaries. In the early Stalinist period, cybernetics had often been denounced in the Soviet bloc as ideologically suspect, but by the 1960s it had become too useful to ignore. Czechoslovakia's industrial economy, planning system, technical education, and scientific culture all needed concepts of feedback, control, information, modelling, and complex systems. The Institute of Information Theory and Automation was established on 1 January 1959 by merging the Laboratory for

Automation and Telemechanics with the Information Theory Department of the Institute of Radio Engineering and Electronics (*Institute of Information Theory and Automation, n.d.*). This institutional origin already reveals the hybrid character of the field. It stood between mathematics, engineering, communication, control theory, and applied technological systems. The journal *Kybernetika* was founded in 1964 through the initiative of a Professional Group of Cybernetics at the Czechoslovak Academy of Sciences, with its first issue appearing in January 1965 (*Kybernetika, 2024*). The founding of such a journal mattered because it provided a platform for methodological consolidation. A journal creates a field by selecting problems, naming standards, building readerships, and connecting local work to international debates. Cybernetics therefore became one of the emblematic disciplines of post-Stalinist scientific renewal. It transformed formerly suspicious concepts into instruments of socialist modernisation.

The methodological significance of cybernetics reached beyond engineering. It offered a way of thinking about society, administration, urban planning, economics, biology, communication, and even architecture as systems governed by information flows and feedback relations. This was attractive in a socialist context because it seemed to promise a more rational form of planning than bureaucratic command. It allowed reform-minded intellectuals to imagine that socialism could become self-correcting, data-informed, adaptive, and technologically sophisticated. At the same time, cybernetics also carried an implicit critique of rigid centralism. A system that cannot receive feedback cannot learn, and a state that suppresses information cannot govern rationally. This logic made cybernetics politically ambiguous. It could serve state planning, but it could also expose the irrationality of administrative secrecy and ideological dogmatism. For the Academy, this ambiguity was productive. Cybernetics helped develop interdisciplinary networks among mathematicians, engineers, economists, philosophers, and social scientists. It also encouraged a broader methodological vocabulary in which modelling, systems analysis, and information became central categories. The 1960s Academy was not simply borrowing Western techniques; it was integrating them into a socialist reform imagination. Yet this integration depended on the very openness to scientific exchange that had been restricted in the previous decade.

The social sciences underwent one of the most dramatic processes of disciplinary reconstruction. Sociology had been marginalised after 1948, partly because it was associated with bourgeois empiricism and partly because Marxist ideology claimed to possess a complete science of society. In the 1960s, however, the need to understand actual social processes became too pressing to be satisfied by ideological formulas. Urbanisation, youth culture, educational mobility, work organisation, public opinion, regional differences, family life, and social stratification required empirical study. Czech sociology began to revive through institutions, associations, teaching, research projects, and publications. The Institute of Sociology of the Czechoslovak Academy of Sciences was established in 1965, and this institutional moment is widely recognised as central to the restoration of sociology as a research discipline (*Skovajsa, 2008*; *Vaváková, 1983*). The Slovak Institute for Sociology of the Slovak Academy of Sciences was also established in 1965, demonstrating that the sociological revival had a wider Czechoslovak dimension (*Institute for Sociology of the Slovak Academy of Sciences, n.d.*). This revival was not merely organisational. It represented a methodological revolution because society became an object of empirical analysis rather than ideological assertion. The return of surveys, fieldwork, statistical reasoning, and comparative social theory changed the intellectual landscape of the Academy.

The re-emergence of sociology also altered the relationship between knowledge and public life. A sociological institute could not remain entirely neutral in a society where official discourse claimed that socialism had solved the basic contradictions of class society. Empirical research inevitably revealed differentiation, dissatisfaction, inequality, institutional mistrust, and the complexity of everyday life. This did not mean that sociologists in the 1960s simply became anti-regime critics. Many worked within the language of socialist reform and hoped that better knowledge could make socialist society more rational and humane. Yet the method itself had critical potential. Once one asks people what they think, how they live, how institutions affect them, and how opportunities are distributed, one weakens the monopoly of official self-description. The Academy's sociological revival therefore embodied the central ambiguity of the 1960s. It served planning and reform, but it also made society more visible to itself. Methodologically, this meant the return of empirical humility. The scholar could no longer pretend that theory alone exhausted reality. Data, interviews, surveys, and comparative interpretation became tools through which the official image of society could be questioned. In this sense, sociology was not only a discipline; it was a practice of controlled but real social self-observation.

Economics followed a related but distinct path. The economic difficulties of the early 1960s created strong pressure for analytical renewal. The command-administrative model had produced industrial growth in earlier periods, but it was poorly suited to innovation, quality improvement, enterprise initiative, and complex technological development. Economists associated with reform debates therefore began to examine planning, incentives, market mechanisms, price formation, management, and institutional efficiency with greater methodological seriousness. The Economic Institute of the Czechoslovak Academy of Sciences became a significant centre of this discussion, especially under Ota Šik's influence after the early 1960s (*Kosta, 1989*). Methodologically, the important shift was from ideological political economy to reform-oriented economic analysis. This analysis did not necessarily abandon socialism, but it questioned the administrative mechanisms through which socialism had been organised. It introduced a more differentiated view of enterprises, decision-making, information, and motivation. It also drew on comparative knowledge of other economic systems, including Yugoslav, Soviet, and Western debates. The Academy gave such work an institutional base and a degree of intellectual protection. Economic reform was therefore not only a political programme of the Prague Spring period. It was rooted in earlier methodological changes within research institutes. The discipline developed because it was forced to confront the failure of inherited explanatory schemes.

Philosophy, especially philosophy of science and philosophical anthropology, also experienced renewal. Under Stalinism, philosophy had often been reduced to guardianship of ideological orthodoxy. In the 1960s, it increasingly became a field where questions of technology, humanity, alienation, scientific rationality, and social transformation could be discussed. The work associated with Radovan Richta and his interdisciplinary team was central to this transformation. *Civilization at the Crossroads* presented the scientific and technological revolution as a process with social and human implications, not merely as an accumulation of machines or discoveries (*Richta, 1969*). Routledge's description of the English edition notes that a systematic examination of these problems was undertaken in Czechoslovakia in 1965 by a research team from various branches of science, and that the volume sought to draw a synthetic picture of the scientific and technological revolution against the background of socialism and capitalism (*Richta, 1969*). This is methodologically important

because it shows the Academy's movement toward interdisciplinarity. Philosophy was no longer only the discipline that justified ideology. It became a space for synthesising economics, sociology, technology, education, labour theory, and cultural anthropology. Richta's project therefore expressed both the promise and the limits of reform socialism. It tried to think through modernity scientifically while still remaining within a socialist horizon.

Interdisciplinarity itself was one of the most important methodological features of the decade. The Academy's institute structure could sometimes encourage specialisation, but the problems of the 1960s increasingly demanded crossing disciplinary borders. The scientific and technological revolution could not be understood by engineers alone. Economic reform could not be designed without sociology, management theory, mathematics, and political judgement. Educational reform required psychology, sociology, demography, philosophy, and labour-market analysis. Environmental and regional questions required geography, geology, biology, economics, and public administration. The Academy's collective projects therefore often became methodological experiments in cooperation. This did not always work smoothly. Disciplines had different languages, standards, and institutional interests. Yet the very attempt to build interdisciplinary teams signalled a departure from earlier forms of ideological unity. Stalinist unity had been imposed from above by doctrine. The new unity was supposed to arise from the complexity of problems themselves. This difference was decisive. It made scientific cooperation less declarative and more analytical. It also allowed the Academy to position itself as a national centre of expertise for issues that exceeded the capacity of single ministries or university departments.

The humanities developed under more difficult conditions because their objects of study were closer to political legitimacy, national memory, and cultural identity. Nevertheless, the 1960s brought important methodological movement in history, literary scholarship, linguistics, art history, archaeology, ethnography, and philosophy. Historians increasingly sought more nuanced interpretations of modern Czech and Czechoslovak history, even though the political limits of inquiry remained visible. Literary scholars engaged more seriously with modernism, structuralism, semiotics, exile, and the previously marginalised complexity of 20th-century culture. Linguistics benefited from older Prague School traditions, which had never entirely lost their international relevance despite institutional disruption. Archaeology and ethnography could connect fieldwork, material culture, and long-term historical interpretation. The Academy's institutes in these fields carried a double burden. They had to renew scholarly method while avoiding direct collision with ideological boundaries. This produced a characteristic style of cautious sophistication. Arguments were often framed in terms acceptable to socialist discourse, but the research itself became richer, more archival, more comparative, and more theoretically aware. The humanities therefore contributed to the broader intellectual opening by restoring complexity. They taught the Academy that culture and history could not be reduced to schematic laws.

The Institute of History offers an instructive case of this ambivalence. Its institutional history notes that the institute became part of the Czechoslovak Academy of Sciences in 1952 and that, after the Prague Spring, it was renamed and seriously undermined by forced resignations or even imprisonment of some leading experts, including František Šmahel and Jaroslav Mezník (*Institute of History of the CAS, n.d.*). Although this later repression belongs more directly to the post-1968 period, it reveals the stakes of methodological renewal in the 1960s. Historical scholarship was not politically harmless. A historian who insisted on source criticism, plurality of interpretation, and the complexity of Czech and European history could challenge official

narratives even without explicit political opposition. The renewal of historical method therefore carried risks that were less visible in chemistry or mathematics. Yet it was precisely in the humanities that the moral meaning of de-Stalinisation became most acute. To write history better was also to resist the simplifications through which power justified itself. The Academy's historical institutes thus became places where scholarly standards and political boundaries confronted one another. The later punishment of historians demonstrates that the regime understood this confrontation very well.

The development of disciplinary communities also depended on publication infrastructure. Journals, monographs, conference proceedings, collective volumes, bibliographies, translations, and institute reports were essential instruments of renewal. The founding of *Kybernetika* in the mid-1960s is one example, but the pattern was broader. A discipline grows when it can publish arguments, receive criticism, train younger scholars, and accumulate debates. Publication also allowed Czech and Slovak researchers to reconnect with international science. In some fields, this occurred through foreign-language articles in journals abroad. In others, it happened through translations, reviews, and domestic discussions of foreign literature. The Publishing House of the Czechoslovak Academy of Sciences played a significant role in this ecosystem. Publication was still subject to censorship and ideological review, but the range of publishable material widened. Methodological texts, theoretical debates, and empirical studies could circulate with fewer obstacles than in the early 1950s. This created a new intellectual rhythm inside the Academy. Scholars could read one another, argue across institutes, and build reputations through work rather than only through political status. The methodological renewal of the 1960s therefore had a textual foundation as well as an institutional one.

International literature became a particularly important channel of change. Access to Western journals, books, and conferences remained uneven, but it increased sufficiently to reshape research horizons. In the natural sciences, this was indispensable because international knowledge moved quickly and experimental standards could not be developed in isolation. In the social sciences and humanities, foreign literature carried theoretical and methodological alternatives: structuralism, systems theory, empirical sociology, mathematical economics, philosophy of science, modern historiography, and new approaches to literature and language. The Academy's scholars did not simply imitate Western models. They read them through Czechoslovak problems, socialist vocabulary, and local disciplinary traditions. This selective reception was one of the creative features of the decade. It produced hybrid forms of analysis: Marxist but empirical, socialist but cybernetic, nationally rooted but internationally informed, reformist but professionally specialised. Such hybridity can appear inconsistent from a later perspective, but it was historically productive. It allowed scholars to move beyond Stalinism without necessarily abandoning the hope of socialist renewal. It also protected certain innovations by translating them into acceptable language. Methodological renewal therefore often proceeded through adaptation rather than open rupture.

The Academy's disciplinary development was also shaped by generational change. Older scholars who had been trained before 1948 carried memories of interwar academic standards, European contacts, and pre-Stalinist disciplinary cultures. Some had suffered exclusion or marginalisation; others had adapted to the new order. Younger researchers trained in the 1950s and early 1960s had different experiences. They often knew socialism as the only institutional environment of their adult professional life, yet they were increasingly dissatisfied with its dogmatism and provincialism. For them, methodological renewal could mean not

restoration but modernisation. They were drawn to cybernetics, mathematical modelling, empirical research, structural analysis, molecular science, and interdisciplinary work because these appeared future-oriented. The Academy became a meeting place between memory and ambition. The older generation could transmit scholarly seriousness, while the younger generation brought methodological curiosity and a stronger desire for international relevance. This intergenerational combination was not always harmonious. Conflicts over authority, ideology, and institutional advancement persisted. Yet the development of scientific schools depended on such continuity. A discipline cannot be renewed only by administrative decree; it needs teachers, pupils, laboratories, seminars, and shared habits of criticism.

The question of evaluation became increasingly important as disciplines developed. In the Stalinist period, political reliability and fulfilment of planned tasks could dominate institutional judgement. In the 1960s, the rise of professional standards made such evaluation less defensible. Scientists wanted their work to be assessed by peers, international reception, originality, methodological rigour, and real contribution to knowledge. This demand was especially strong in fields where international comparison was unavoidable. A chemical discovery, mathematical theorem, archaeological interpretation, sociological survey, or economic model had to be judged by standards internal to the field. The Academy's leadership could not fully replace political supervision with peer review, but the language of scientific quality gained strength. This was a methodological development because evaluation shapes research behaviour. If scholars are rewarded for loyalty, they produce conformity. If they are rewarded for insight, evidence, and innovation, they produce knowledge. The 1960s did not solve this problem, but it made the contradiction visible. Discussions about planning, autonomy, and evaluation in the Academy were therefore part of the same process as methodological renewal. They concerned not only administration, but the epistemic conditions under which science could exist.

The relationship between basic and applied research was another central issue. Socialist science policy often insisted on practical usefulness, industrial relevance, and service to the national economy. Yet many Academy researchers understood that genuine application requires a strong base of fundamental knowledge. The Institute of Macromolecular Chemistry again demonstrates this clearly, because its work on polymers moved between theoretical chemistry, laboratory synthesis, material properties, and medical or industrial use. The Institute of Polarography likewise combined theory, instrumentation, methodology, and analytical application. Cybernetics and automation bridged mathematical abstraction and technical systems. Economic reform research linked theoretical models with policy proposals. The methodological renewal of the 1960s therefore challenged simplistic utilitarianism. It did not reject practical relevance, but it argued implicitly that usefulness cannot be commanded mechanically. The most useful science may arise from long-term inquiry whose application is not immediately predictable. This view strengthened the case for institutional patience and professional autonomy. It also brought the Academy closer to international models of research organisation, even though its political environment remained very different. The Academy's development in the 1960s thus involved a more mature understanding of the research process.

Scientific schools became one of the concrete forms of disciplinary consolidation. A scientific school is more than a group of people working in the same institute. It includes shared problems, methods, technical skills, interpretive habits, international contacts, and often a charismatic or institutionally powerful leader. The Academy's 1960s development produced or strengthened such schools in chemistry, polymer science, polarography, mathematics,

cybernetics, sociology, economics, philosophy, and historical research. These communities helped protect research continuity against political fluctuation. They also trained younger scholars in practical standards that could not be fully captured in official plans. The laboratory, seminar, archive room, or fieldwork team became places where disciplinary culture was reproduced. This was especially important under authoritarian conditions, because formal institutional autonomy was limited. A strong scientific school could create informal autonomy through expertise, reputation, and collective loyalty. It could also provide a buffer between individual researchers and external pressure. Such schools were not automatically democratic or open; they could be hierarchical and dependent on leading figures. Yet they were essential for the survival and development of serious science within the Academy.

The Slovak dimension of disciplinary development deserves special attention. The 1960s were a period in which Slovak scientific institutions sought stronger recognition within the Czechoslovak framework. The establishment of the Institute for Sociology of the Slovak Academy of Sciences in 1965 is one example of this broader expansion (*Institute for Sociology of the Slovak Academy of Sciences, n.d.*). Slovak academic development was connected to questions of national equality, regional modernisation, language, education, and institutional representation. The Czechoslovak Academy of Sciences formally included the Slovak Academy as an autonomous part of the broader structure, but relations between Prague and Bratislava were shaped by asymmetries of resources, prestige, and historical development. Disciplinary renewal therefore did not occur only along a political axis between state and science. It also unfolded along a national-institutional axis within Czechoslovakia. Methodological development in sociology, history, linguistics, ethnography, economics, and regional studies could become part of a wider Slovak claim to intellectual and institutional maturity. This did not necessarily produce conflict in every case, but it added complexity to the Academy's internal landscape. The development of Czechoslovak science in the 1960s must therefore be seen as both Czech and Slovak, central and regional, unified and differentiated.

The scientific and technological revolution became a unifying metaphor for many of these changes. It offered a way to interpret the 1960s not merely as a political thaw but as a civilisational transition. Richta's team argued that scientific discovery and technological development were transforming the material basis of life and opening new questions about labour, education, human development, and social organisation (*Richta, 1969*). The importance of this project lay in its ambition to connect empirical science, social theory, and philosophical reflection. It suggested that socialist society could not remain organised around older industrial assumptions if science itself was changing the nature of production and human capacity. This argument gave methodological renewal a broad historical meaning. Chemistry, cybernetics, sociology, economics, and philosophy were no longer separate domains; they were parts of a larger transformation of civilisation. The concept also gave reform-minded scholars a language through which they could criticise bureaucratic stagnation without abandoning socialist aspirations. Yet it also exposed the regime's dilemma. If science and technology required creativity, education, feedback, and human development, then a closed political system would eventually become an obstacle to the very modernisation it proclaimed. The Academy's methodological renewal therefore contained a latent political argument about the conditions of modernity.

At the level of everyday research practice, renewal meant more than grand concepts. It meant better instruments, more precise measurement, improved statistical procedures, fieldwork protocols, laboratory standardisation, bibliographic control, archival cataloguing, editorial

discipline, and specialised training. These less dramatic changes are sometimes overlooked, but they are the substance of scientific development. A discipline becomes modern when its routine practices improve. The Academy's institutes could support such routines because they concentrated technical staff, libraries, laboratories, documentation centres, and research time. This made them different from universities, where teaching obligations and political supervision often limited research capacity. The institute model also allowed long-term projects that required patience, such as dictionaries, historical editions, geological surveys, biological collections, experimental series, and technological prototypes. Methodological renewal was therefore embedded in material infrastructure. It depended on buildings, equipment, journals, archives, and administrative support. The 1960s opening helped because it made it easier to obtain foreign literature, invite guests, attend conferences, and justify resources in the name of international competitiveness. Scientific dynamism was not only an intellectual mood. It was built through concrete institutional conditions.

The limits of methodological renewal must nevertheless be kept in view. Ideological supervision did not disappear, and some disciplines remained more vulnerable than others. Philosophy, history, sociology, law, economics, and literary studies could be pushed back whenever their findings threatened political authority. Even in the natural sciences, travel, publication, appointments, and international collaboration could be controlled. The renewal of methods therefore occurred under surveillance and within uncertain boundaries. Scholars often learned to protect their work through careful language, strategic framing, and institutional alliances. This produced a culture of double coding: one vocabulary for official legitimacy and another for professional substance. Such double coding could be intellectually creative, but it also had costs. It encouraged caution, indirectness, and sometimes self-censorship. The Academy's development in the 1960s was thus not a simple triumph of scientific freedom. It was a partial and negotiated modernisation. Its achievements were real precisely because they were produced under constraint. The fragility of those achievements would become painfully clear after 1968, when many of the disciplines that had developed most dynamically were again exposed to political intervention.

The methodological renewal of the Czechoslovak Academy of Sciences also changed its social image. The Academy was no longer only a symbol of centralised socialist science. It increasingly appeared as a reservoir of expertise capable of diagnosing national problems and proposing modern solutions. Economists contributed to reform debates, sociologists studied society, cyberneticists imagined rational systems, chemists and physicists produced internationally visible results, philosophers interpreted technological civilisation, and historians reopened questions of memory. This enlarged public authority was one of the most important outcomes of disciplinary development. It made the Academy relevant beyond the walls of institutes. At the same time, it made the institution politically sensitive. A body that produces expertise can become inconvenient when expertise contradicts official narratives. The 1960s therefore elevated the Academy's prestige while increasing its vulnerability. Scientific authority and political suspicion grew together. This paradox would shape the Academy's role in the Prague Spring. The methodological developments discussed here were not isolated academic matters; they prepared the intellectual infrastructure of reform politics. By changing how problems were studied, the Academy changed how society could imagine its future.

Thus, methodological renewal and disciplinary development in the Czechoslovak Academy of Sciences during the 1960s formed one of the deepest layers of the post-Stalinist

transformation. The Academy's institutes did not merely benefit from a softer political climate; they actively converted that climate into new research practices, new disciplinary communities, and new forms of intellectual authority. Chemistry, polymer science, electrochemistry, cybernetics, sociology, economics, philosophy, history, and other fields each contributed differently to this process. Some renewed older traditions, some created new interdisciplinary languages, and some built empirical instruments for studying a society that official ideology had previously described too simply. The result was not full academic freedom, but a widening of the professional space in which methods mattered more than slogans and evidence could challenge inherited certainties. The Academy's development in this period showed that modern science requires more than institutions and funding. It requires standards of argument, openness to comparison, respect for uncertainty, and communities capable of correcting themselves. These conditions were never fully secure in 1960s Czechoslovakia, yet they were strong enough to produce a remarkable disciplinary flowering. For this reason, the methodological renewal of the Academy should be seen as one of the principal foundations of the intellectual dynamism that would later enter the reform horizon of the Prague Spring.

3. The Academy between Political Limits and Professional Autonomy

The Czechoslovak Academy of Sciences in the 1960s occupied a position that cannot be adequately described either as simple subordination or as genuine freedom. It remained an institution of the socialist state, formed according to the Sovietised model of research organisation and embedded in the political order created after 1948. Yet it was also a highly specialised scientific body whose everyday work depended on professional standards, disciplinary knowledge, international contacts, and the long-term accumulation of expertise. This dual nature made the Academy one of the most revealing institutions of the Czechoslovak reform decade. Political power expected it to serve socialism, economic development, ideological legitimacy, and technological progress. Scientists, meanwhile, increasingly understood that research could not be productive if it was reduced to administrative obedience or doctrinal repetition. The Academy therefore became a negotiated space where political limits and professional autonomy constantly confronted one another. Its autonomy was never absolute, but neither was its dependence total. The official history of the Czech Academy of Sciences emphasises that the Czechoslovak Academy became the central research institution of the country after the communist reorganisation of science, while later institutional memory also acknowledges the importance of figures such as Otto Wichterle in the post-communist reconstruction of the Academy's autonomy (*Czech Academy of Sciences, n.d.*). In the 1960s, that later reconstruction was still far away, but the internal foundations of a more autonomous scientific culture were already being formed.

The key to understanding this balance lies in the difference between political autonomy, institutional autonomy, and professional autonomy. Politically, the Academy did not possess independence from the Communist Party of Czechoslovakia. Its leadership, budgets, strategic priorities, foreign contacts, publishing possibilities, and personnel decisions remained subject to political control or at least political supervision. Institutionally, however, the Academy possessed a more complex structure than a simple ministry department. It contained institutes, research groups, learned bodies, editorial mechanisms, archives, laboratories, and expert committees, all of which generated internal norms and interests. Professionally, it relied

on scientists whose authority often came not from party loyalty but from competence, reputation, and achievement. This gave the Academy a certain room for manoeuvre. A successful chemist, physicist, economist, sociologist, historian, or engineer could not be replaced as easily as an obedient administrator. The more specialised research became, the more political power needed professional knowledge that it could not itself produce. This did not liberate scientists from pressure, but it changed the terms of pressure. The party-state could still command, yet it also had to persuade, bargain, tolerate, or postpone intervention. In the 1960s, such negotiated spaces multiplied.

František Šorm's presidency symbolised this new balance more clearly than almost any other institutional fact. The Academy's second major historical volume on the period 1963–1970 explicitly treats the years of Šorm's leadership as a moment when political control eased, civil society developed, and impulses from Western society became more visible; it also describes the 1960s as a golden era for many disciplines within the Czechoslovak Academy of Sciences (*Franc, Dvořáčková, et al., 2025*). Šorm was not only a politically acceptable head of a state institution. He was also an internationally recognised chemist, and this mattered. His authority did not rest solely on ideological function but on scientific achievement and organisational competence. Under such leadership, the Academy could present itself to the state as a productive instrument of socialist development while internally strengthening the prestige of professional science. Šorm's presidency did not abolish political dependency, but it changed the tone of institutional negotiation. The Academy could argue for travel, equipment, foreign literature, research continuity, and institute stability in the name of scientific excellence. Such arguments had a practical force because Czechoslovakia wanted international scientific recognition and technological modernisation. The leadership of a serious scientist made it harder to reduce the Academy to a mere ideological office.

Professional autonomy in this context was not a legal privilege but a practical condition of research. It appeared in the ability of institutes to define problems, select methods, train younger researchers, organise seminars, correspond with foreign colleagues, publish specialised work, and maintain internal standards of quality. These practices could coexist with political declarations, plan fulfilment, and ritual references to Marxism-Leninism. In fact, much of the Academy's autonomy in the 1960s survived precisely because it was often expressed indirectly. A laboratory did not need to proclaim ideological independence in order to defend its experimental protocols. An economic research team did not need to reject socialism in order to criticise irrational planning mechanisms. A sociological institute did not need to become an opposition centre in order to show that society was more complex than official slogans suggested. A historical institute did not need to speak openly against the regime in order to restore source criticism and archival seriousness. This indirectness was both protective and limiting. It allowed research to advance within an authoritarian system, but it also required caution, self-censorship, and tactical language. The Academy's professional autonomy was therefore real, but it was structurally vulnerable.

The natural sciences often enjoyed the widest practical autonomy, although even there political limits remained important. Chemistry, physics, mathematics, biology, geology, and engineering were less directly tied to the ideological legitimacy of the regime than history, philosophy, sociology, economics, or law. Their results could be assessed through experiments, instruments, equations, measurements, patents, publications, and international recognition. This made crude ideological intervention less effective and often less attractive to the authorities. The state wanted usable discoveries, industrial applications, technological

prestige, and evidence that socialist science could compete internationally. For that reason, it often had to give research groups a degree of technical freedom. Yet this freedom was never complete. Access to foreign journals, travel permissions, laboratory equipment, conference participation, and appointments could still be filtered through political criteria. A scientist might be trusted in the laboratory but distrusted as a citizen. International excellence could protect a scholar, but it could also make him or her visible to political suspicion. Thus, even the natural sciences lived inside a conditional autonomy. Their protection came from usefulness and prestige, not from a recognised right to independent inquiry.

The case of Otto Wichterle reveals the ambiguous nature of professional autonomy particularly well. His work on hydrophilic polymers and soft contact lenses demonstrated the creative power of basic research connected with invention, industrial application, and medical technology. Yet Wichterle's later public role, including his association with the reformist atmosphere of 1968 and his connection with the "Two Thousand Words" manifesto, showed that scientific reputation could not fully shield a scholar from political consequences. The official history of the Czech Academy of Sciences identifies Wichterle as one of the main authors of the famous June 1968 manifesto and later as the last chairman of the Czechoslovak Academy of Sciences after the fall of the communist regime (*Czech Academy of Sciences, n.d.*). This biographical arc is historically revealing. In the 1960s, he represented the scientist-inventor whose work proved the necessity of creative freedom. After 1968, he also represented the vulnerability of such freedom when professional authority crossed into civic responsibility. Wichterle's career therefore shows that the Academy's autonomy was never merely technical. The boundary between scientific creativity and public conscience could become politically explosive. A regime that celebrated invention could still punish the inventor when he became a moral voice.

The social sciences stood closer to the line of political danger because they studied the very society that the regime claimed to understand and lead. Sociology, economics, demography, legal theory, and political analysis could not be separated from questions of legitimacy, reform, inequality, participation, and institutional performance. This gave them a special importance in the 1960s. The state needed social knowledge because administrative command no longer solved the problems of a complex industrial society. At the same time, such knowledge could reveal the failures of administrative command. The Academy's economists, especially those connected with the Economic Institute, played a central role in this tension. Jiří Kosta identifies the Economic Institute of the Czechoslovak Academy of Sciences, headed from early 1962 by Ota Šik, as one of the key places where radical criticism of existing economic practice began to be heard (*Kosta, 1989*). This did not mean that economists were free in a liberal sense. They were expected to operate within socialism and to contribute to its reform, not to advocate capitalism or political pluralism. Yet within that framework, they could challenge central planning, inefficient incentives, and bureaucratic irrationality. Economic expertise became a form of controlled criticism.

This controlled criticism gave professional autonomy a reformist content. The economist did not simply ask whether a plan had been fulfilled; he asked whether the planning mechanism itself produced rational behaviour. The sociologist did not simply describe the working class as an ideological category; he investigated actual social groups, values, attitudes, and inequalities. The historian did not merely celebrate progressive traditions; he examined ruptures, conflicts, institutional continuities, and suppressed memories. The philosopher did not only repeat dialectical materialism; he asked about technology, alienation, human

development, and the meaning of modern civilisation. Each of these disciplinary moves pushed against political limits without always naming them directly. The Academy was well suited to such work because its institutes could sustain collective research over time. It also possessed enough prestige to make certain debates less easy to silence immediately. Nevertheless, the limits remained visible. A reformist economist could become influential, but only so long as reform remained politically tolerable. A sociologist could study society, but not freely question the monopoly of the ruling party. The autonomy of expertise expanded in the 1960s, but it remained dependent on the changing temperature of politics.

The Academy's relationship with international science intensified this tension. On the one hand, foreign contacts strengthened professional autonomy because they exposed Czechoslovak researchers to international standards and gave them external recognition. A scientist who published abroad, attended conferences, or cooperated with foreign colleagues gained a form of authority that was not entirely produced by the domestic political system. On the other hand, internationalisation provoked suspicion because the same contacts could be interpreted as ideological contamination, political unreliability, or excessive dependence on the West. Riikka Nisonen-Trnka's study of Czechoslovak natural scientists and the Iron Curtain describes scientific cooperation with the West as one of the significant embodiments and paradoxes of the Prague Spring of science (*Nisonen-Trnka, 2008*). This paradox already existed before 1968. The Academy needed international communication to remain scientifically credible, yet the political system feared uncontrolled communication. As a result, foreign travel, correspondence, visiting lectures, and conference participation became arenas of negotiation. Scientists could appeal to prestige and necessity; authorities could impose permissions, reporting duties, or restrictions. Professional autonomy thus developed through selective international opening, not through free circulation.

The tension between political limits and professional autonomy was also visible in publication culture. Scientific journals, conference proceedings, monographs, and collective volumes provided spaces where disciplinary standards could be established and defended. Yet publication remained subject to ideological review, editorial caution, and institutional responsibility. The result was a layered textual culture. Some texts contained obligatory ideological formulations while pursuing quite serious methodological work beneath them. Others used reformist Marxist language as a bridge toward more empirical, comparative, or systems-oriented analysis. Still others, especially in the natural sciences, could avoid explicit political language almost entirely, though the institutional framing of research often remained official. The Academy's publishing activity therefore became one of the mechanisms through which autonomy could be practised without being openly declared. A new method, a foreign concept, a statistical table, a laboratory protocol, or a critical historical interpretation could shift disciplinary standards more effectively than a political manifesto. This made publication both powerful and risky. The more serious the scholarship became, the more it could expose the insufficiency of ideological simplification. For this reason, the struggle over publication was also a struggle over the boundaries of truth.

The humanities carried the heaviest burden of historical and political sensitivity. Historical research, philosophy, literary studies, law, art history, linguistics, and cultural studies dealt with the materials from which collective identity and regime legitimacy were constructed. In the 1960s, these fields began to recover more complex methods and broader intellectual horizons. Historians worked more seriously with archives and source criticism. Literary scholars re-engaged with modernism, structuralism, and the complexity of Czech and

European culture. Philosophers opened questions of humanism, responsibility, technology, and freedom. Yet the space for such work was precarious because it touched the memory of 1948, the Stalinist period, democratic traditions, national culture, and the moral legitimacy of socialist rule. The later fate of the Institute of History shows how closely the authorities watched such disciplines. Its official institutional history notes that, after the Prague Spring, the institute was renamed and seriously undermined by forced political resignations and even imprisonment of leading experts, including František Šmahel and Jaroslav Mezník (*Institute of History of the CAS, n.d.*). This later punishment demonstrates that methodological seriousness in the humanities had been politically meaningful. Professional autonomy in historical scholarship was not harmless; it had the power to disturb official memory.

The Academy's internal autonomy also depended on the strength of its institute communities. Institutes were not simply administrative units. They were social worlds with directors, senior researchers, younger scholars, technicians, librarians, secretaries, editors, seminar cultures, and informal hierarchies. A strong institute could protect its members, negotiate with external authorities, and preserve research continuity. A weak institute could be more easily redirected or purged. The director's role was therefore crucial. A director with scientific reputation and political skill could create room for professional work even under ideological pressure. Conversely, a director chosen mainly for political reliability could narrow the institute's intellectual life. This made leadership one of the hidden mechanisms of autonomy. The Academy's formal statutes mattered, but everyday freedom often depended on personal authority and institutional diplomacy. Researchers needed patrons, allies, and protective environments. In this sense, professional autonomy was not only a principle; it was a social achievement constructed through relationships.

The relation between planning and autonomy was especially complex. Socialist science policy insisted on planned research, national priorities, coordinated programmes, and the connection between science and economic development. In principle, planning could support large-scale research by providing stable resources and long-term institutional backing. In practice, however, excessive planning could suffocate discovery by imposing rigid targets, administrative indicators, and politically defined themes. The Academy's scientists increasingly understood this contradiction in the 1960s. They did not necessarily reject planning altogether. Many believed that research should be socially useful and nationally coordinated. But they also insisted, implicitly or explicitly, that scientific planning had to respect uncertainty, peer judgement, and disciplinary competence. A laboratory cannot know in advance the full results of an experiment. A historian cannot produce a predetermined interpretation without betraying the archive. A sociologist cannot investigate society if conclusions are politically fixed beforehand. The Academy's autonomy therefore depended on redefining planning itself. The struggle was not between planning and chaos, but between bureaucratic planning and professionally informed planning.

Evaluation formed another decisive boundary. If scientific work was evaluated primarily by political loyalty, it became conformist. If it was evaluated by disciplinary quality, it could become autonomous. The 1960s did not fully replace political evaluation with peer judgement, but they strengthened the prestige of professional assessment. International publications, conference invitations, citations, patents, technical achievements, empirical findings, and scholarly reputation became more significant. This was particularly important because the Academy wanted recognition beyond Czechoslovakia. International comparison made purely political evaluation harder to sustain. A paper accepted abroad, an invention adopted in

practice, or a conference organised in Prague could not be judged only by party criteria. Yet the authorities retained the ability to intervene in appointments, travel, and institutional restructuring. Evaluation therefore became a mixed system. Scientists were encouraged to produce internationally meaningful work, but remained exposed to domestic political judgement. This contradiction was one of the defining features of the Academy's 1960s position.

The Academy's semi-autonomous status also affected its relationship with universities. Universities were more directly involved in ideological education, student formation, and public political control. The Academy, as a network of research institutes, could sometimes provide a different environment. It could concentrate on specialised research, long-term projects, and expert communities. This did not make it free from ideology, but it gave it a different rhythm from university life. Scholars who found university conditions restrictive could sometimes find more room within Academy institutes. The official history of the Academy notes that, compared with Sovietised universities, the Czechoslovak Academy possessed a greater formal degree of decision-making autonomy and could provide shelter to some figures pushed out of university environments, including Václav Černý, Jan Patočka, and Otto Wichterle (*Czech Academy of Sciences, n.d.*). This point is central for the 1960s. The Academy's autonomy was not merely abstract; it could affect individual careers and the survival of intellectual traditions. It offered protected spaces, though never entirely safe ones. The existence of such spaces helped Czech and Slovak scholarship preserve continuity through periods of political pressure.

Yet shelter was not the same as freedom. A scholar could be employed in an institute while remaining unpublished, marginalised, monitored, or excluded from teaching. A research group could continue working while avoiding politically sensitive themes. An institute could protect a person temporarily, but not necessarily defend him or her against a major political campaign. This is why the Academy's autonomy should be described as relative, functional, and negotiated. It depended on the political moment, the field of research, the reputation of the scholar, the courage of colleagues, and the strategic calculations of administrators. The same institution could protect one scholar and sacrifice another. It could support innovative research in one field while suppressing debate in another. Such inconsistency was not accidental. It was the normal condition of intellectual life in a reforming but still authoritarian socialist system. The Academy's 1960s history therefore resists both celebratory and condemnatory simplification. It was neither a free republic of science nor a mere transmission belt of the party-state.

The Slovak dimension added another layer to the question of autonomy. The relationship between the Slovak Academy of Sciences and the Czechoslovak Academy of Sciences was shaped by institutional asymmetry, national representation, and debates about centralisation. Adam Hudek's study of relations between the Slovak and Czechoslovak academies traces these relations from the early 1950s to the beginning of the normalisation regime, showing that the issue cannot be separated from the broader structure of Czechoslovak statehood (*Hudek, 2022*). In the 1960s, demands for Slovak recognition and institutional dignity became more pronounced across political and cultural life. Scientific institutions were part of this development. Autonomy therefore meant not only the professional autonomy of science from politics, but also the relative autonomy of Slovak scientific life within the Czechoslovak framework. Prague remained the main centre of many resources and decisions, but Bratislava and Slovak institutions were increasingly important to the republic's scientific identity. The

Academy's internal politics thus reflected national questions as well as disciplinary ones. The reform decade made it harder to treat scientific centralisation as a purely administrative matter. Questions of language, region, representation, and institutional competence entered the debate over how science should be governed.

The Academy's position between limit and autonomy was also shaped by the changing concept of the scientist as a public figure. In the early Stalinist period, the ideal scientist was often imagined as a loyal builder of socialism. In the 1960s, the scientist increasingly appeared as an expert capable of diagnosing social problems, criticising inefficiency, explaining technological change, and advising reform. This did not automatically make scientists political opponents. Many reform-minded Academy researchers still believed in socialism, but they wanted it to be more rational, humane, empirical, and open. Their authority came from the claim that knowledge should correct power. This claim was modest in form but radical in implication. If knowledge can correct power, then power is not self-sufficient. If empirical inquiry can revise policy, then ideology cannot be absolute. If professional standards matter, then political loyalty cannot be the only criterion of truth. The Academy's public role therefore quietly transformed the moral standing of scientific work. Research became a form of responsibility, not merely production.

This transformation was particularly visible in debates on the scientific and technological revolution. Radovan Richta and his colleagues connected science, technology, labour, education, human development, and social transformation in a way that gave intellectual legitimacy to reform. Their project argued that modern civilisation was being reshaped by knowledge itself, not only by industrial output or political will. This framework allowed Academy-based and Academy-connected intellectuals to speak about the future of socialism in terms of creativity, education, human potential, and systemic adaptation. Such ideas did not directly abolish political limits, but they widened the intellectual horizon. They implied that a modern society could not be governed by fear, secrecy, and administrative command alone. A society based on knowledge required feedback, participation, competence, and trust. These concepts overlapped with cybernetics, sociology, economics, and philosophy. They helped turn professional autonomy into a broader theory of social modernisation. The Academy thus became not only a producer of research but also a producer of reform vocabulary. Its intellectual authority entered public debate because its disciplines offered new ways of imagining the future.

Political power tolerated such developments because it needed solutions to real problems. Czechoslovakia faced economic stagnation, technological competition, bureaucratic inefficiency, cultural dissatisfaction, and generational change. The old Stalinist model could not answer these challenges convincingly. The Academy offered expertise that could help modernise the system without immediately destroying it. This made professional autonomy useful to the regime. Yet the same autonomy also threatened the regime because expertise tended to reveal that political monopoly was part of the problem. Economists discovered defects in central planning. Sociologists revealed social complexity. Philosophers criticised alienation and dogmatism. Historians complicated official narratives. Natural scientists demanded international openness. Each form of expertise began as a contribution to reform, but each also contained a critique of existing power. The Academy's 1960s position was therefore built on an unstable bargain. The state granted limited room for professional knowledge because it needed that knowledge. Scientists used that room to expand the meaning of knowledge beyond the state's original intention.

The limits of the bargain became visible as the decade moved toward 1968. The reform atmosphere encouraged stronger claims for autonomy, not only in science but in journalism, culture, economics, law, and politics. The Academy's institutes were drawn into this broader movement through expert reports, public statements, intellectual networks, and the civic authority of individual scholars. The more society opened, the more difficult it became to keep professional autonomy confined within technical boundaries. Scientific questions became political because they concerned how society should be organised. Political questions became scientific because reformers increasingly demanded analysis rather than dogma. This convergence made the Academy more influential, but also more exposed. In a stable authoritarian order, the boundary between technical expertise and political judgement can be policed more easily. In a reform crisis, that boundary dissolves. By 1968, the Academy's professional autonomy had acquired public meaning. It was no longer only the right of researchers to work competently; it was part of a wider demand for a more truthful society.

The events after the Warsaw Pact invasion showed how fragile the Academy's autonomy had been. Repression did not immediately erase all scientific work, but it struck precisely those areas where professional authority had become publicly connected with reform. Nisonen-Trnka notes that legal measures directed against individuals who had participated in the scientific reforms of the Prague Spring were implemented in March 1970 (*Nisonen-Trnka, 2008*). The Institute of History's later experience of forced resignations, imprisonment of leading experts, renaming, and restructuring illustrates the same post-1968 reversal in a particularly concrete way (*Institute of History of the CAS, n.d.*). These later developments illuminate the 1960s retrospectively. They show that the autonomy achieved before 1968 had not been institutionally secured. It depended on political liberalisation, leadership protection, and the temporary weakening of ideological control. Once the political context changed, the same professional communities could be disciplined again. The Academy's 1960s experience therefore had a tragic structure. It demonstrated the vitality of scientific autonomy, but also its vulnerability when not protected by law, pluralism, and civic rights.

Nevertheless, it would be misleading to interpret the Academy's autonomy only through its later defeat. The achievements of the 1960s were not illusions. Institutes were strengthened, disciplines were renewed, international contacts expanded, methods improved, and professional communities matured. Many researchers experienced the period as a real opening, even if they understood its limits. The Academy's historical volume for 1963–1970 describes the institution as fully embracing the changes of the decade and identifies the period as exceptionally productive for many disciplines (*Franc, Dvořáčková, et al., 2025*). This matters because historical significance is not measured only by permanence. Even temporary openings can transform intellectual standards, personal trajectories, disciplinary memories, and future possibilities. The 1960s created expectations of what scientific life could be. Those expectations survived later normalisation in damaged, hidden, or displaced forms. Some scholars were expelled, silenced, or forced into compromise, but the memory of professional autonomy remained. It would re-emerge after 1989 as part of the Academy's reconstruction.

The Academy's position in the 1960s also reveals a broader Central European pattern. In authoritarian systems that still require modern expertise, scientific institutions often become zones of semi-autonomy. They are not free, but they cannot be governed entirely by command if they are to remain useful. Their laboratories, archives, seminars, and journals create standards that exceed political vocabulary. Their foreign contacts create comparisons that provincial ideology cannot control. Their professional hierarchies create forms of authority

independent of party rank. Their research problems force them to observe realities that propaganda simplifies. The Czechoslovak Academy of Sciences exemplified this pattern with particular intensity because Czechoslovakia was industrially advanced, culturally sophisticated, and historically connected to European scholarly traditions. The regime needed modern science, but modern science carried a logic of openness. The Academy lived within this contradiction throughout the 1960s. Its partial autonomy was not an anomaly; it was a structural consequence of the regime's own modernising ambition. Yet because the political system refused full intellectual freedom, the contradiction could not be resolved peacefully.

At the level of everyday life, this contradiction shaped the habits of researchers. Scientists and scholars learned how to write cautiously, choose research topics strategically, maintain foreign contacts discreetly, protect colleagues, cultivate institutional allies, and translate professional demands into politically acceptable language. These habits were not heroic in a simple sense, but they were historically important. They allowed knowledge to continue under conditions that often discouraged candour. They also created moral ambiguities. Tactical language could protect research, but it could also normalise self-censorship. Institutional compromise could preserve a laboratory, but it could also leave injustice unnamed. Professional autonomy under authoritarianism is rarely pure. It is built from small acts of courage, calculation, patience, silence, and persistence. The Academy's 1960s history must therefore be read with sensitivity to this grey zone. Its scientists were neither merely victims nor merely collaborators. They were actors navigating a system in which the defence of science often required negotiation with power.

The balance between political limits and professional autonomy also depended on the type of knowledge produced. Knowledge that increased industrial productivity, medical technology, chemical innovation, or international prestige was easier to defend. Knowledge that questioned political legitimacy, social harmony, historical myth, or ideological monopoly was harder to protect. This hierarchy shaped the internal geography of autonomy. A polymer chemist, mathematician, or physical chemist might enjoy more technical room than a sociologist of public opinion or a historian of the communist movement. Yet even useful technical knowledge could become politically sensitive if its producer entered public debate. Conversely, a humanist or social scientist could sometimes advance serious work by framing it in acceptable reformist terms. The boundaries were therefore fluid rather than fixed. Autonomy was distributed unevenly across disciplines, institutes, personalities, and moments. This unevenness is one of the reasons why the Academy's 1960s experience cannot be reduced to a single narrative. It was a mosaic of opportunities and constraints.

The Academy's professional autonomy was also inseparable from its material base. Buildings, laboratories, archives, libraries, instrumentation, field stations, publishing houses, and research budgets gave autonomy substance. A scholar with no archive, no journal, no library, and no institutional position possesses little practical freedom. The Academy's concentration of research infrastructure made it a powerful institution even under political control. It could support long-term projects that individual universities or ministries could not easily sustain. It could preserve collections, maintain laboratories, and train specialists. This material capacity gave scientists leverage in negotiations with the state. It also made the Academy a target when political control tightened. Whoever controlled the Academy controlled not only offices but the infrastructure of national research. The 1960s expansion of professional autonomy therefore had a material dimension. It rested on the practical conditions that allowed research communities to survive, grow, and defend their standards.

The moral dimension of autonomy became increasingly important as the decade progressed. At first, many demands were framed in technical terms: better planning, more rational management, more access to literature, more adequate evaluation, more efficient institutes, more travel, more resources. Gradually, however, these technical demands revealed ethical implications. A scientist who asks for freedom to publish is also asking for truthfulness. A historian who asks for access to archives is also asking for memory. A sociologist who asks to survey public attitudes is also asking society to hear itself. An economist who asks to analyse failure is also asking political authority to accept criticism. A chemist or physicist who asks for international exchange is also asking that knowledge not be imprisoned by borders. Thus, professional autonomy became a moral language even when it remained formally professional. The Academy's role in the 1960s cannot be understood without this gradual ethical deepening. Science was becoming a way of defending reality against simplification.

This ethical deepening helps explain why the Academy was drawn toward the Prague Spring. The reform movement did not arise only from party politics; it also emerged from accumulated demands for competence, truthfulness, dignity, and participation across society. The Academy contributed to this atmosphere by producing analyses, concepts, research communities, and public intellectuals who made reform thinkable. It did not act as a single political body, and its members were far from unanimous. Yet its institutional culture had changed enough for it to become part of the reform horizon. The Academy's scientists had learned that knowledge required room to breathe. Once that lesson was learned inside laboratories and institutes, it could not be completely separated from broader civic life. The demand for professional autonomy became one strand in the wider demand for social and political renewal. This connection would later expose the Academy to normalisation, but it also gave the 1960s their historical grandeur. The institution became a bridge between specialised knowledge and public reform.

Thus, the Czechoslovak Academy of Sciences in the 1960s existed in a dynamic and unstable space between political limits and professional autonomy. It remained dependent on the socialist state, subject to party supervision, and vulnerable to ideological reversal. Yet within those constraints it developed real spaces of scientific self-government, methodological seriousness, disciplinary authority, and international communication. Its autonomy was not guaranteed by law in a liberal sense; it was negotiated through expertise, institutional prestige, leadership, scientific schools, and the practical needs of a modernising state. This made it fragile, uneven, and morally complicated, but also historically powerful. The Academy showed that serious science could not be fully reduced to political command, even when political command claimed supremacy over society. Its institutes became places where knowledge pressed against ideology, where professional standards challenged administrative simplification, and where the reformist imagination of the 1960s acquired empirical and intellectual substance. The later defeat of this autonomy after 1968 does not cancel its importance. On the contrary, it reveals how consequential it had become. The Academy's position between limit and autonomy was one of the central institutional dramas of Czechoslovak science, and it prepared the ground for the more explicit reform debates that would define the Prague Spring.

Institutional Reform and Internal Debate

1. Reformist Tendencies in the Organisation of Research

The reformist tendencies that emerged within the Czechoslovak Academy of Sciences in the 1960s were not accidental administrative adjustments. They were part of a broader search for a new relationship between science, state, economy, and society after the exhaustion of the most rigid Stalinist model. The Academy had been created in the early 1950s as a centralised research institution, modelled in important respects on Soviet patterns of scientific organisation. By the beginning of the 1960s, however, this model increasingly showed its limitations. It could concentrate institutes, mobilise resources, and subordinate research to state priorities, but it could not easily generate the flexibility, international communication, methodological plurality, and professional self-correction required by modern science. The reformist mood inside the Academy therefore grew from practical experience as much as from political liberalisation. Scientists and research administrators saw that excessive centralisation slowed innovation, weakened the connection between research and application, and made institutes dependent on decisions taken too far from real scientific work. The second volume of the institutional history of the Czechoslovak Academy of Sciences describes the period 1963–1970 as one of significant internal reforms and a search for a new social position for the main non-university research institution in Czechoslovakia amid economic crisis and fundamental economic reform (*Franc, Dvořáčková, et al., 2025*). This formulation is crucial because it places institutional reform within the same historical field as economic reform, political relaxation, and professional modernisation. The reform of research organisation was not a technical matter; it was one of the ways in which Czechoslovak socialism tried to redefine its own capacity for modernity.

The organisational question had already become visible at the turn of the 1950s and 1960s. The Academy had accumulated many institutes, research tasks, commissions, plans, and reporting obligations, but accumulation alone did not guarantee effective science. The early model often treated scientific work as if it could be organised by the same instruments as industrial production: central allocation, hierarchical command, fulfilment of plans, and political supervision. By the 1960s, this approach was increasingly inadequate. Research could be planned in broad directions, but not in its concrete discoveries. It needed stable support, but also room for initiative. It needed coordination, but not suffocation by bureaucracy. It needed social usefulness, but not the reduction of every inquiry to immediate practical output. The reformist tendency inside the Academy therefore began with a simple but consequential recognition: science was a specific form of labour and could not be managed as a merely administrative sector. This recognition did not yet mean liberal academic self-government. It meant that even within socialism, research organisation had to become more intelligent, more specialised, and more responsive to the internal logic of disciplines.

The political background of this reform was the gradual weakening of the old Stalinist confidence in command. Economic difficulties in the first half of the 1960s forced the Czechoslovak leadership to listen more seriously to economists, planners, technologists, and research institutes. Jiří Kosta notes that during the crisis years from 1962 to 1964 the neo-Stalinist leadership was compelled by economic deterioration to question conventional textbook assurances about socialism and to consider solutions proposed by critics of existing practice, especially those connected with the Economic Institute of the Czechoslovak

Academy of Sciences under Ota Šik (*Kosta, 1989*). This matters for the organisation of research because the Academy became one of the places where the state looked for analytical alternatives. Reform did not come only from abstract belief in freedom; it came from the realisation that the existing administrative system was underperforming. The Academy's economists, technologists, chemists, and social scientists could all argue that better science required better organisation. In this context, institutional reform and national economic reform became mutually connected. A rigid economy needed scientific expertise, and scientific expertise needed a less rigid institutional environment.

The first reformist tendency was the demand for a more rational balance between central coordination and institute-level initiative. The Academy could not function as a loose federation of unrelated laboratories, because many research programmes required coordination, shared infrastructure, and national priorities. Yet it also could not function well if every significant decision was made by remote committees or political organs. The institute, not the central office, was the real site of scientific work. It was there that researchers selected methods, trained younger colleagues, maintained equipment, communicated with foreign specialists, and adapted projects to unexpected findings. Reform-minded administrators therefore had to rethink how much freedom institutes should possess in defining research tasks and managing their resources. This was not a simple decentralisation. It was an attempt to make central planning more dependent on professional judgement. The better the institute, the stronger the argument for trusting it. The Academy's reformers thus tried to shift the centre of gravity from administrative control to scientifically informed coordination. Such a shift was limited, but it changed the internal language of governance.

A second reformist tendency concerned the relationship between basic research and applied research. The early socialist model often celebrated science as a productive force, but in practice it could misunderstand how scientific productivity worked. If basic research was judged only by immediate application, it could be starved of the time and uncertainty required for discovery. If applied research was separated too sharply from fundamental inquiry, technological development could become derivative and mechanical. The Academy's experience in chemistry, polymer science, physical chemistry, cybernetics, and biology showed that the most successful research frequently moved across this boundary. The Institute of Organic Chemistry and Biochemistry, rooted in the post-war scientific group around František Šorm and formally founded in 1953, later became one of the central Academy institutes in which organic chemistry and biochemistry were institutionally linked (*Institute of Organic Chemistry and Biochemistry, n.d.*). This type of institute embodied the reformist argument that research organisation should not divide knowledge into rigid bureaucratic compartments. It had to allow basic theory, laboratory experimentation, methodological development, and practical application to interact. The organisational reform of science therefore required intellectual flexibility as well as administrative change.

The Institute of Macromolecular Chemistry offered another powerful example of this organisational logic. Its development showed that a modern research institute could not be organised merely as a service unit for industry or as an isolated theoretical laboratory. It had to connect polymer chemistry, polymer physics, experimental apparatus, material testing, biomedical applications, and industrial cooperation. Otto Wichterle's work on hydrophilic gels and soft contact lenses became emblematic because it demonstrated how original scientific insight could pass into invention and application. Yet this passage required institutional conditions: research time, technical support, laboratory freedom, and the ability to move

between disciplinary and practical contexts. The reformist lesson was clear. Innovation could not be ordered from above in the form of a plan target. It had to be cultivated through institutions that allowed researchers to follow problems across conventional boundaries. Such institutions needed planning, but planning had to become enabling rather than commanding. The success of macromolecular research therefore supported a broader organisational argument inside the Academy. The more complex the research, the less adequate the old administrative model became.

The Academy's leadership under František Šorm was important precisely because Šorm represented both scientific authority and institutional ambition. He was not a mere bureaucratic manager of research; he came from a strong chemical research background and understood the practical needs of laboratories. The institutional history of the Academy's 1963–1970 period stresses that the decade was associated with political easing, civil-society development, openness to Western impulses, and, for many disciplines, a golden era of development (*Franc, Dvořáčková, et al., 2025*). Šorm's leadership was situated within this atmosphere, but it also helped shape it. His presidency strengthened the prestige of professional science within the Academy's internal hierarchy. It allowed reform arguments to be framed not as anti-socialist dissent but as the necessary modernisation of socialist science. This was politically important. An open demand for institutional autonomy could be dangerous, but a demand for more effective research organisation could be defended as service to national development. Under Šorm, the Academy could speak to the state in the language of productivity, prestige, and expertise while also expanding the practical space of scientific initiative.

The reform of research organisation also required a different attitude toward international relations. The earlier Stalinist model had treated foreign contacts, especially with the West, as politically sensitive and potentially dangerous. By the 1960s, however, serious research could not advance without journals, conferences, correspondence, visiting scholars, shared standards, and international comparison. Riikka Nisonen-Trnka's work on the Prague Spring of science shows how cooperation with Western science became both a symbol and a paradox of Czechoslovak liberalisation (*Nisonen-Trnka, 2008*). The paradox was that the state needed international scientific exchange for prestige and technological modernisation, but feared its political and ideological implications. Organisational reform inside the Academy therefore had to include the management of international communication. Institutes needed more predictable access to travel, literature, and foreign partnerships. Central bodies needed to coordinate foreign relations without strangling them. The tension between control and openness became one of the defining organisational problems of the decade. A modern Academy could not remain scientifically provincial, yet a fully open Academy would have challenged the political logic of the regime.

Planning and internationalisation were especially closely connected. The Academy could not plan high-level research effectively without knowing the international state of each field. A plan written only from domestic administrative assumptions would quickly become obsolete. Chemists needed to know current synthetic methods and analytical techniques. Physicists needed to follow instrumentation and theoretical developments. Economists needed comparative data and foreign reform debates. Sociologists needed empirical methods and international survey techniques. Historians and linguists needed access to scholarship beyond the socialist bloc. Thus, international communication was not a luxury but an organisational condition of scientific rationality. Reform-minded researchers could use this argument to

defend more open exchange. They did not need to say that censorship was morally wrong, although many privately believed this. They could say that scientific isolation damaged the national interest. This practical formulation made demands for openness more politically defensible.

Another important reformist tendency was the attempt to overcome the separation between research and practice. In the early 1960s, one of the Academy's concerns was the inadequate application of scientific research, especially the weak connection between industry and research. Nisonen-Trnka's doctoral study notes that, from the perspective of chemists, the problem was weak interaction between industry and research, while the deeper issue lay in excessively centralised planning and the Academy's lack of independence in decision-making (*Nisonen-Trnka, 2012*). Although this observation came from the natural-scientific context, it had broader significance. The state wanted science to serve production, but the mechanisms connecting research to production were often bureaucratic and inefficient. Institutes could develop knowledge that industry failed to absorb. Enterprises could need innovation but lack incentives to cooperate with research. Ministries could demand application but prevent the flexible partnerships required for it. Reform therefore required not simply more applied research but a restructuring of the channels between laboratories, enterprises, ministries, and planning organs. This was one of the clearest points at which the internal reform of the Academy intersected with national economic reform.

The problem of application also revealed the limits of administrative command. A ministry could order cooperation, but it could not create mutual trust, technical competence, or shared risk. An enterprise might formally accept a research result while lacking the motivation or capacity to implement it. A laboratory might be asked to produce practical results without being given the industrial feedback needed to refine them. Reform-minded scientists therefore increasingly argued, directly or indirectly, for more flexible institutional interfaces. These could include joint projects, specialised commissions, contractual research, pilot production, advisory bodies, and more direct channels between research groups and users. The Academy's position was delicate because it had to defend basic research while also proving social usefulness. Too much distance from practice could expose it to criticism as an ivory tower. Too much subordination to practice could reduce it to a technical service department. The reformist organisational ideal was a productive middle ground. The Academy was to remain a centre of advanced research, but one whose knowledge could move more effectively into the economy, public administration, culture, and education.

The Economic Institute became a particularly important model of research connected with reform practice. Ota Šik and his colleagues did not merely study economics as an academic discipline; they developed proposals that influenced national debates over planning, incentives, enterprise autonomy, prices, and the relationship between plan and market. Kosta's account shows that the Institute became one of the major places where criticism of existing economic practice was articulated in the early 1960s (*Kosta, 1989*). This had institutional implications. It demonstrated that an Academy institute could function as a centre of policy-relevant analysis without being merely a propaganda organ. It also showed that research organisation had to allow space for critical diagnosis. If an institute could only confirm existing policy, it would be useless precisely when reform was needed. Economic research therefore strengthened the argument for professional autonomy inside the Academy. The state needed economists capable of telling it what was wrong. But such economists could not work honestly if every conclusion was predetermined. In this sense, the Economic Institute

became one of the clearest institutional expressions of the reformist tendency in research organisation.

Sociology's revival had similar organisational meaning. The restoration of sociology in the 1960s required more than permission to use the word "sociology". It required institutes, trained staff, empirical projects, survey techniques, statistical support, journals, teaching links, and public legitimacy. The founding of sociological institutions within the Academy framework showed that Czechoslovak science was beginning to recognise society itself as an object of empirical research. This was a major organisational innovation because it created a disciplined space for studying social reality outside the purely ideological vocabulary of class doctrine. A sociological institute could conduct research relevant to planning, education, labour, urbanisation, youth, family life, and public opinion. Yet the very act of empirical inquiry made it possible to reveal complexity, dissatisfaction, and differentiation. The reform of research organisation thus had a subtle political consequence. By creating institutions for empirical social science, the Academy helped society become more visible to itself. This was not yet political pluralism, but it was a move away from the monopoly of ideological self-description.

The rise of cybernetics and automation also reshaped the organisation of research. The Institute of Information Theory and Automation was established in 1959 through the merger of existing units concerned with automation, telemechanics, information theory, and radio engineering (*Institute of Information Theory and Automation, n.d.*). This origin already reflected a reformist logic: modern problems required institutional combinations that did not fit older disciplinary borders. Cybernetics linked mathematics, engineering, communication, biology, economics, control theory, and systems analysis. Its organisational importance lay in the fact that it encouraged interdisciplinary cooperation and new models of planning. If a system required feedback, then a research organisation also required feedback. If information was central to control, then secrecy and rigid command could become obstacles to rational management. Cybernetics therefore supplied not only technical tools but an implicit critique of bureaucratic organisation. It made the language of adaptation, feedback, and systems visible inside a state still shaped by hierarchical command. This was one reason why cybernetics became so characteristic of the reform decade.

Interdisciplinary research was one of the strongest reformist tendencies of the 1960s. The problems facing Czechoslovakia were too complex to be solved within single disciplines. Economic reform needed economics, sociology, mathematics, management theory, psychology, law, and political judgement. Technological modernisation needed chemistry, physics, engineering, cybernetics, education, and industrial organisation. Social development required sociology, demography, urban studies, economics, cultural studies, and public administration. The Academy's institute structure could encourage specialisation, but reformist projects increasingly pushed toward cooperation across institutes and fields. This did not always work smoothly. Disciplines had different vocabularies, hierarchies, and institutional interests. Yet the effort itself was historically significant. It replaced the old ideological claim to unity with a more modern functional need for collaboration. The unity of science was no longer to be imposed by doctrine; it was to emerge from shared problems. That shift marked a profound change in the organisation of research.

Radovan Richta's work on the scientific and technological revolution represented perhaps the most ambitious interdisciplinary reform project of the decade. His team brought together

philosophy, sociology, economics, technology, and social theory in order to understand the civilisational meaning of modern science. *Civilization at the Crossroads* framed scientific and technological change not as a narrow technical process but as a transformation of labour, education, human development, and social organisation (*Richta, 1969*). Organisationally, such work required a research culture capable of team-based synthesis. It could not be produced by isolated specialists or by administrative compilation. It needed dialogue across disciplines and a shared conceptual horizon. The project also expressed the reformist belief that socialism could be renewed through knowledge, planning, humanisation, and technological modernity. This was an optimistic vision, and later events would expose its vulnerability. Nevertheless, it showed what the Academy could become when its institutes and researchers were allowed to think beyond narrow departmental boundaries. The reform of research organisation therefore included the emergence of the interdisciplinary team as a privileged form of intellectual production.

The Slovak dimension of reform was equally important, although it carried a different emphasis. Relations between the Czechoslovak Academy of Sciences and the Slovak Academy of Sciences had long been shaped by centralisation, coordination, and tensions over autonomy. Adam Hudek's study shows that at the turn of the 1950s and 1960s the pursuit of effective scientific work led the highest party bodies to alter the position of the Slovak Academy and make it an "organic" part of the Czechoslovak Academy, while the late 1960s brought calls for fundamental reform of the relationship between the two institutions (*Hudek, 2022*). This means that organisational reform was not only about laboratories, planning, and application. It was also about national balance within Czechoslovakia. Slovak representatives often feared that centralised research organisation would reduce Slovak institutes to subordinate or service functions. Czech and central Academy bodies, meanwhile, often justified coordination in the name of efficiency and avoidance of duplication. The reformist debate therefore involved competing meanings of rational organisation. What looked efficient from Prague could look like marginalisation from Bratislava.

The Slovak question shows that the organisation of research was inseparable from the organisation of the state. Scientific institutions reflected the constitutional and political tensions of Czechoslovakia itself. A centralised Academy could claim to represent national scientific unity, but it could also reproduce Czech predominance. A more autonomous Slovak Academy could defend national scientific development, but it might also complicate statewide coordination. The 1960s made these tensions more visible because the broader political atmosphere encouraged debates about federalisation, equality, and national self-expression. Scientific reform therefore could not be limited to internal efficiency. It had to address representation, language, regional development, and institutional dignity. This gave the Academy's organisational reform a constitutional dimension. It also anticipated conflicts that would become more explicit during the Prague Spring. The Academy was not merely a research system; it was one of the institutional mirrors of Czechoslovak statehood.

Personnel policy was another essential field of reform. The quality of research organisation depends not only on institutional charts but on who is allowed to lead, publish, travel, teach, and form research teams. In the Stalinist period, cadre policy had often placed political reliability above scholarly competence. By the 1960s, this priority increasingly conflicted with the demand for modern science. Reform-minded leaders and institute directors could argue that research excellence required the recruitment and promotion of capable specialists, including those whose political profiles were imperfect. The Academy sometimes provided

space for scholars pushed out of universities or kept away from public teaching. This was not full rehabilitation, but it helped preserve intellectual capacity. Personnel reform therefore had a protective dimension. It could bring back expertise damaged by earlier ideological campaigns, though often cautiously and incompletely. It could also open opportunities for younger researchers whose methodological training matched the needs of modern disciplines. The reform of research organisation thus required a partial revaluation of competence.

However, personnel reform remained politically limited. The party-state did not renounce its claim to supervise appointments, promotions, and leadership positions. Sensitive institutes remained vulnerable to ideological review. Scholars associated with reformist ideas could be useful in the mid-1960s and exposed after 1968. Directors had to balance scientific needs with political expectations. This produced an institutional culture of negotiation. A strong director might protect a controversial researcher by emphasising his or her expertise. A research group might frame a project in officially acceptable terms while pursuing more serious questions internally. A scholar might be allowed to work but not to represent the institution publicly. Such arrangements were unstable and morally ambiguous, but they were part of the reformist reality of the Academy. Organisational change did not arrive as a clean statute of academic freedom. It came through practical compromises that widened the space for science without dismantling political control.

The reform of research organisation also involved the problem of evaluation. The older administrative model could measure fulfilment of assigned tasks, but serious science required assessment of originality, methodological rigour, international relevance, and long-term contribution. The Academy's institutes increasingly needed peer judgement rather than purely bureaucratic indicators. This was especially evident in fields with international visibility. A chemical discovery, mathematical result, archaeological interpretation, sociological survey, or economic model could not be evaluated only by whether it corresponded to a plan. It had to be judged by disciplinary standards. Reformist tendencies therefore pushed toward more professional forms of assessment. These were never fully institutionalised in a liberal sense, but the language of scientific quality grew stronger. International publication, conference participation, patents, citations, and expert recognition became harder to ignore. Evaluation reform was thus connected with internationalisation and professional autonomy. It challenged the idea that administrative power could define scientific value from outside the discipline.

Youth and training also belonged to the reform agenda. The Academy needed a new generation of researchers able to work with modern methods, foreign literature, instruments, and interdisciplinary problems. This required postgraduate training, research supervision, specialised seminars, and opportunities for early-career scientists to participate in international networks. The Academy's institute structure could be valuable here because young researchers learned inside active research teams rather than only through formal instruction. Yet the system also faced obstacles: political screening, limited travel, shortage of equipment, uneven language competence, and hierarchical institute cultures. Reform-minded scientists understood that the future of disciplines depended on how younger colleagues were trained and integrated. A stagnant personnel structure would reproduce administrative obedience rather than scientific creativity. Therefore, the organisation of research had to become also an organisation of scientific reproduction. It had to create schools, not merely offices. This was one reason why strong laboratories and seminars became so important in the 1960s.

Budgeting and resource allocation formed another practical field of reform. Scientific autonomy has little meaning without material conditions. Institutes needed equipment, buildings, journals, technical staff, chemicals, computers, fieldwork funds, archival facilities, and travel budgets. Nisonen-Trnka's study notes that by 1960 the Academy's budget for planning and international relations had already increased because such contacts were recognised as important for Czechoslovak science (*Nisonen-Trnka, 2012*). This fact points to a wider shift. The state began to understand that research organisation required investment not only in domestic laboratories but also in the channels connecting them with world science. Yet resource allocation remained a political and administrative process. Institutes competed for funds, and central bodies had to decide which disciplines deserved priority. Reform therefore involved both more resources and smarter distribution. It required recognition that advanced science could not be maintained on symbolic prestige alone. Material support had to correspond to methodological ambition.

The reformist tendency toward greater institute responsibility also had risks. Decentralisation could improve flexibility, but it could also strengthen local hierarchies or uneven development between institutes. Some directors might use autonomy to protect innovation; others might use it to entrench personal authority. Some institutes were internationally connected and methodologically advanced; others remained provincial or ideologically cautious. The Academy therefore faced the problem of how to combine autonomy with accountability. Too much central control would stifle research; too little coordination could produce fragmentation, duplication, or unequal standards. This was not an easy problem, and it remains familiar in research governance today. The 1960s Academy did not solve it completely. Yet the fact that such questions became visible was itself a sign of institutional maturation. The reform debate moved beyond simple slogans of centralisation or decentralisation. It began to ask what kinds of governance actually help science develop.

The reform of research organisation also changed the Academy's public role. If the Academy was only an administrative body of state science, its social meaning was limited. If it became a centre of expertise, diagnosis, and innovation, it could influence national development. The 1960s saw this second image grow stronger. Academy economists participated in debates on economic reform. Sociologists studied social realities. Cyberneticists and systems theorists offered models of rational management. Chemists and technologists demonstrated the potential of research-based innovation. Philosophers and interdisciplinary teams interpreted scientific and technological change as a civilisational issue. The Academy therefore became more visible as a public institution of knowledge. This visibility supported internal reform because it gave the institution a broader claim to importance. At the same time, it increased political risk. A visible Academy could be celebrated when useful, but attacked when its expertise became inconvenient.

The relation between reform and loyalty remained delicate. Most organisational reformers did not initially present themselves as enemies of socialism. On the contrary, many argued that better research organisation was necessary for the success of socialism. They wanted socialism to become more rational, more scientifically grounded, more technologically advanced, and more humane. This made reform politically plausible in the mid-1960s. Yet the same logic could become dangerous because it implied that existing socialism was irrational, bureaucratic, wasteful, or insufficiently humane. The Academy's reformist tendencies therefore carried a double meaning. They were loyal in declared intention but critical in practical implication. They accepted the need for planning but criticised centralised planning.

They accepted social usefulness but criticised crude utilitarianism. They accepted the state's interest in science but criticised political interference in method and personnel. This double meaning was characteristic of the whole reform decade. It allowed change to proceed, but it also made backlash likely once political fear returned.

By the late 1960s, the organisational reform of research had moved beyond narrow institutional efficiency. It touched questions of autonomy, federalisation, economic reform, internationalisation, personnel rehabilitation, interdisciplinary method, and the public authority of science. The Academy had become one of the institutions in which the broader transformation of Czechoslovak socialism was tested. The institutional history of the period notes that during the difficult years at the end of the 1960s, the Academy, its staff, and its leadership generally managed to uphold its integrity, although this later contributed to its being labelled by those in power as one of the centres of "counter-revolution" (*Franc, Dvořáčková, et al., 2025*). This is a striking statement because it reveals how organisational reform could become politically charged. A research institution that defended its integrity could be reinterpreted as a threat. The very reforms that made the Academy more modern also made it less obedient. The post-1968 reaction would show that the regime understood this danger. Yet before that reversal, the Academy had already demonstrated that scientific organisation could not be modernised without changing the relationship between knowledge and power.

Thus, the reformist tendencies in the organisation of research within the Czechoslovak Academy of Sciences during the 1960s formed a complex attempt to make socialist science more flexible, professional, internationally connected, and socially effective. These tendencies included greater institute-level initiative, a more intelligent balance between basic and applied research, stronger links with industry and policy, revived social science, interdisciplinary teamwork, improved international communication, personnel renewal, and more professional evaluation. They were not anti-institutional or anarchic; on the contrary, they sought a better form of organisation for modern knowledge. Yet their implications exceeded administration. To reorganise research was also to redistribute authority from political command toward professional judgement. To improve application was also to criticise bureaucratic barriers between science and practice. To open international relations was also to challenge provincial ideological control. To strengthen Slovak scientific autonomy was also to rethink the structure of the Czechoslovak state. For this reason, reform of research organisation became one of the quiet but decisive fronts of the 1960s transformation. It prepared the Academy to become an active participant in the reform horizon of the Prague Spring, while also exposing it to the political retaliation that followed the end of that horizon.

2. Debates on Scientific Planning, Evaluation, and Autonomy

The debates on scientific planning, evaluation, and autonomy within the Czechoslovak Academy of Sciences in the 1960s belonged to the same historical movement as the wider reform of Czechoslovak socialism. They did not arise from a purely administrative desire to improve paperwork or redistribute competences between offices. They emerged from the practical experience of researchers who saw that science could not flourish if it was governed only by political command, quantitative plan indicators, and ideological loyalty. The Academy had been created as a centralised research body, and its early structure reflected the conviction that socialist science could be planned, directed, and mobilised in a way analogous to socialist industry. By the 1960s, this conviction had become increasingly difficult to sustain.

Laboratories did not produce discoveries simply because a plan demanded them, and social scientists could not diagnose society if their conclusions were politically fixed in advance. The Academy's internal debates therefore revolved around a fundamental question: how could a state-financed socialist research institution remain socially useful while also preserving the professional freedom necessary for genuine science? The recent institutional history of the Czechoslovak Academy of Sciences describes the period 1963–1970 as a time of extensive internal reform, political relaxation, openness to Western impulses, and exceptional disciplinary development under František Šorm's leadership (*Franc, Dvořáčková, et al., 2025*). That assessment is important because it shows that debates about planning and autonomy were not marginal. They were central to the Academy's attempt to redefine itself as a modern research institution.

Scientific planning had been one of the pillars of the post-1948 research system. In principle, planning promised rational concentration of resources, avoidance of duplication, coordination between institutes, and alignment of research with national economic and cultural priorities. These aims were not meaningless, especially in a medium-sized country that could not afford unlimited institutional fragmentation. Yet the practice of planning often became bureaucratic, rigid, and politically overdetermined. Research tasks could be formulated according to administrative categories rather than intellectual problems. Institutes could be judged by whether they fulfilled assigned plans rather than by whether they produced original knowledge. Long-term inquiry could be disrupted by short-term priorities, while ambitious projects could be forced into artificial reporting cycles. The 1960s therefore did not simply produce a rejection of planning. Instead, they generated an argument for a different kind of planning: more flexible, more expert-led, more aware of uncertainty, and more respectful of disciplinary standards. The Academy's reform-minded researchers and administrators increasingly understood that science needed coordination, but coordination had to serve discovery rather than replace it.

The strongest criticism of old-style planning came from the contradiction between research and predictability. Industrial production can often be planned through output targets, materials, labour hours, and delivery schedules. Scientific discovery cannot be planned in this way, because its value often lies precisely in the unknown result. A chemist can define a research problem, prepare an experimental programme, and report progress, but cannot honestly guarantee the discovery that will emerge from it. A historian can plan archival work, but cannot know in advance what the sources will reveal. A sociologist can design a survey, but cannot predetermine its findings without destroying its scientific validity. An economist can construct models, but cannot make reality fit them by administrative decree. These differences made the old planning mentality epistemologically inappropriate. The debate in the Academy therefore concerned not only governance but the nature of knowledge itself. A plan could organise the conditions of inquiry, but it could not command truth. This recognition was one of the deeper intellectual foundations of the Academy's reformist mood.

Economic reform gave these debates sharper political relevance. The Czechoslovak economy had entered a difficult period in the early 1960s, and the limitations of rigid central planning were increasingly visible. Economists connected with the Economic Institute of the Czechoslovak Academy of Sciences became important critics of existing mechanisms and helped formulate reform alternatives. Jiří Kosta notes that the economic crisis of 1962–1964 forced the leadership to confront the inadequacy of conventional assurances about socialism and to consider critical proposals associated with Ota Šik and the Economic Institute (*Kosta, 1989*). The importance of this fact extends beyond economics. If economic planning required

reform because central command could not process information efficiently, scientific planning required reform for similar reasons. Both systems suffered when decision-making was too remote from real processes. Both needed feedback, specialised knowledge, and institutional responsibility. The Academy's internal debates on research planning were therefore connected to the wider critique of command-administrative socialism. The reform of science and the reform of the economy were not identical, but they belonged to the same intellectual atmosphere.

The Academy's economists helped turn planning itself into an object of scientific investigation. Instead of treating planning as a sacred principle, they asked how planning actually worked, where information was lost, how incentives shaped behaviour, and why administrative targets could produce irrational outcomes. This analytical shift had consequences for the Academy's self-understanding. If economic institutions needed more autonomy from central directives in order to function effectively, then research institutes could make a similar claim. Autonomy did not have to be presented as a liberal right against socialism. It could be defended as a necessary condition of rational performance within socialism. This was a powerful argument because it translated professional freedom into the language of efficiency, responsibility, and modernisation. It also allowed reform-minded scholars to criticise bureaucracy without openly rejecting the socialist framework. The Academy's debates therefore often moved within a reformist socialist vocabulary, but their implications were broader. They suggested that knowledge-producing institutions require self-correction, peer judgement, and decentralised competence. These were principles that could not be easily reconciled with a fully command-based political system.

Evaluation was the second central issue. A research system can plan poorly and still survive for some time, but if it evaluates scientific work badly, it gradually destroys its own standards. In the Stalinist period, political reliability, ideological usefulness, and fulfilment of assigned tasks had often overshadowed professional quality. By the 1960s, this was increasingly unacceptable to many researchers. The Academy needed criteria that could distinguish genuine scientific achievement from formal compliance. It needed to know which institutes were internationally competitive, which research programmes were intellectually promising, which laboratories required investment, and which publications actually mattered. Evaluation therefore became a practical and moral problem. If political authorities judged science from outside its methods, science would remain dependent. If scientists judged themselves without accountability, institutes could become closed hierarchies or self-protective communities. The reform debate had to find a balance between external responsibility and internal professional judgement. This balance was difficult, but the discussion itself showed that the Academy was moving beyond the simplest forms of administrative control.

The problem of evaluation differed across disciplines. In chemistry, physics, mathematics, biology, and engineering, international publications, experimental results, patents, instruments, and conference recognition could provide relatively visible indicators of quality. They were not perfect, but they created external standards that could not be entirely manipulated by domestic political authorities. In the humanities and social sciences, evaluation was more complex and politically exposed. A historian's archival interpretation, a sociologist's empirical survey, or a philosopher's conceptual analysis could not be assessed by patent counts or laboratory output. At the same time, these disciplines were closer to ideological conflict because they dealt with society, culture, memory, and legitimacy. The Academy therefore needed multiple evaluation cultures rather than a single mechanical

standard. This was a sophisticated problem, and it was not solved in the 1960s. Yet the very recognition that research quality required disciplinary criteria marked a significant departure from the earlier model. Evaluation became an arena in which professional autonomy could be defended. To demand peer judgement was to demand that science be evaluated as science.

Internationalisation strengthened the argument for professional evaluation. When Czechoslovak scientists published abroad, attended conferences, hosted symposia, or worked with foreign colleagues, their work entered a wider field of judgement. This was especially important for the natural sciences, where international comparison was unavoidable. Riikka Nisonen-Trnka describes cooperation with Western science as one of the major embodiments and paradoxes of Czechoslovak scientific liberalisation, because the state wanted international prestige while also fearing uncontrolled contacts (*Nisonen-Trnka, 2008*). The paradox affected evaluation directly. If an Academy institute claimed international excellence, the claim had to be tested through foreign journals, citations, invitations, and collaboration. Yet the more researchers depended on international criteria, the less purely domestic ideological evaluation could dominate them. This did not abolish political supervision, but it complicated it. A regime could denounce a scholar politically, but it could not easily manufacture international scientific authority. In this sense, internationalisation became a protective, though never secure, resource for professional autonomy.

The debate over evaluation also had a generational dimension. Older scholars who had lived through the interwar period or the immediate post-war years often remembered other standards of academic recognition. They knew that reputation had once been tied to publications, learned societies, foreign contacts, and scholarly schools rather than only to party reliability. Younger researchers trained under socialism increasingly wanted access to contemporary methods, equipment, and international literature. They did not necessarily seek to restore the pre-1948 academic order, but they wanted research to be judged by its intellectual seriousness. This created an implicit alliance between memory and modernisation. Senior scholars could appeal to older professional norms, while younger scholars could appeal to future-oriented scientific competitiveness. The Academy became one of the few institutions where these two arguments could meet. It preserved fragments of earlier academic culture while also housing new laboratories and interdisciplinary teams. Evaluation debates therefore reflected both restoration and innovation. They asked how a scientific community could recover standards while adapting to modern forms of research.

Autonomy was the third and most sensitive theme. In the Academy, autonomy could mean several different things: autonomy of the institution from party interference, autonomy of institutes from central Academy administration, autonomy of research groups from institute hierarchy, autonomy of disciplines from ideological doctrine, and autonomy of scientists from bureaucratic evaluation. These forms of autonomy overlapped but did not always coincide. A strong central Academy might defend science against ministries, but also limit institute initiative. A powerful institute director might protect researchers from political pressure, but also dominate internal intellectual life. A discipline might gain methodological freedom while still avoiding politically sensitive questions. The 1960s debates therefore could not be reduced to a simple demand for “more autonomy”. They involved competing autonomies and competing responsibilities. The key issue was how to construct a research system in which freedom did not become fragmentation, and coordination did not become control. This problem gave the Academy’s reform debates their institutional complexity.

The leadership of František Šorm was significant because it allowed autonomy to be defended through the authority of scientific achievement. Šorm's presidency did not place the Academy outside the socialist state, but it strengthened the status of professional science within institutional negotiation. The second volume of the Academy's history identifies the years of his leadership with a broad transformation of the ČSAV, including reform tendencies, increasing openness, and a search for a new social position for the institution (*Franc, Dvořáčková, et al., 2025*). This mattered because autonomy was easier to claim when the Academy could demonstrate usefulness and prestige. A politically isolated plea for academic freedom would have been vulnerable. A scientifically grounded argument that research quality required autonomy was harder to dismiss. Šorm's own background in chemistry made this argument more credible. He could speak as someone who understood the concrete needs of research. Under such conditions, autonomy became less an abstract slogan and more a practical precondition for national scientific success.

The Academy's institutes were the main terrain on which autonomy was tested. Central planning bodies could define broad priorities, but institutes conducted the actual work. They knew which equipment was needed, which younger researchers were promising, which foreign journals mattered, which methodological debates were current, and which projects had real potential. Reform-minded institute directors therefore sought greater discretion in managing resources, personnel, and research programmes. This was not always a democratic demand. Sometimes it strengthened the authority of directors and senior researchers. Yet it could still expand professional autonomy if directors used their position to defend research communities. The institute became a buffer between the individual scientist and the state. It could protect, translate, negotiate, and sometimes conceal. The quality of institute leadership therefore became one of the practical determinants of freedom. Autonomy in the Academy was not only written into statutes; it was enacted through institutional relationships.

The relationship between autonomy and accountability was difficult. A state-funded Academy could not simply withdraw from public responsibility. It had to justify its budgets, priorities, buildings, salaries, equipment, and social relevance. Reformers therefore had to explain why autonomy would improve rather than weaken accountability. Their answer was that genuine accountability in science must be professional as well as administrative. A research institute should be accountable for the seriousness of its work, the quality of its publications, the training of young scholars, the relevance of its programmes, and the integrity of its methods. It should not be judged only by political conformity or by formal plan fulfilment. This argument redefined accountability from below. It suggested that the state had a legitimate interest in science, but that the state could damage its own interest if it ignored scientific standards. The Academy's debates therefore tried to replace external discipline with responsible self-government. Such self-government remained incomplete, but the idea itself was historically important.

In the social sciences, the demand for autonomy was especially closely linked to the demand for truthful diagnosis. Sociology, economics, law, demography, and political analysis could serve public policy only if they were allowed to describe reality accurately. A sociological survey that merely confirmed official optimism had no scientific value. An economic analysis that ignored systemic inefficiency could not help reform. A demographic study distorted by ideology could not support planning. The revival of sociology within the Academy framework in the mid-1960s therefore had institutional significance as well as disciplinary significance. It created a space where empirical methods could enter the study of socialist society. That space

required autonomy because empirical findings could contradict official narratives. The Academy's social scientists were often careful and reformist rather than openly oppositional, but their work depended on the right to observe. In this sense, autonomy was not a privilege of scholars; it was a condition of social knowledge.

The humanities faced an even more delicate problem. Historical research, philosophy, literary studies, linguistics, archaeology, and art history dealt with cultural memory and interpretation. Their autonomy could not be defended only by economic usefulness or technological innovation. It had to be defended as a condition of intellectual seriousness and national cultural maturity. In the 1960s, the humanities gradually recovered more sophisticated methods, including archival criticism, structural analysis, comparative interpretation, and renewed attention to previously marginalised traditions. Yet political limits remained strong because the humanities could disturb official narratives about national history, class struggle, democracy, fascism, Stalinism, and the legitimacy of the communist regime. The later post-1968 attacks on historians and humanists show that the authorities understood this risk. The Institute of History's own institutional account notes that after the Prague Spring it was renamed, weakened by forced resignations, and affected by the imprisonment of leading experts such as František Šmahel and Jaroslav Mezník (*Institute of History of the CAS, n.d.*). This later reversal illuminates the earlier debate: autonomy in the humanities was never merely academic. It concerned the right of society to know its own past.

Planning debates also touched the question of long-term research. Some forms of research cannot produce immediate visible results. Historical editions, dictionaries, archaeological surveys, geological mapping, biological collections, longitudinal social research, and basic laboratory programmes require continuity over years or decades. A rigid annual plan could distort such work by demanding premature outputs or artificially measurable achievements. The Academy's institutes needed planning horizons long enough to support cumulative inquiry. This was one reason why the Academy could not be governed purely by short-term political cycles. Scientific time differs from administrative time. Reformist debates therefore had to defend long-term continuity against impatience. They also had to explain that unfinished research is not necessarily unproductive. Sometimes the most valuable work lies in building archives, methods, instruments, collections, and teams before final results appear. The Academy's institutional maturity depended on whether it could protect this slower temporality of science.

The debate over scientific planning was also a debate over information. Good planning requires reliable information from below, but authoritarian systems tend to distort information because subordinates fear reporting failure. This problem was familiar in the economy, and it was also present in science. Institutes might exaggerate success, conceal difficulties, or formulate projects in language expected by superiors. Central authorities might issue priorities without knowing real scientific conditions. Researchers might formally comply with plans while informally pursuing more meaningful work. Such behaviour was rational under pressure, but it damaged institutional learning. Reform-minded approaches to planning therefore required more honest feedback. Cybernetics and systems theory made this point conceptually attractive in the 1960s. If a system suppresses feedback, it cannot adapt. Applied to the Academy, this meant that scientific governance needed open reporting, criticism, and correction. The language of information and feedback thus became indirectly connected with autonomy.

The rise of cybernetics within the Academy helped reshape these debates. The Institute of Information Theory and Automation had been established in 1959 through the merger of units concerned with automation, telemechanics, information theory, and radio engineering (*Institute of Information Theory and Automation, n.d.*). The journal *Kybernetika* appeared in the mid-1960s as part of the consolidation of cybernetic research in Czechoslovakia (*Kybernetika, 2024*). These institutional developments were not limited to technical research. Cybernetics offered a general vocabulary of control, feedback, communication, and adaptation. That vocabulary could be applied to machines, organisations, economies, and social systems. It suggested that rigid command without feedback was inefficient by definition. This made cybernetics methodologically useful and politically suggestive. It allowed reformers to criticise bureaucratic planning in technical language. In the Academy, such language helped connect scientific planning with broader debates on rational governance.

The influence of cybernetic and systems thinking should not be exaggerated into a single cause of reform, but it gave reform debates conceptual coherence. It encouraged researchers to see institutes not as passive recipients of directives but as active nodes in a knowledge system. A research system required circulation of information, evaluation of results, correction of errors, and adaptation to new problems. This view made autonomy functional rather than merely ideological. Institutes needed autonomy because they processed specialised information that central authorities could not fully possess. Evaluation had to be professional because only disciplinary communities could judge certain kinds of information. Planning had to be flexible because complex systems cannot be controlled by linear commands alone. Such ideas resonated strongly in a decade fascinated by the scientific and technological revolution. They also helped bridge natural sciences, social sciences, and economic reform. The Academy became a place where organisational self-reflection could borrow concepts from contemporary science itself. This was one of the more subtle forms of methodological modernisation.

Radovan Richta's interdisciplinary project on the scientific and technological revolution also contributed to the rethinking of planning and autonomy. *Civilization at the Crossroads* presented science and technology as forces transforming labour, education, social structure, and human development (*Richta, 1969*). Its importance lay not only in its content but in its form: it was a collective, interdisciplinary, future-oriented research project. It suggested that modern society required intellectual synthesis rather than administrative compartmentalisation. If science was becoming the central productive force of civilisation, then the organisation of science could not remain primitive, bureaucratic, or ideologically rigid. The Academy's planning debates therefore had a broader civilisational dimension. They asked how a society could organise knowledge in an age when knowledge itself was becoming decisive. Richta's project still operated within a socialist horizon, but it pushed that horizon toward humanisation, participation, and rational self-correction. This made it both acceptable and potentially unsettling. It implied that the future of socialism depended on whether it could give science enough freedom to transform society.

The Slovak dimension complicated planning and autonomy in institutional terms. Relations between the Czechoslovak Academy of Sciences and the Slovak Academy of Sciences raised questions about central coordination, national equality, and scientific self-government. Adam Hudek's study of relations between the two academies shows that the late 1960s brought calls for fundamental reform in their relationship, after earlier arrangements had sought to make the Slovak Academy an organic part of the Czechoslovak Academy structure (*Hudek, 2022*). This

issue had direct relevance for planning. A centrally planned research system could claim efficiency, but it could also reproduce asymmetry between Prague and Bratislava. Slovak institutions needed sufficient autonomy to develop their own research priorities, personnel, and disciplinary communities. At the same time, Czechoslovak science required coordination in fields where resources were limited. The debate therefore was not simply between centralism and nationalism. It concerned how a multinational state could organise science without reducing one national component to a subordinate position. Scientific autonomy thus intersected with constitutional reform.

The Slovak question also revealed that evaluation could not be entirely separated from institutional power. If the central Academy defined standards, allocated resources, and judged priorities, Slovak institutes could fear being evaluated according to criteria shaped mainly by Czech institutional experience. If evaluation was decentralised too far, however, it could weaken common standards and reduce the visibility of Slovak science in the wider Czechoslovak and international context. The 1960s debates therefore involved a search for proportionality. Scientific quality had to matter, but so did institutional development and national representation. This was especially important for disciplines tied to language, history, culture, regional economy, and social development. The Academy's planning mechanisms had to account for the fact that Czechoslovakia was not a homogeneous scientific space. Research organisation was also a politics of territory and identity. The later federalisation debates of the Prague Spring would make this connection more explicit. But the problem was already present in the organisation of science.

The question of publishing created another zone where planning, evaluation, and autonomy met. Academic publishing under socialism was not merely a neutral channel of communication. It was an institution of permission, reputation, censorship, and intellectual circulation. A planned research system needed publications as evidence of output, but serious evaluation required judging what publications actually contributed. Reform-minded scholars wanted journals and monographs to reflect genuine disciplinary debate rather than ritual production. At the same time, publication remained politically supervised. Censorship and editorial control could shape what methods, arguments, and interpretations reached readers. Later studies of academic publishing under state socialism have shown how scholarly communication was structured by permissions, institutional gatekeeping, and strategies of professional survival (*Kopeček & Wciślik, 2021*). Although much of the most repressive publishing environment belongs to normalisation after 1969, the 1960s debates already revealed the importance of publication autonomy. Without the ability to publish meaningful work, planning and evaluation became hollow. A science that cannot communicate cannot properly evaluate itself.

Travel and conference participation were similarly important. A research plan could include international cooperation, but actual participation depended on permissions, funding, political trust, and institutional priorities. Evaluation could be improved by international comparison, but that required researchers to be present in international arenas. Autonomy could be strengthened by foreign recognition, but foreign recognition was difficult without mobility. Nisonen-Trnka's work on Czechoslovak natural scientists emphasises that contacts with Western science were central to the reform atmosphere and also politically paradoxical (*Nisonen-Trnka, 2008*). The Academy's debates therefore included practical questions: who should travel, according to what criteria, with what reporting duties, and for what institutional benefit? Travel was not simply a privilege; it was part of the infrastructure of scientific

evaluation. A scientist who attended conferences brought back methods, contacts, publications, and standards. Restricting travel could protect political control, but it weakened scientific quality. The Academy had to negotiate this contradiction continuously.

Personnel evaluation was perhaps the most sensitive form of evaluation. Scientific institutions depend on appointments, promotions, leadership selection, and the training of younger scholars. In the Stalinist period, cadre policy had privileged political reliability. In the 1960s, professional competence became more important, but political criteria did not disappear. This created a mixed and often unstable personnel regime. A researcher could be scientifically excellent but politically suspect. Another could be reliable but mediocre. The Academy's reformist logic favoured competence, because modern science could not be built on obedience alone. Yet the party-state retained mechanisms of control over careers. This tension shaped the entire decade. It also explains why the later normalisation purges were so damaging: they did not merely remove political opponents but disrupted research teams, disciplines, and generational continuity. Personnel policy was therefore one of the places where autonomy either became real or remained rhetorical.

The debate over autonomy also included the moral question of responsibility. Some party officials feared that greater autonomy would create uncontrolled intellectual opposition. Some scientists feared that without autonomy science would become false, provincial, and sterile. Between these positions lay a difficult question: what obligations did scientists have to society? Reformers did not usually argue that researchers should be isolated from social needs. On the contrary, they often insisted that science must contribute to economic modernisation, cultural development, and human welfare. But they also argued, implicitly or explicitly, that society is not served by subordinating truth to political convenience. A false diagnosis cannot guide reform. A censored history cannot educate citizens. A manipulated survey cannot help social planning. An experiment distorted by pressure cannot produce reliable technology. Scientific autonomy was therefore tied to public responsibility. This moral link gave the Academy's debates a depth that went beyond institutional self-interest.

The Academy's position was different from that of universities, and this difference shaped the autonomy debate. Universities were responsible for teaching, ideological education, student life, and professional training. The Academy's institutes were focused primarily on research, which gave them a different internal rhythm and sometimes a greater capacity to protect specialised work. The Czech Academy's historical overview notes that the Czechoslovak Academy possessed a greater formal degree of decision-making autonomy than Sovietised universities and could shelter some figures pushed out of university life, including Václav Černý, Jan Patočka, and Otto Wichterle (*Czech Academy of Sciences, n.d.*). This comparative autonomy strengthened the Academy's self-image as a research institution with special responsibilities. It could preserve knowledge and expertise that might otherwise be lost. But this position also made it politically visible. If the Academy became a refuge for independent thought, it could be accused of elitism or ideological unreliability. The autonomy debate therefore included a question of institutional identity: was the Academy a service organ of the state, a national research centre, or a partially self-governing community of scholars?

By the second half of the 1960s, the debates had moved closer to the public sphere. Questions of scientific planning, evaluation, and autonomy were no longer only internal institutional issues. They were connected with broader discussions about economic reform, cultural liberalisation, federalisation, and the role of expertise in government. The Academy's scholars

increasingly appeared as public intellectuals, expert advisers, reform theorists, and institutional critics. This development was both empowering and dangerous. It gave science a stronger voice in society, but it also blurred the boundary between professional autonomy and political reform. Once economists, sociologists, philosophers, and natural scientists began to speak publicly about the conditions of modernisation, their authority could no longer be confined to laboratories and institutes. The Academy became part of the wider reform horizon. Its internal debates helped supply the language of rationality, evidence, feedback, and responsibility that animated the Prague Spring. This was one reason why the Academy's integrity later became politically suspect.

The post-1968 reversal demonstrated the fragility of the reforms, but it also confirms their significance. Institutions are not punished harshly for debates that are meaningless. The fact that Academy institutes and scholars became targets of normalisation shows that debates on planning, evaluation, and autonomy had acquired political weight. Nisonen-Trnka notes that legal measures were taken in March 1970 against individuals who had participated in scientific reforms during the Prague Spring (*Nisonen-Trnka, 2008*). The Academy's own later history and the histories of its institutes show that post-1968 intervention affected personnel, leadership, publishing, international contacts, and research agendas. The reform debates of the 1960s had therefore touched the real mechanisms of power. They had challenged who could define scientific value, who could plan research, who could evaluate truth, and who could speak for knowledge. The defeat of these reforms did not make them insignificant. It revealed how far they had gone in redefining the Academy's place within socialist society.

The debates on planning, evaluation, and autonomy also left a longer legacy. Even when normalisation imposed new restrictions, memories of the 1960s continued to shape the identity of many scientific communities. Researchers remembered that institutes had once possessed greater openness, that international contacts had widened, that evaluation had moved closer to professional standards, and that public expertise had seemed capable of influencing reform. These memories could become painful, but they also preserved an alternative image of what the Academy might be. After 1989, when the Academy again had to redefine its autonomy and legitimacy, the 1960s could be recalled as an earlier, incomplete attempt at scientific self-government. The debates of that decade therefore belong not only to the history of the Prague Spring. They also belong to the longer history of Czech and Czechoslovak struggles over the institutional conditions of knowledge. They show that the question of autonomy was never a luxury for scholars. It was a structural requirement of scientific truthfulness.

Thus, the debates on scientific planning, evaluation, and autonomy in the Czechoslovak Academy of Sciences during the 1960s formed one of the central intellectual and institutional dramas of the reform decade. They began from practical problems of research organisation, but they gradually opened onto larger questions of power, truth, responsibility, and modernity. Planning had to be defended against chaos, but also rescued from bureaucratic rigidity. Evaluation had to protect public accountability, but also respect disciplinary competence and international standards. Autonomy had to remain socially responsible, but could not be sacrificed to ideology without destroying the very science the state claimed to support. The Academy's researchers and leaders did not resolve all these tensions, and their reforms remained politically vulnerable. Yet they changed the language in which science was discussed. They made it possible to argue that modern research requires feedback, peer judgement, methodological freedom, long-term continuity, and honest communication with

the world. In doing so, they transformed the Academy from a centrally administered institution into a contested space of professional self-definition. This transformation prepared the ground for the more visible conflicts of 1968 and also gave later generations a powerful memory of what scientific autonomy could mean.

3. The Academy as a Space of Cautious Intellectual Liberalisation

The Czechoslovak Academy of Sciences in the 1960s became one of the most important spaces of cautious intellectual liberalisation in the country, although this liberalisation must be understood with historical precision. It was not a free academy in the Western liberal sense, and it was not an opposition institution standing outside the structures of socialist power. It remained formally and materially dependent on the party-state, its leadership was politically monitored, and its institutes operated within a system of planning, ideological review, and cadre control. Yet precisely because it was a major research institution, it also contained social and intellectual mechanisms that could not be entirely reduced to political command. Laboratories, seminars, editorial boards, expert commissions, research groups, institute libraries, archives, and international contacts created pockets of professional life in which more complex forms of thinking could develop. The second volume of the institutional history of the Czechoslovak Academy of Sciences describes the years 1963–1970 as a period of easing political control, civil-society growth, greater openness to Western impulses, significant internal reforms, and exceptional development in many disciplines (*Franc, Dvořáčková, et al., 2025*). This characterisation captures the central paradox of the Academy in the decade before normalisation. It was still an institution of the socialist system, but it was also one of the places where the system's intellectual boundaries began to shift. It allowed certain questions to be asked more openly, certain methods to be used more seriously, and certain foreign influences to be discussed more responsibly. The Academy did not abolish censorship, fear, or ideological discipline, but it made them less absolute. Its liberalisation was cautious because it advanced through research practice rather than open political confrontation. It was intellectual because it changed the quality of thought before it changed the structure of power.

The concept of cautious intellectual liberalisation is useful because it avoids two misleading simplifications. The first simplification is the romantic image of the 1960s Academy as a nearly free republic of scholars. That image ignores the continuing role of the Communist Party, the security apparatus, ideological review, travel permissions, publication control, and the vulnerability of individual careers. The second simplification is the reduction of the Academy to a passive instrument of communist rule. That image ignores the internal diversity of institutes, the professional authority of scientific communities, the partial protection offered to some scholars, and the genuinely innovative research produced during the decade. The Academy's real position lay between these extremes. It was a controlled institution that generated semi-autonomous intellectual practices. It served the state, but it also supplied forms of knowledge that could correct, criticise, or complicate the state's self-understanding. It employed loyal functionaries, cautious professionals, reform-minded Marxists, internationally recognised scientists, and intellectuals who had already experienced exclusion elsewhere. Its liberalisation was therefore uneven, negotiated, and dependent on field, institute, personality, and political moment. This unevenness made it historically fragile, but it also made it productive. The Academy's importance lay not in complete freedom, but in the emergence of limited spaces where serious thinking could once again become possible.

The Academy's institute structure was one of the material foundations of this cautious liberalisation. Universities were more exposed to ideological education, student mobilisation, and direct political oversight, whereas Academy institutes were primarily research environments. This difference did not make the Academy independent, but it gave it a different rhythm. A research institute could cultivate long-term projects, specialised seminars, technical expertise, archival work, and laboratory continuity in ways that did not always require constant public ideological display. The official historical overview of the Czech Academy of Sciences notes that, compared with universities fully Sovietised by the Higher Education Act of 1950, the Czechoslovak Academy retained at least a greater formal degree of decision-making autonomy and could sometimes offer asylum to scholars expelled from universities, including Václav Černý, Jan Patočka, and Otto Wichterle (*Czech Academy of Sciences, n.d.*). This was one of the most concrete ways in which the Academy became a space of cautious liberalisation. It did not necessarily restore public authority to such figures, but it could preserve their intellectual presence within institutional life. It could allow work to continue when open university teaching or public cultural activity had become impossible. Such shelter was incomplete and conditional, yet it mattered profoundly for the continuity of Czech intellectual culture. It meant that the Academy carried not only official socialist science but also fragments of older academic traditions and suppressed intellectual lineages. This protective capacity became one of the reasons why the Academy later appeared dangerous to normalisation authorities.

The Academy's cautious liberalisation also depended on the internal distinction between public speech and professional discourse. Public political statements remained risky, especially before the more open phase of 1968. Professional discourse, however, could sometimes move more freely because it was framed as technical, disciplinary, or methodological. A philosopher could discuss alienation, humanism, and technology under the language of Marxist renewal. An economist could criticise planning mechanisms in the vocabulary of socialist efficiency. A sociologist could investigate social differentiation as a contribution to better social policy. A chemist or physicist could defend international contact as a condition of scientific competitiveness. In each case, professional language created a protected channel for wider intellectual movement. It allowed scholars to say more than official slogans permitted, though usually not as much as full freedom would require. This produced a culture of careful formulation, strategic ambiguity, and layered argument. Texts and lectures often had a surface of acceptable vocabulary and a deeper level of methodological or critical innovation. Such double coding was not ideal, because it encouraged caution and sometimes self-censorship. Yet under authoritarian conditions it could become a way of preserving truth-seeking. The Academy's cautious liberalisation therefore occurred through the disciplined use of specialised languages.

Seminars played a crucial role in this intellectual opening. They were less visible than public congresses and less easily reduced to formal ideological rituals. In seminars, researchers could test concepts, discuss foreign literature, criticise methods, and debate interpretations with a freedom that rarely existed in official publications. The seminar room was not outside the state, but it allowed a different density of argument. It created a temporary community governed more by expertise than by political rank, at least when institute culture permitted it. Younger scholars could encounter senior figures, foreign guests, translated texts, and new methodologies. Economists, sociologists, philosophers, historians, chemists, mathematicians, and cyberneticists all depended on such smaller spaces of exchange. The

Academy's institute-based life made seminars especially important because they allowed research communities to reproduce themselves across generations. They also allowed interdisciplinary contact, particularly in fields connected with the scientific and technological revolution. Such conversations were rarely dramatic from the outside, but they changed the intellectual atmosphere. They made it possible to think before one could openly publish. In that sense, seminars were among the quiet institutions of liberalisation.

The revival of sociology illustrates how cautious liberalisation operated in institutional and methodological form. Sociology had been marginalised after 1948 because Marxist-Leninist ideology claimed to possess a complete science of society and treated independent empirical sociology with suspicion. In the 1960s, however, social reality became too complex to be described only through doctrine. Urbanisation, youth culture, education, work organisation, public opinion, social differentiation, and everyday life required empirical investigation. The establishment of the Institute of Sociology of the Czechoslovak Academy of Sciences in the mid-1960s marked a significant moment in the reconstitution of the field, and historians of Czech sociology have treated that revival as a central part of the discipline's modern development (*Skovajsa, 2008*; *Illner, 2011*). This institutional revival was liberalising because it gave society a method of observing itself. It introduced surveys, data, interviews, and comparative analysis into a public culture still shaped by ideological self-description. Sociology did not necessarily become anti-socialist; many sociologists hoped to contribute to a more rational socialism. Yet the discipline's empirical method made it difficult to sustain the fiction of a completely harmonious socialist society. The Academy thus became a place where society could be studied as a living, differentiated reality rather than merely celebrated as an ideological achievement. This was a cautious but genuine opening of intellectual life.

Economics provides an even clearer example of expert knowledge becoming a vehicle of controlled criticism. The Economic Institute of the Czechoslovak Academy of Sciences became one of the major centres of reform-oriented thinking in the early and mid-1960s. Ota Šik and his colleagues did not reject socialism as an official framework, but they criticised the inefficiencies of rigid central planning, weak incentives, poor enterprise autonomy, and the absence of meaningful feedback in the economy. Jiří Kosta's analysis of the Czechoslovak economic reform identifies the Economic Institute under Šik as a decisive centre where critical economic proposals emerged during the crisis years of 1962–1964 (*Kosta, 1989*). This was intellectual liberalisation because economic reality became subject to analysis rather than ideological reassurance. It was cautious because the criticism was framed as reform of socialism, not as rejection of socialism. Such framing made it politically possible for a time, but it also gave the analysis a practical edge. If the system needed reform, then existing authority had failed in some important respect. The Academy's economists therefore transformed expertise into a limited form of public reason. Their work showed that the state's own need for modernisation could open space for critical thought. It also showed that expertise could become dangerous when it began to reveal structural failure.

The Academy's philosophical environment also contributed to this cautious opening, especially through debates on technology, humanism, alienation, and the scientific and technological revolution. Radovan Richta and his interdisciplinary team provided one of the most important intellectual syntheses of the decade. Their work did not merely discuss technology as machinery or production; it interpreted science and technology as forces transforming labour, education, culture, social organisation, and human development. The English edition of *Civilization at the Crossroads* presented the project as the result of

systematic research undertaken in Czechoslovakia by a team of workers from different branches of science beginning in 1965 (*Richta, 1969*). The project's significance lay in the way it connected Marxist vocabulary with broader questions of modern civilisation. It gave reform socialism a language of human development and scientific rationality. It also implied that a modern society based on knowledge could not be governed adequately by secrecy, fear, or bureaucratic command. This was not open liberalism, but it was a powerful intellectual loosening. The Academy became the institutional setting in which such a synthesis could be produced, discussed, and circulated. Its cautious liberalisation therefore included the creation of concepts that made reform thinkable.

Richta's project is also important because it shows how interdisciplinarity itself could become a form of liberalisation. Stalinist intellectual order had claimed unity through doctrine, while the 1960s Academy increasingly sought unity through shared problems. The scientific and technological revolution could not be understood by philosophy alone, economics alone, sociology alone, or engineering alone. It demanded cooperation across fields, and such cooperation weakened rigid disciplinary and ideological compartments. Interdisciplinary work required negotiation, debate, and the recognition that no single authority possessed all answers. This was intellectually significant in a society where political authority still claimed a monopoly over fundamental truth. The Academy's interdisciplinary teams therefore created small laboratories of plural reasoning. They did not necessarily produce political pluralism, but they practised a form of epistemic plurality. Different methods and disciplines had to be placed in conversation. The resulting synthesis was often optimistic and reformist, but it moved beyond the narrowness of dogmatic Marxism-Leninism. It treated modernity as a problem to be investigated, not as a script already written by ideology. This made interdisciplinarity one of the Academy's most important liberalising practices.

The natural sciences participated in cautious liberalisation in a different but no less important way. Their liberalising force came less from direct political critique and more from the practical necessity of international standards, experimental freedom, and methodological openness. Chemistry, physics, mathematics, biology, cybernetics, and physical chemistry could not remain scientifically serious if they were isolated from world research. The official history of the Academy itself points to the Nobel Prize awarded to Jaroslav Heyrovský in 1959 and the international recognition of Otto Wichterle's contact-lens work as examples of Czech science maintaining creative energy and contact with the world scientific community despite ideological pressure (*Czech Academy of Sciences, n.d.*). These achievements had institutional meaning beyond individual fame. They demonstrated that the Academy's scientific value depended on criteria that transcended domestic political control. A good experiment, discovery, or invention had to be judged by a wider scientific community. Natural scientists therefore defended openness through the language of quality, prestige, and technical necessity. This made their liberalisation less overtly political but deeply structural. It showed that modern science cannot be nationally or ideologically sealed without damaging itself.

International contact was one of the most sensitive features of the Academy's intellectual opening. The more Czechoslovak scientists travelled, corresponded, read foreign journals, attended conferences, and hosted visitors, the more they encountered alternative standards of scientific organisation and intellectual communication. Riikka Nisonen-Trnka has described cooperation with the West as one of the characteristic paradoxes of the Prague Spring of science, because the socialist state needed international exchange while also fearing its political implications (*Nisonen-Trnka, 2008*). Her later study also notes that lack of contact with

the international scientific community, especially academic travel, had been a serious impediment in earlier Czechoslovak science, and that abolishing travel restrictions became one of the priorities of scientific reform during the Prague Spring (*Nisonen-Trnka, 2012*). This reveals why internationalisation was liberalising. Travel was not only a professional convenience; it was a way of seeing how science could be organised differently. It brought back methods, books, instruments, contacts, and expectations. It also changed the mental geography of researchers who could no longer treat isolation as normal. The Academy's cautious liberalisation therefore involved a widening of horizons. It made the world scientific community a reference point for domestic reform.

Yet internationalisation remained cautious because it was always filtered through political suspicion. Foreign contact could be interpreted as professional necessity, but also as ideological risk. Western journals could modernise research, but they could also introduce concepts and debates outside official control. Conferences could raise prestige, but they could also create personal networks that escaped state supervision. Scientific travel could be celebrated as evidence of Czechoslovak excellence, but it could also produce comparisons unfavourable to the domestic system. Nisonen-Trnka's research shows that even in 1968 discussions of cooperation across Europe involved reflection on how differently scientific institutions were organised in East and West, on the importance of personal contacts, and on the limits of applied-research cooperation across the Iron Curtain (*Nisonen-Trnka, 2012*). These were not merely technical observations. They revealed that science was teaching researchers to think across political borders. The Academy's liberalisation therefore grew from the tension between official international prestige and unofficial intellectual comparison. The more scientists entered world networks, the more difficult it became to keep their thinking provincial. The authorities understood this danger, which is why the opening remained fragile.

The Academy's publishing culture was another important medium of cautious liberalisation. Monographs, collective volumes, journals, conference proceedings, bibliographies, and translations allowed new ideas to circulate with a seriousness that casual public speech could not always achieve. Publication remained subject to review, censorship, and institutional caution, but the range of discussable material broadened in the 1960s. Scholars could introduce new methods, revisit older traditions, cite foreign literature more openly, and build arguments that subtly exceeded official formulas. Academic publishing under state socialism was never neutral; it was a space of permission, gatekeeping, compromise, and professional strategy. Later research on Czech and Hungarian academic publishing has shown how scholarly communication under socialism was shaped by censorship, institutional control, and professional negotiation, especially during the stricter normalisation period after 1969 (*Kopeček & Wciślik, 2021*). The 1960s were less closed than normalisation, but the same structural question already existed: what could be printed, by whom, under what institutional responsibility, and with what intellectual consequences? The Academy's publication channels made it possible for liberalisation to take textual form. Ideas that could not yet become political programmes could appear as methodological discussions, empirical studies, or theoretical syntheses. In this sense, publication was one of the bridges between cautious internal debate and wider intellectual life.

The humanities in the Academy were especially important for cautious liberalisation because they touched the historical and cultural memory of society. Historians, philosophers, literary scholars, linguists, art historians, archaeologists, and ethnographers all worked with materials that could complicate official narratives. The recovery of source criticism, structural analysis,

archival depth, and comparative interpretation carried political implications even when expressed in scholarly language. A serious historian could not treat the past merely as a procession toward socialist fulfilment. A literary scholar could not honestly interpret modern Czech literature through crude class categories alone. A philosopher could not reflect on human responsibility, truth, and alienation without pressing against dogmatic simplification. The Academy's institutes gave some of these disciplines more room than they had possessed during high Stalinism. Yet that room remained precarious, because the humanities dealt with legitimacy, memory, and identity. The later normalisation attack on historians and humanists shows that the authorities understood the political stakes of scholarly complexity. Cautious liberalisation in the humanities was therefore both intellectually fertile and politically vulnerable. It restored nuance, but nuance itself could become dangerous.

The figure of Jan Patočka symbolises the Academy's ambiguous role as a place of shelter and limitation. Patočka could not occupy a normal university position during much of the communist period, yet he was able to work in Academy-related contexts, including the Institute of Philosophy. The official history of the Academy lists him among major representatives of Czech science and scholarship who worked at the Academy and notes that the Academy could provide asylum to researchers expelled from universities for ideological reasons (*Czech Academy of Sciences, n.d.*). This does not mean that Patočka enjoyed full public freedom in the 1960s. His case rather demonstrates the difference between institutional survival and intellectual liberty. The Academy could preserve a philosopher's presence, allow research, and maintain a thread of continuity, while still limiting public teaching and public influence. Such partial shelter was one of the most characteristic mechanisms of cautious liberalisation. It kept alive forms of thought that the regime could not fully integrate but did not always wish, or was not always able, to destroy. Later, Patočka's role in Charter 77 would show how such preserved intellectual authority could acquire civic meaning. In the 1960s, however, the Academy's importance lay in allowing the continuity of thought before full civic articulation became possible.

The Academy's cautious liberalisation also depended on the changing public role of expertise. In the early Stalinist order, intellectuals were often expected to serve as transmitters of ideology or technical builders of socialism. In the 1960s, experts increasingly became interpreters of social problems. Economists analysed reform, sociologists studied society, philosophers interpreted technological civilisation, scientists defended international cooperation, and historians reopened complex questions of memory. This did not immediately create a public sphere independent of the state, but it did enlarge the role of reasoned argument in public life. The Academy became a reservoir of such expertise because it housed institutes capable of collective research. Its scholars could speak not only as private individuals but as representatives of organised knowledge. This gave their opinions a particular weight in reform debates. It also made the Academy more politically exposed. Expertise is tolerated by authoritarian power when it remains technical and supportive. It becomes threatening when it claims the right to diagnose power itself. The Academy's intellectual liberalisation therefore consisted partly in the transformation of expertise from service into judgement.

Civil society's gradual growth in the 1960s gave this expert judgement a wider environment. The Academy did not exist apart from writers, journalists, filmmakers, students, economists, reform communists, and cultural institutions. The same atmosphere that made the Kafka conference at Liblice, new cinema, literary debate, and public economic reform possible also

affected research institutes. Scholars read the same journals, attended the same lectures, participated in overlapping committees, and moved through the same cafés, editorial offices, and cultural networks. The Academy's intellectual liberalisation was therefore part of a broader cultural thaw, but it had its own specific form. It translated social restlessness into research questions and methodological debate. The growing openness to Western impulses and civil-society development identified in the Academy's institutional history was not merely external background; it entered the Academy's internal life through people, texts, seminars, and institutional reform (*Franc, Dvořáčková, et al., 2025*). The Academy was neither the sole source of liberalisation nor a passive recipient of it. It was one of the institutions in which the cultural thaw became analytical, organised, and professionally grounded. This gave the 1960s reform atmosphere much of its intellectual seriousness.

The Academy was also a space of cautious liberalisation because it could contain different political and intellectual positions without immediately forcing them into open conflict. Some scholars were convinced reform communists who believed socialism could be humanised through science and democracy. Others were politically cautious professionals who wanted better conditions for research but avoided public commitments. Some were older intellectuals who carried memories of interwar scholarly culture and democratic traditions. Others were younger researchers formed inside socialism but attracted by modern methods, Western literature, and interdisciplinary thinking. Some functionaries remained conservative or opportunistic, while others adapted sincerely to reform. This pluralism was rarely openly declared, but it existed in institute corridors, editorial meetings, seminars, and personal networks. The Academy's importance lay in allowing such pluralism to coexist long enough to generate intellectual movement. It did not create a pluralist political order, but it fostered plural intellectual habits. These habits included debate, comparison, methodological disagreement, and cautious criticism. In an authoritarian system, even such habits could have liberalising force. They made monolithic ideological language less convincing from within.

The Slovak dimension of the Academy's life added another form of cautious liberalisation. Relations between the Czechoslovak Academy of Sciences and the Slovak Academy of Sciences were shaped by questions of centralisation, institutional equality, national representation, and scientific development. Adam Hudek's study of relations between the Slovak and Czechoslovak academies shows that these relations developed from the early 1950s to the beginning of normalisation and became closely connected with debates over the position of Slovak science within the Czechoslovak institutional framework (*Hudek, 2022*). In the 1960s, the Slovak question was not only a constitutional or political matter; it was also an intellectual one. Slovak historians, linguists, sociologists, economists, and cultural scholars needed institutional space to develop questions specific to Slovak society and history. Cautious liberalisation therefore included a gradual broadening of national voices within Czechoslovak science. Centralised planning could appear rational from Prague, but it could also suppress the autonomy and dignity of Slovak institutions. The Academy's debates about organisation, evaluation, and autonomy intersected with the broader movement toward federalisation. Scientific liberalisation thus involved not only freedom from ideology but also a more plural understanding of the state. This pluralisation remained incomplete, but it formed part of the decade's reform logic.

The cautious character of the Academy's liberalisation was visible in the way criticism was framed. Direct attacks on the party's monopoly were rare before 1968 and dangerous even then. Instead, criticism appeared through terms such as efficiency, modernisation, feedback,

humanisation, scientific-technological revolution, international standards, social diagnosis, and reform of planning. These words allowed scholars to discuss real problems while remaining within officially acceptable language. They also allowed political critique to be translated into professional critique. To say that planning lacked feedback was to criticise bureaucratic command. To say that science required international contact was to criticise isolation. To say that sociology needed empirical data was to criticise ideological self-description. To say that technological civilisation required human development was to criticise crude productivism. The language of reform was therefore both cautious and subversive. It worked because it was plausible within socialism, yet it opened doors beyond Stalinist socialism. The Academy's intellectual liberalisation was built from precisely this double movement.

Cybernetics and systems theory were especially important in this double movement. They offered concepts that were technical enough to appear politically safe, yet broad enough to reshape thinking about organisations, economies, and society. Feedback, information, control, adaptation, and systems analysis could be applied to machines, but also to institutions and planning. The Institute of Information Theory and Automation, established in 1959, and the later consolidation of cybernetic research through journals such as *Kybernetika* helped give this vocabulary an institutional base (*Institute of Information Theory and Automation, n.d.*; *Kybernetika, 2024*). Cybernetics was liberalising not because it was inherently democratic, but because it challenged one-way command as an adequate model of rational organisation. A system that cannot receive feedback cannot learn. A state that suppresses information cannot modernise effectively. Such ideas could be expressed technically, but their implications reached far beyond technology. They made the Academy more receptive to models of self-correction, complexity, and adaptive governance. In a society still formally ruled by centralised command, this was intellectually significant. Cybernetics thus became one of the quiet languages of cautious reform.

The Academy's cautious liberalisation had a moral dimension that gradually became more visible. At first, many demands appeared technical: more travel, better evaluation, access to journals, stronger laboratories, more flexible planning, more professional leadership, and better use of research results. Over time, however, these demands revealed ethical implications. To demand access to international literature was to insist that knowledge cannot be imprisoned. To demand empirical sociology was to insist that society should not be lied about. To demand archival seriousness was to insist that memory cannot be simplified for convenience. To demand professional evaluation was to insist that loyalty cannot replace truth. To demand scientific autonomy was to insist that reality must be allowed to answer back. This moral deepening did not happen everywhere at the same pace, and many scholars remained cautious. Nevertheless, the Academy's reform culture increasingly connected scientific standards with human dignity. Knowledge became a way of resisting falsification. That is why intellectual liberalisation inside the Academy could not remain purely technical. It touched the ethical foundations of public life.

The fragility of this liberalisation was already visible before the invasion of August 1968. The same features that made the Academy intellectually dynamic also made it vulnerable. International contacts could be portrayed as ideological weakness. Social-scientific reform could be labelled revisionism. Philosophical humanism could be interpreted as anti-Marxist deviation. Historical complexity could be accused of undermining official memory. Institute autonomy could be denounced as elitism or resistance to party leadership. The institutional

history of the Academy's 1963–1970 period notes that, in the turbulent late 1960s, the Academy and its leadership generally managed to uphold its integrity, but this contributed to its being regarded by those in power as one of the centres of "counter-revolution" (*Franc, Dvořáčková, et al., 2025*). That statement reveals the political meaning of cautious liberalisation. An institution did not need to be openly oppositional to become suspect. It was enough to defend professional integrity, reformist expertise, and intellectual openness. The Academy's very success in becoming a space of serious thought made it dangerous to a system returning to discipline.

The post-1968 reversal confirms that the Academy's liberalisation had been substantive, not merely decorative. Normalisation authorities did not target only public politicians; they also acted against institutes, scholars, editors, and research communities associated with reform. The official historical overview of the Czech Academy of Sciences states that the normalisation period was particularly hard on the Czechoslovak Academy, because the party leadership took revenge for the leading role played by groups from Academy social-science institutes in the reform efforts of the Prague Spring (*Czech Academy of Sciences, n.d.*). Nisonen-Trnka's study likewise notes that the invasion and subsequent political measures severely limited the possibilities of many scientists, especially by cutting them off from research work, institutes, teamwork, and national and international scientific communities (*Nisonen-Trnka, 2012*). These facts show that the Academy's spaces of liberalisation had mattered. They had produced people, arguments, networks, and expectations that the restored hard-line regime considered unacceptable. The repression of those spaces was an attempt not only to punish individuals but to remake the conditions of thought. It sought to restore political priority over professional judgement. The severity of the backlash is therefore evidence of the depth of the preceding opening.

Yet the Academy's cautious liberalisation should not be judged only by its defeat. Its achievements were real, even if politically reversible. It renewed disciplines, reconnected Czechoslovak science with the world, strengthened professional standards, encouraged interdisciplinary thinking, revived sociology, supported economic reform analysis, and preserved intellectual figures who might otherwise have disappeared from institutional life. It also changed expectations. Researchers who had experienced serious seminars, international exchange, empirical inquiry, and expert debate could not easily forget them after normalisation. Even when silenced or compromised, they carried an internal memory of another scientific culture. The Academy's liberalisation therefore created a hidden legacy. Some of it survived in personal networks, unpublished manuscripts, private seminars, technical research, and the professional habits of younger scholars. Some of it would re-emerge after 1989, when the Academy again had to reconstruct its autonomy. Historical openings do not need to be permanent to be consequential. The 1960s changed what many scientists believed was possible. That change could be suppressed, but not fully erased.

The Academy's role as a space of cautious intellectual liberalisation also helps explain the distinctive character of the Prague Spring. The Prague Spring did not appear suddenly in January 1968 as a purely political event. It was prepared by years of methodological renewal, expert criticism, cultural debate, international contact, and institutional self-reflection. The Academy contributed to this preparation by giving reform a scientific and intellectual infrastructure. Economists supplied analyses of planning and incentives. Sociologists supplied empirical knowledge of society. Philosophers supplied concepts of humanisation and technological civilisation. Natural scientists supplied arguments for international openness.

Historians and humanists restored complexity to memory and culture. These contributions did not all point in the same direction, and they were not coordinated as a political programme. Yet together they weakened the authority of dogmatic simplification. They made reform appear rational, necessary, and historically possible. The Academy's cautious liberalisation was therefore one of the preconditions of the reform horizon that culminated in 1968.

The Academy's liberalising function was distinctive because it joined three forms of authority: scientific authority, institutional authority, and moral authority. Scientific authority came from methods, discoveries, publications, and international reputation. Institutional authority came from the Academy's position as the leading non-university research organisation in Czechoslovakia. Moral authority emerged when scholars used knowledge to challenge falsification, inefficiency, and dogmatism. These three forms of authority did not always coincide, but when they did, they were powerful. A respected scientist speaking from an Academy institute could carry more weight than an isolated dissident voice. A collective research team could make reform seem objective rather than merely opinionated. A publication or expert report could transform criticism into evidence. This is why the Academy's intellectual liberalisation had broader social meaning. It did not merely produce private enlightenment among scholars. It helped alter the relationship between expertise and public life. In the 1960s, knowledge became a legitimate source of reformist authority.

At the same time, this authority remained dependent on caution. The Academy's researchers often had to avoid unnecessary provocation, select words carefully, frame criticism as reform, and maintain enough institutional loyalty to continue working. This caution could be frustrating, and it could also create compromises that later appeared morally ambiguous. Some scholars moved boldly; others remained silent; many occupied positions between courage and prudence. The Academy itself contained both reformers and conservatives, protectors and opportunists, innovators and cautious administrators. This complexity should not be flattened into moral simplicity. Cautious liberalisation is always partly compromised because it works within structures it cannot yet overcome. But it is also historically meaningful because it creates room where no full freedom exists. The Academy's role in the 1960s must be understood in this grey zone. Its intellectual opening was neither pure resistance nor mere adaptation. It was a negotiated expansion of thought under constraint.

Thus, the Czechoslovak Academy of Sciences in the 1960s became a space of cautious intellectual liberalisation because it combined state dependence with professional complexity, ideological supervision with methodological renewal, and institutional control with limited but real intellectual initiative. Its institutes sheltered some scholars, revived disciplines, hosted seminars, published new research, supported interdisciplinary projects, and opened channels to international science. Economists, sociologists, philosophers, natural scientists, historians, and humanists each contributed differently to the widening of the intellectual field. The Academy's liberalisation was cautious because it usually operated through expert language, reformist vocabulary, professional practice, and institutional negotiation rather than direct political confrontation. It was nevertheless genuine because it changed what could be studied, discussed, published, and imagined. The later normalisation backlash demonstrated that these spaces had become politically significant. They had shown that knowledge could not remain merely an instrument of power; it could become a source of judgement upon power. For this reason, the Academy's role in the 1960s was one of the central episodes in the history of Czechoslovak scientific and intellectual life. It prepared the ground

for the Prague Spring, preserved a memory of professional autonomy, and revealed both the possibilities and the limits of reform within state socialism.

International Scientific Communication

1. Contacts with Western Science

Contacts with Western science formed one of the most revealing dimensions of the Czechoslovak Academy of Sciences in the 1960s. They were not merely external relations, not simply visits, letters, conference invitations, or the exchange of journals. They were part of the deeper transformation of the Academy from a rigidly Sovietised post-war institution into a more professionally self-conscious, internationally attentive, and methodologically modern research body. The Iron Curtain did not disappear, and Czechoslovak science did not suddenly enter a condition of free circulation. Yet the 1960s created new possibilities for communication with Western Europe, North America, and the broader world scientific community. These possibilities were partial, politically supervised, and unevenly distributed across disciplines, but they had enormous intellectual consequences. The second volume of the institutional history of the Czechoslovak Academy of Sciences characterises the period 1963–1970 as one of easing political control, growing openness to Western impulses, and exceptional development for many disciplines within the Academy (*Franc, Dvořáčková, et al., 2025*). This judgement is especially important because Western contact was not an ornamental supplement to domestic reform. It was one of the mechanisms through which reform acquired content, comparison, and methodological direction. Scientists who read Western journals, attended conferences, hosted visitors, or corresponded with colleagues abroad encountered not only new data but also different standards of organisation, evaluation, and intellectual debate. The Academy's relationship with Western science therefore became a practical test of how far post-Stalinist liberalisation could go. It showed that modern science could not be sustained by ideological self-sufficiency.

The paradox of these contacts lay in the fact that the socialist state both needed and feared them. Czechoslovakia wanted scientific prestige, industrial innovation, technological modernisation, and international recognition. These goals required participation in world science, especially in fields where knowledge developed rapidly and where isolation could lead to immediate obsolescence. At the same time, the regime feared that foreign contacts could weaken ideological discipline, create uncontrolled personal networks, and expose researchers to political and intellectual alternatives. Riikka Nisonen-Trnka has described scientific cooperation with the West as one of the most important embodiments, and also one of the greatest paradoxes, of Czechoslovak liberalisation (*Nisonen-Trnka, 2008*). This formulation is very precise for the Academy. A serious research institute needed Western books, instruments, journals, correspondence, conferences, and comparison. Yet every one of these needs could become politically sensitive. The scientist who travelled to Paris, London, Vienna, Stockholm, or New York returned not only with technical knowledge but also with memories of different institutional cultures. The Academy's Western contacts therefore

widened scientific horizons and also quietly widened political imagination. The regime could not fully separate these two effects. That is why internationalisation remained both encouraged and controlled.

In the natural sciences, the necessity of Western contact was especially evident. Chemistry, physics, mathematics, biology, medicine, geology, cybernetics, and engineering depended on current literature, experimental methods, instruments, nomenclature, and peer recognition. A chemist could not work at the frontiers of organic synthesis or macromolecular science while being cut off from international publications. A physicist could not remain competitive without knowledge of foreign laboratories, equipment, theoretical debates, and measurement techniques. A mathematician could survive longer under conditions of limited material access, but even mathematics requires conferences, preprints, correspondence, and recognition within an international community. The Academy's natural-scientific institutes therefore had strong professional reasons to demand more reliable channels to the West. These demands could be framed as technical, not political. They could be defended as necessary for socialist modernisation, for industrial innovation, and for the reputation of Czechoslovak science. Yet the technical argument had a liberalising effect. It asserted that science was governed by standards wider than the state. It also implied that national ideology could not decide what counted as valid knowledge in chemistry, physics, or biology. Western contact in the natural sciences thus became one of the least openly political but most structurally important forms of intellectual opening.

František Šorm's role is central to this story because he personified the Academy's aspiration to international scientific respectability. As a chemist and later president of the Czechoslovak Academy of Sciences, Šorm represented a type of scientific authority that could not be reduced to party function. His research reputation and organisational influence helped strengthen the argument that Czechoslovak science needed international contact if it was to remain modern. The Academy under his leadership could speak to the state in the language of prestige, innovation, and competence. This made demands for Western engagement more politically defensible. The regime could suspect the West, but it also wanted the symbolic capital that came from scientific recognition beyond the socialist bloc. Šorm's presidency therefore gave the Academy a stronger negotiating position. It could argue that contact with Western science was not ideological contamination but a condition of national achievement. This did not remove surveillance or bureaucratic restrictions, but it changed the balance of argument. In the 1960s, the Academy increasingly used scientific success as a justification for openness. This was one of the decade's most important institutional strategies.

The example of Otto Wichterle and the Institute of Macromolecular Chemistry demonstrates how Western contact, invention, and professional autonomy were linked. The Institute was established within the Academy in 1959, Wichterle became its first director, and its new building was completed in 1963; the Institute's own historical account emphasises its combination of polymer chemistry, polymer physics, basic research, and applied implementation (*Institute of Macromolecular Chemistry, n.d.*). That combination itself required international awareness. Macromolecular chemistry was a rapidly developing field whose standards were shaped by global debates, conferences, and industrial applications. Wichterle's work on hydrophilic polymers and soft contact lenses could not be understood as a purely domestic achievement; it belonged to an international field of polymer science, medical technology, and materials research. The Prague IUPAC symposia on macromolecules, including the 1965 meeting, were especially significant because they brought the international

polymer community into contact with Czechoslovak research. Such meetings were not merely ceremonial. They allowed scientists to test methods, establish reputations, build personal trust, and observe how colleagues abroad organised research. The Academy's Western contacts therefore helped turn local laboratories into participants in world science. This was both a scientific achievement and an institutional opening.

Conferences were among the most important channels of Western scientific contact. A conference creates a temporary international public sphere in which papers, discussions, reputations, and informal conversations circulate together. For Czechoslovak scientists, participation in Western conferences meant exposure to current research before it became fully available in print. It also allowed them to present their own work to audiences whose judgement did not depend on domestic political hierarchies. This was especially important for researchers seeking recognition beyond the socialist world. A successful presentation abroad could strengthen a scientist's position at home, because international validation was difficult for administrators to ignore. Conversely, the inability to travel could isolate a researcher from the living rhythm of a field. The Academy therefore had to negotiate travel permissions as part of scientific policy. Who could travel, to which countries, with what institutional justification, and under what reporting obligations were not minor questions. They shaped careers, research directions, and the international reputation of institutes. Western conferences became one of the places where scientific autonomy touched political control most directly.

The exchange of publications was another basic but decisive form of contact. Journals, monographs, conference proceedings, bibliographies, and abstracting services connected Academy researchers to the international circulation of knowledge. In the 1950s, access to Western literature had often been limited by ideological suspicion, currency problems, institutional isolation, and censorship. In the 1960s, the situation improved unevenly. Research libraries could acquire more foreign materials, and scholars could more frequently cite or discuss Western work. This mattered because reading foreign literature is not passive reception. It changes the questions scholars ask, the methods they consider legitimate, and the standards by which they judge their own work. A sociologist reading Western empirical studies encountered survey techniques and theories of modernisation, stratification, and public opinion. An economist reading Western or Yugoslav debates encountered new ways of thinking about incentives, markets, and planning. A philosopher reading contemporary debates in phenomenology, philosophy of science, or technological civilisation encountered concepts that did not fit easily into dogmatic Marxism-Leninism. A natural scientist reading Western journals encountered experimental frontiers that could not be reconstructed from domestic ideology. In this sense, the library was one of the quiet gateways through the Iron Curtain.

Correspondence also mattered greatly. Scientific letters, preprints, requests for articles, invitations, peer comments, and informal exchanges often maintained relationships that formal diplomacy could not fully regulate. A scientist might build trust with a Western colleague over years through the exchange of publications and technical advice. Such contact was less visible than conference travel but could be just as important. It allowed researchers to remain connected between visits, to ask practical questions, and to receive information not easily available through official channels. In authoritarian systems, correspondence was often monitored or self-censored, but it still created human links across political borders. The Academy's researchers depended on these links, especially in fields where equipment, methods, and publications developed quickly. Western contacts therefore were not only

institutional but personal. They rested on friendships, reputations, shared problems, and mutual respect. This human dimension of science is often underestimated in political histories of the Cold War. Yet without it, formal agreements and conference programmes would have had much less substance.

The Academy's contacts with Western science were also mediated through international scientific organisations. Organisations such as IUPAC, UNESCO-related structures, discipline-specific unions, and international congress committees provided channels that could be presented as politically neutral or professionally necessary. For a socialist country, participation in such organisations offered prestige and visibility. For researchers, it offered access to standards, networks, and opportunities. The Academy could use international organisations to legitimise travel, host meetings, and demonstrate that Czechoslovakia remained part of world science. This was especially useful because direct bilateral contact with Western institutions could be politically delicate. Multilateral scientific organisations made exchange easier to justify. They allowed the regime to present cooperation as official, controlled, and beneficial, while scientists used the same channels for real intellectual communication. The ambiguity was productive. It made contact possible even when ideological mistrust remained. International organisations therefore functioned as semi-protected corridors between Czechoslovak research and the Western scientific world.

The political authorities tried to distinguish between acceptable and unacceptable forms of Western contact, but this distinction was difficult to maintain. Technical cooperation, conference attendance, journal exchange, and laboratory visits could be approved when they promised prestige or practical benefit. Yet even technical cooperation exposed researchers to different norms of scientific life. They observed how grant systems, laboratory management, peer review, academic mobility, and industrial partnerships worked elsewhere. Such observations could lead to comparisons with Czechoslovak bureaucracy. A scientist might return from a Western laboratory convinced that Czechoslovak research needed more flexibility, less administrative interference, better instrumentation, and more merit-based evaluation. These were scientific conclusions with institutional implications. The regime could not easily prevent such comparisons unless it prevented travel altogether, but complete isolation would damage science. This was the core paradox of openness. The state wanted international scientific success without international intellectual comparison. The Academy's researchers increasingly discovered that this was impossible.

Western contacts affected different disciplines in different ways. Natural scientists often emphasised equipment, methods, literature, and conference visibility. Social scientists and humanists were more directly affected by theoretical and methodological alternatives. Sociology encountered empirical survey methods, urban studies, family sociology, stratification research, and theories of social change. Economics encountered mathematical modelling, market-socialist debates, management theory, and comparative analysis of planning systems. Philosophy encountered phenomenology, existentialism, philosophy of science, structuralism, and debates about technology and humanism. Literary studies encountered modernism, semiotics, and new critical methods. History encountered comparative historiography and more complex approaches to modern Europe. These influences did not simply replace Marxist frameworks. Instead, they were selectively absorbed, translated, and adapted into the Czechoslovak reform environment. The result was intellectual hybridity. Western science and scholarship entered the Academy through cautious

appropriation rather than wholesale imitation. This hybrid character gave Czechoslovak 1960s thought much of its originality.

The revival of sociology provides a clear example of this process. The establishment of the Institute of Sociology within the Academy framework in the mid-1960s marked the restoration of a discipline that had been marginalised in the Stalinist period. Czech sociology's renewal depended on domestic reform needs, but it also required awareness of international methods and debates. Empirical surveys, sampling, social stratification analysis, urban sociology, and public-opinion research could not develop convincingly in isolation from broader sociological practice. Historians of Czech sociology have emphasised the importance of the 1960s revival for the formation of modern Czech sociological research (*Skovajsa, 2008*; *Illner, 2011*). Western contact helped make sociology more than an ideological supplement to Marxism. It gave the discipline methodological tools for observing society as it actually existed. This made sociology useful to reform socialism but also potentially unsettling. The more precisely society was studied, the less convincing official simplifications became. Western social-scientific influence therefore contributed to cautious intellectual liberalisation inside the Academy.

Economic research followed a similar pattern, though its political relevance was even more direct. The Economic Institute of the Academy under Ota Šik became one of the crucial centres of reform thinking in the early 1960s. Its work drew on domestic crisis, socialist reform debates, and comparative knowledge of alternative economic mechanisms. Kosta identifies the Institute as a key site where criticism of existing economic practice emerged during the crisis years of 1962–1964 (*Kosta, 1989*). Western contact mattered here not because Czechoslovak economists wished simply to import capitalism, but because comparative economics broadened the field of possible questions. It allowed them to examine incentives, markets, decentralisation, enterprise autonomy, and planning from a less doctrinaire perspective. Western literature and debates provided analytical pressure against closed ideological political economy. At the same time, reform economists had to frame their work as the improvement of socialism. Their relationship with Western economic thought was therefore selective and strategic. The Academy became a place where foreign concepts could be translated into reformist socialist language. This translation was one of the defining intellectual operations of the decade.

In philosophy and interdisciplinary social theory, Western contact operated both directly and indirectly. Not every influence came through open citation; some arrived through translation, informal discussion, secondary literature, or personal encounters. The work of Radovan Richta's team on the scientific and technological revolution illustrates how Czechoslovak scholars engaged with global debates on technology, automation, labour, education, and modern civilisation while retaining a socialist framework. *Civilization at the Crossroads* became internationally known precisely because it spoke to concerns shared across East and West, even though it emerged from a Czechoslovak reform environment (*Richta, 1969*). Its significance lay in its refusal to treat science and technology as purely national or ideological possessions. It presented technological modernity as a civilisational process. This allowed Academy-based thinkers to participate in a wider conversation about the future of industrial society. Western contact here was not only import; it also included export. Czechoslovak reform thought itself became visible abroad as a distinctive contribution to debates on modernity, socialism, and human development.

The Academy's Western contacts also included the reception of Czechoslovak science abroad. International reputation was not created only by travel from Czechoslovakia to the West. It was also created when Western scientists visited Prague, cited Czechoslovak work, attended conferences, collaborated with institutes, or recognised the achievements of Czechoslovak laboratories. The Nobel Prize awarded to Jaroslav Heyrovský in 1959 had already given Czech physical chemistry a powerful symbol of international esteem. Wichterle's contact-lens invention, Šorm's chemical research, and the reputation of Prague polymer science further strengthened this image. Such recognition mattered domestically because it supplied evidence that Czechoslovak science could achieve world-class results. It also made political authorities more willing, at least temporarily, to tolerate certain forms of openness. International reputation became a form of institutional capital. It could be used to argue for better equipment, travel, publications, and autonomy. The Academy's Western contacts therefore were not only outward-looking; they shaped internal power relations. A scientist recognised abroad could sometimes defend professional standards more effectively at home.

Yet the benefits of Western contact were distributed unequally. Elite institutes in internationally visible fields often had more opportunities than smaller, more provincial, or politically sensitive units. Senior scientists with strong reputations could travel more easily than younger researchers, although younger scholars often needed international exposure most urgently. Natural scientists sometimes enjoyed more practical openness than historians, sociologists, or philosophers. Czech institutes in Prague often had better access than some regional or Slovak institutions, though this varied by field and individual networks. Political reliability also mattered. A researcher considered ideologically suspect could be denied travel even if professionally qualified. The Academy's internationalisation was therefore not a universal opening. It was selective and stratified. This selectivity shaped careers and intellectual development. It also created tensions within institutes, where access to travel and foreign publications could become a marker of privilege as well as professional recognition.

The Slovak dimension of Western contact deserves attention because Czechoslovak science was not institutionally homogeneous. Relations between the Czechoslovak Academy of Sciences and the Slovak Academy of Sciences were shaped by questions of centralisation, autonomy, and national representation. Adam Hudek's research on relations between the Slovak and Czechoslovak academies shows that these questions became increasingly important before the beginning of normalisation (*Hudek, 2022*). Western contacts could reinforce Prague's dominance if central bodies controlled international communication and resources. Yet they could also help Slovak institutes develop their own profiles, especially in fields tied to language, history, sociology, economics, and regional research. For Slovak scientists, access to Western science was not only a disciplinary matter but also part of institutional maturation. It helped position Slovak scholarship within broader European contexts. The issue of international contact therefore intersected with debates about the internal structure of Czechoslovak science. Openness to the West could not be separated from the question of how scientific authority was distributed within the republic.

Western contact also affected the Academy's understanding of scientific evaluation. International science offered external criteria: publications in recognised journals, invitations to conferences, citations, membership in committees, foreign reviews, and collaborative projects. These criteria were imperfect and uneven, but they made purely domestic political evaluation less credible. A research group that had international recognition could argue that its work was objectively valuable. Conversely, an institute isolated from international debate

risked provincialism, even if it fulfilled domestic plan indicators. The Academy's debates on evaluation therefore naturally connected with internationalisation. To evaluate science seriously, one had to know how it was judged elsewhere. This did not mean mechanically adopting Western standards, but it did mean entering comparative space. Once that happened, the authority of domestic ideological criteria weakened. Western contact thus reinforced the professionalisation of assessment. It made scientific quality harder to define solely through plan fulfilment or loyalty.

The politics of travel remained one of the most visible obstacles to this process. Travel abroad required permission, justification, and often political trust. Researchers might need to demonstrate that their visit served the national interest, that they would represent the country properly, and that they were personally reliable. Some had to file reports after returning. Others could be refused without transparent explanation. Such controls reminded scientists that their international mobility was not a right but a concession. Yet the very demand for travel grew stronger during the 1960s. Nisonen-Trnka's doctoral research notes that travel restrictions and limited international contact had been serious impediments for Czechoslovak science, while their removal became one of the priorities of scientific reform during the Prague Spring (*Nisonen-Trnka, 2012*). The Academy's 1960s experience must therefore be read as a movement toward mobility that remained politically conditional until it was sharply restricted again after 1968. The scientist's passport became a symbol of both professional necessity and political vulnerability.

Personal experience of the West could have effects that were difficult to measure but historically important. A scientist visiting a Western laboratory might observe not only instruments but also informal communication, laboratory hierarchy, relations between universities and industry, access to libraries, and the role of peer review. A social scientist attending a conference might encounter debates conducted with a degree of openness unavailable at home. A philosopher or historian might see how disagreement could exist without immediate institutional punishment. These impressions did not necessarily turn researchers into political opponents of socialism. Many remained committed to reform socialism or avoided politics altogether. But they did alter expectations. They made it harder to accept provincial isolation, bureaucratic rigidity, or ideological simplification as normal. Western contact thus worked through comparison. It expanded the imaginable forms of scientific life. In a controlled society, comparison itself can become liberalising.

The Academy's Western contacts were also shaped by the Cold War politics of détente and scientific diplomacy. Even during periods of ideological hostility, science could serve as a channel of limited communication across blocs. Western governments and institutions sometimes viewed scientific exchange as a way to maintain dialogue with Eastern Europe, while socialist states used it to gain technology, prestige, and legitimacy. The Academy operated within this wider diplomatic environment. Its researchers were not simply private travellers; they were representatives of a socialist country, and their contacts were often interpreted politically by both sides. This created additional complexity. A visit to a Western institute could be a genuine scientific collaboration, a diplomatic gesture, a prestige exercise, and a monitored political event at the same time. Scientists had to navigate these layers carefully. The Academy's international communication therefore belonged simultaneously to science, diplomacy, and ideological competition. This made Western contact both valuable and delicate.

The experience of Western cooperation also exposed differences between basic and applied research. In basic science, collaboration could often be justified through universal disciplinary standards. In applied science and technology, cooperation raised questions of patents, industrial transfer, military relevance, commercial value, and state secrecy. Wichterle's contact-lens work illustrates how invention could become entangled with institutional, economic, and international questions. A discovery made within a socialist research system could have global commercial implications. This challenged simple assumptions about socialist science serving only domestic planned production. It showed that knowledge could circulate through markets, patents, firms, and international medical demand. The Academy's contact with Western science therefore also confronted it with the problem of intellectual property and innovation transfer. These questions would become more prominent later, but they were already visible in the 1960s. Scientific openness was not only a matter of ideas; it involved technologies, materials, rights, and economic interests.

The humanities and social sciences faced a different kind of risk in Western contact. A historian, philosopher, literary scholar, or sociologist engaging Western thought could be accused of revisionism, bourgeois influence, or ideological deviation more easily than a chemist attending a polymer conference. This did not prevent contact, but it shaped its form. Foreign theories were often discussed through careful framing, translated into Marxist terminology, or introduced as methodological tools rather than ideological alternatives. Structuralism, phenomenology, empirical sociology, systems theory, and modern historiography entered Czechoslovak academic life through such mediations. The Academy's intellectual culture became skilled at selective reception. Scholars learned to borrow concepts without always announcing the full implications of their sources. This practice could be intellectually creative, but it could also conceal debts and produce ambiguity. Western contact in the humanities was therefore more coded than in many natural sciences. Its liberalising power lay in the slow transformation of interpretive possibilities.

Western scientists who visited Czechoslovakia also played a role. Their presence in Prague, Brno, Bratislava, or specialised institutes could temporarily change the atmosphere of a seminar or laboratory. A foreign guest brought not only a lecture but also a different way of speaking, questioning, and disagreeing. Informal conversations after lectures could be as important as official presentations. Visiting scientists also confirmed that Czechoslovak institutes were visible enough to attract international attention. This mattered psychologically. It helped researchers feel that they belonged to a wider community, not merely to an isolated national system. At the same time, foreign visitors were often channelled through official programmes and observed by institutional hosts. Their presence could be politically staged as evidence of openness. Yet genuine intellectual exchange could occur within and around the staging. The Academy's Western contacts often worked precisely through this mixture of official form and unofficial substance.

The Prague Spring gave the question of Western contact a more explicitly reformist meaning. As political and cultural life opened in 1968, scientists could speak more directly about the need to remove barriers to international cooperation. The idea of "science with a human face", associated in later scholarship with the activities of Šorm and Wichterle, captures the sense that scientific reform was not only technical but also civic (*Nisonen-Trnka, 2012*). The demand for travel, correspondence, institutional autonomy, and open cooperation became part of a wider demand for a more truthful and humane socialism. Yet this made Western contact politically explosive. To conservative forces in Czechoslovakia and the Soviet bloc, openness

to the West could be portrayed as evidence of ideological weakness or counter-revolutionary drift. The same contacts that scientists saw as normal professional life could be reinterpreted as political danger. After the invasion of August 1968, this reinterpretation became one of the justifications for renewed control. The fate of Western contact therefore reveals the fragility of the Academy's reform horizon.

The post-1968 reversal should not obscure the importance of the preceding opening. Many contacts were interrupted, careers were damaged, travel was restricted, and international communication became more carefully monitored during normalisation. However, the experience of the 1960s left deep traces. Scientists who had participated in conferences, read Western literature, or worked with foreign colleagues remembered what a more open scientific life looked like. Institutes that had built reputations abroad could not entirely forget those standards. Younger researchers who had entered international networks carried intellectual expectations into later decades, even when opportunities narrowed. Western contact had changed not only information flows but professional identity. It taught many Academy scientists to see themselves as members of international disciplines, not merely employees of a socialist research apparatus. This memory became one of the hidden legacies of the 1960s. It survived in private networks, professional habits, and later efforts to rebuild autonomy after 1989.

Contacts with Western science also helped reveal the broader European identity of Czech and Czechoslovak scholarship. The Academy had been reorganised after 1948 according to Soviet models, but Czech science had much older connections with German, Austrian, French, British, Scandinavian, and American intellectual worlds. The 1960s reopening therefore had a restorative dimension. It did not simply introduce foreign influences; it reactivated older European patterns of scholarly communication that had been damaged by war, occupation, Stalinisation, and the Cold War. This was particularly visible in fields with strong pre-war traditions, such as chemistry, linguistics, mathematics, philosophy, and historical scholarship. Western contact reminded researchers that Czechoslovak science had never been naturally isolated. Its isolation was political, not civilisational. The Academy's internationalisation thus carried a historical argument about continuity. It suggested that Czechoslovak science belonged to Europe even while operating inside the socialist bloc. That sense of belonging strengthened both professional confidence and reformist aspiration.

At the same time, Western contact did not mean intellectual dependence on the West. Czechoslovak scientists and scholars were not merely receivers of foreign knowledge. They contributed to international fields through discoveries, methods, theories, conferences, and publications. Heyrovský's polarography, Wichterle's polymer research, Šorm's chemistry, Prague structuralist legacies, cybernetic research, reform economics, and Richta's theory of the scientific and technological revolution all show that Czechoslovak science had exportable intellectual substance. The relationship with Western science was therefore dialogical, even if politically unequal. Czechoslovak researchers wanted access to Western laboratories and literature, but they also wanted recognition for their own achievements. This dual movement is important because it prevents a provincial reading of the Academy's history. The Academy's opening to the West was not a confession of inferiority. It was an attempt to restore normal participation in a shared scientific world. The tragedy of the Cold War was that this participation had to be negotiated through political suspicion.

Thus, contacts with Western science were one of the decisive elements of the Czechoslovak Academy of Sciences' transformation in the 1960s. They strengthened methodological renewal, supported disciplinary development, improved evaluation standards, and gave reform-minded scientists a comparative horizon beyond the limits of domestic ideology. These contacts took many forms: conferences, publications, correspondence, visits, international organisations, personal networks, and the reception of Czechoslovak work abroad. They were especially important in the natural sciences, but they also reshaped sociology, economics, philosophy, history, and other humanities and social-scientific fields. Their significance lay not only in the transfer of information but in the transformation of expectations. Western science showed Academy researchers that scientific life could be organised around peer judgement, mobility, open discussion, and international comparison. The socialist state needed this openness for prestige and innovation, yet feared its intellectual and political consequences. This unresolved contradiction gave the Academy's Western contacts their distinctive historical character: they were productive, necessary, carefully watched, and ultimately vulnerable. In the years leading to the Prague Spring, they made the Academy more dynamic and more European in its self-understanding. After 1968, their restriction became one of the clearest signs that the reform horizon had been closed.

2. Cooperation within Socialist Scientific Networks

Cooperation within socialist scientific networks was one of the defining features of the Czechoslovak Academy of Sciences in the 1960s, but it must not be interpreted as a simple opposite of contacts with Western science. The Academy's international life developed in two different but overlapping directions. One direction led toward Western journals, conferences, laboratories, and disciplinary standards; the other led toward Soviet-led and socialist-bloc structures of scientific, technical, ideological, and institutional cooperation. These two directions were not equal in political meaning. Cooperation within socialist networks was officially encouraged, ideologically celebrated, and administratively normalised, whereas contact with Western science was more carefully watched and more politically ambivalent. Yet socialist cooperation also contained its own tensions. It offered access to large facilities, Soviet expertise, bloc-wide programmes, and opportunities for Czechoslovak researchers to work in fields that exceeded the resources of a single country. At the same time, it reproduced asymmetries of power, especially the central position of the Soviet Union and the unequal scientific capacities of the socialist states. The Czechoslovak Academy of Sciences therefore entered socialist networks as both participant and subordinate partner, as beneficiary and contributor, as national institution and component of a broader bloc system. The second volume of the Academy's institutional history stresses that the 1960s were a period of easing political control, institutional reform, and exceptional development in many disciplines under František Šorm's leadership, but this opening unfolded inside a world still structured by Cold War alliances and socialist internationalism (*Franc, Dvořáčková, et al., 2024*). The result was a complex form of internationalisation: officially fraternal, scientifically useful, politically constrained, and often less symmetrical than its rhetoric suggested.

The ideological vocabulary of socialist scientific cooperation rested on the idea that science under socialism was collective, planned, peaceful, and directed toward the needs of society. In official discourse, cooperation among socialist countries expressed proletarian internationalism and the superiority of planned development over capitalist competition.

Scientific exchange was therefore presented not merely as professional interaction but as part of a shared historical mission. Czechoslovak scientists were expected to participate in this mission through joint research programmes, exchanges of specialists, common conferences, publications, technical standardisation, and coordination of research priorities. Yet the rhetoric of equality concealed significant differences. The Soviet Union possessed the largest scientific infrastructure, the greatest military-technological capacity, the strongest political authority, and the decisive role in defining many bloc-wide priorities. East Germany, Czechoslovakia, Poland, and Hungary had strong traditions in selected fields and sometimes higher levels of industrial or technical sophistication than Soviet planners wished to acknowledge. Bulgaria, Romania, and other partners entered cooperation with different needs and degrees of dependence. The socialist scientific network was therefore never a flat community of equals. It was a structured system of cooperation, prestige, competition, and negotiation. The Academy had to move within this system carefully, using socialist cooperation to gain resources and visibility while trying to preserve national scientific competence.

The Council for Mutual Economic Assistance formed the broadest institutional framework within which much scientific and technical cooperation among socialist countries was discussed. Created in 1949 by the Soviet Union, Bulgaria, Czechoslovakia, Hungary, Poland, and Romania, it was intended to coordinate the development of the Eastern European economies under Soviet leadership (*Bideleux & Jeffries, 1998*; *Britannica, 2026*). In its official self-presentation, Comecon was not only about trade and production but also about scientific research, investment cooperation, and technical development. This mattered for the Academy because many scientific questions were tied to industrial modernisation, energy, chemistry, engineering, metallurgy, agriculture, transport, electronics, and automation. Comecon was not an academy, and it did not replace bilateral or discipline-specific scientific institutions. Nevertheless, it created a political-economic environment in which scientific and technical cooperation could be justified as part of socialist integration. The Academy's institutes could be drawn into projects connected with standardisation, technical assistance, division of labour, or applied research. Yet Comecon's mechanisms were often slow, bureaucratic, and shaped by national interests. Its coordination could encourage cooperation, but it could also impose priorities that did not fully correspond to the internal logic of research. For Czechoslovakia, a relatively industrialised country with strong engineering, chemistry, and scientific traditions, Comecon cooperation could be both useful and frustrating. It promised access to a large socialist market, but it could also discourage independent technological development when bloc-wide specialisation favoured Soviet or politically agreed designs.

The 1960s were especially important for Comecon because the organisation was trying to move beyond loose coordination toward more systematic cooperation. After Stalin's death, the socialist states discussed complementary specialisation, coordination of five-year plans, and mechanisms of economic integration. In 1956, permanent standing commissions were created to facilitate cooperation in specific fields, and in 1961 the "Basic Principles of the International Socialist Division of Labour" attempted to define a more coherent programme of socialist economic coordination (*Kaser, 1967*; *Bideleux & Jeffries, 1998*). Such developments affected science indirectly but substantially. Scientific and technical research was expected to support the international socialist division of labour, improve productivity, reduce duplication, and help the bloc compete with the capitalist West. However, the same period revealed the limits of bloc integration. Czechoslovakia, Hungary, Poland, and Romania each had reasons to resist excessive supranational planning, especially when it threatened their

industrial structures or national development priorities. For the Academy, this meant that scientific cooperation through Comecon could never be purely scientific. It was embedded in disputes over sovereignty, industrial strategy, technological dependency, and the authority of Moscow. Scientific networks inside socialism therefore operated within a field of negotiation rather than automatic fraternity. The language was cooperative; the practice was often bargaining.

One of the most significant socialist scientific institutions for Czechoslovak researchers was the Joint Institute for Nuclear Research at Dubna. Founded on 26 March 1956 by eleven states, including Czechoslovakia, the institute was created to combine scientific and material potential for studying the fundamental properties of matter (*Joint Institute for Nuclear Research, n.d.*). Dubna gave socialist countries access to large-scale nuclear research facilities that would have been impossible or extremely difficult for each country to develop separately. For Czechoslovak physicists, participation in JINR meant entry into a world of accelerators, nuclear reactions, high-energy physics, theoretical physics, instrumentation, and international teams. This was a different kind of socialist cooperation from routine delegation visits or ceremonial conferences. It involved "big science": expensive equipment, specialised expertise, shared infrastructure, and multinational research communities under Soviet predominance. JINR also functioned as a symbolic counterpart to Western institutions such as CERN, although the two organisations had different political settings and institutional cultures. Czechoslovak participation in Dubna therefore had both scientific and geopolitical meaning. It allowed the Academy and related national institutes to participate in advanced nuclear physics, but it did so through a Soviet-centred international structure.

The existence of Dubna shows why socialist scientific networks cannot be dismissed simply as propaganda instruments. They did provide real research opportunities. Nuclear physics demanded facilities, detectors, accelerators, computing support, and theoretical communities that exceeded the capacity of many national systems. A small or medium-sized country could send researchers to Dubna, train specialists, participate in experiments, and bring back expertise to domestic institutions. The Nuclear Physics Institute of the Czechoslovak Academy of Sciences, founded in 1955 at Řež as a basic Czechoslovak institution in the nuclear fields, formed part of this wider nuclear research landscape (*Nuclear Physics Institute of the CAS, n.d.*). Domestic nuclear research and participation in JINR were connected through personnel, methods, instrumentation, and the broader politics of atomic modernity. At the same time, Dubna's usefulness did not erase asymmetry. The Soviet Union provided the main infrastructure and therefore held institutional authority. Research agendas, access, and prestige were shaped by the centre. Czechoslovak scientists gained opportunities, but they also operated inside a hierarchy. The Academy's experience of socialist cooperation thus combined genuine scientific benefit with structural dependence.

JINR also reveals the importance of socialist networks for training and scientific mobility. A young Czechoslovak physicist working in Dubna could encounter colleagues from Poland, Hungary, East Germany, Romania, Bulgaria, Mongolia, Vietnam, or the Soviet Union. Such mobility created personal networks across the socialist world. It also exposed researchers to multilingual working environments, collective experiments, and shared technical problems. This kind of mobility differed from travel to Western conferences. It was politically approved and ideologically legitimised, but it still widened horizons beyond the domestic institute. Scientists could compare national research cultures within the socialist bloc, notice differences in resources or methods, and build reputations among colleagues from other

countries. The Academy benefited from this because its researchers returned with experience that could strengthen domestic institutes. Yet socialist mobility also had limits. It was more likely to be organised through official channels, and it often reinforced bloc priorities rather than individual disciplinary initiative. Still, for many researchers, cooperation in places such as Dubna was a real professional opportunity. It created a socialist scientific public sphere, though one shaped by Soviet leadership and political boundaries.

Another important field of socialist cooperation was space research, which became increasingly significant in the late 1960s. The Interkosmos programme, formally launched in 1967, was created as a Soviet-led programme for cooperation among socialist countries in the study and exploration of space (*Burgess & Vis, 2016*). Although the most famous Czechoslovak achievement within Interkosmos came later, when Vladimír Remek became the first citizen of a country other than the Soviet Union or the United States to fly into space in 1978, the institutional foundations of cooperation were laid in the 1960s. Space research connected astronomy, geophysics, ionospheric studies, instrumentation, radio communication, solar physics, and later satellite technology. It also had enormous symbolic value in the Cold War. The Soviet Union used Interkosmos to demonstrate that socialist internationalism extended into the cosmos, while partner countries gained access to scientific opportunities that would otherwise have been unattainable. For Czechoslovak science, participation in space-related networks connected Academy institutes with a technologically prestigious and politically visible field. The programme illustrates how socialist cooperation could open doors while also serving Soviet prestige. Czechoslovak researchers could contribute instruments, observations, and scientific expertise, but the political theatre of space remained strongly centred on Moscow.

Space cooperation also shows how socialist networks could produce a delayed effect. A programme initiated in the late 1960s did not immediately transform Czechoslovak science, but it created institutional channels that later supported satellite experiments, instrument development, and international recognition. Czech space history records that Interkosmos spacecraft carried Czech instruments and that the later MAGION satellites grew out of Czechoslovak researchers' desire to obtain more detailed data on electromagnetic-wave propagation through a separate block of instruments (*Astronomical Institute of the CAS, n.d.*). This later development belongs chronologically beyond the immediate 1960s, but its roots lay in the socialist cooperative infrastructure formed during that decade. The point is important for understanding the Academy's international communication. Cooperation was not always measured by immediate publications or spectacular missions. It often created technical skills, teams, instrumentation habits, and long-term ambitions. Socialist networks could therefore function as incubators of capacity, even when their political symbolism was heavy. They gave Czechoslovak institutes access to fields that required launch capacity, large instruments, or shared observation systems. At the same time, they tied such access to Soviet programmes and priorities. The Academy's space-related cooperation thus reveals both dependence and agency within socialist science.

Bilateral agreements between academies formed another major channel of socialist scientific cooperation. The Czechoslovak Academy of Sciences maintained relations with the Soviet Academy of Sciences, the Polish Academy of Sciences, the Hungarian Academy of Sciences, the East German Academy, the Bulgarian Academy, the Romanian Academy, and other socialist institutions. Lloyd Jordan's contemporary analysis of scientific and technical relations among Eastern European communist countries noted that the Soviet Academy's agreements

with the Czechoslovak and Slovak academies illustrated both the fields of cooperation and the practical problems of such relationships (*Jordan, 1970*). These agreements could cover exchanges of delegations, joint conferences, translation of publications, cooperative research themes, training stays, and coordination of documentation. They created a formal architecture of socialist academic internationalism. However, the reality behind formal agreements varied greatly. Some exchanges were productive and led to genuine collaboration. Others were ceremonial, ideologically motivated, or administratively burdensome. The effectiveness of cooperation depended on the quality of institutes, the seriousness of participants, the availability of resources, and the degree to which research themes corresponded to real disciplinary needs. Socialist scientific networks were therefore not monolithic. They ranged from fruitful collaboration to ritualised bureaucracy.

The Soviet Academy occupied a special position in these bilateral relations. It was the model according to which the Czechoslovak Academy had been reorganised after 1952, and it remained the dominant scientific institution in the socialist bloc. Cooperation with the Soviet Academy therefore had a double meaning. On the one hand, it gave Czechoslovak institutes access to a large research system, major facilities, and prestigious scientific schools. On the other hand, it reinforced the ideological and institutional hierarchy established after 1948. Soviet science was officially presented as advanced, fraternal, and exemplary, even when Czechoslovak scientists privately recognised weaknesses in Soviet bureaucracy, isolation, or methodological conservatism. The Academy had to show respect for Soviet leadership while also defending its own scientific traditions and professional standards. This produced a delicate diplomatic style. Czechoslovak researchers could learn from Soviet colleagues in some fields while looking more eagerly to Western literature in others. They could cooperate sincerely and still resent political dominance. The socialist network therefore cannot be reduced either to forced imitation or to genuine brotherhood. It was a field of asymmetrical exchange.

East Germany, Poland, and Hungary were especially important partners because they possessed strong scientific traditions and faced comparable problems of reform within state socialism. Cooperation with these countries could be less hierarchical than cooperation with the Soviet Union. It allowed Czechoslovak scientists to compare experiences with neighbours who shared similar institutional structures, ideological constraints, and aspirations for modernisation. Polish mathematics, East German industrial research, Hungarian economics, and various Central European traditions in chemistry, physics, linguistics, and historical studies could all provide useful points of contact. These relationships were not free from competition. Socialist countries competed for prestige, resources, industrial specialisation, and recognition within the bloc. Nevertheless, cooperation among the Central European socialist academies could produce a more balanced exchange than Soviet-centred cooperation. It also allowed scientists to discuss common problems in ways that were sometimes more candid than official rhetoric suggested. The Academy's Central European socialist contacts therefore formed an intermediate zone between Soviet hierarchy and Western comparison. They helped Czechoslovak researchers understand both the possibilities and the limits of reform in neighbouring systems.

Cooperation within socialist networks was not confined to the natural sciences. The social sciences and humanities also participated, although in a more ideologically sensitive form. Marxist philosophy, history of the workers' movement, Slavic studies, linguistics, economics, law, sociology, and cultural studies were all fields in which socialist countries organised

conferences, exchanges, and joint publications. These networks could reinforce official interpretations, especially in politically sensitive fields such as contemporary history or Marxist-Leninist philosophy. Yet they could also create opportunities for methodological comparison and cautious reformist discussion. Economists from Hungary, Poland, and Czechoslovakia could compare problems of planning, incentives, and enterprise reform. Sociologists could observe the uneven revival of empirical methods across socialist countries. Historians and literary scholars could encounter different national approaches to Marxism and cultural memory. The ideological frame was often restrictive, but it did not prevent all serious thought. Socialist scholarly networks in the humanities and social sciences therefore had an ambivalent character. They could reproduce dogma, but they could also circulate reformist language inside the bloc.

Economic reform debates provide a clear example of such circulation. The Czechoslovak reform around Ota Šik did not emerge in isolation. It belonged to a broader Eastern European discussion about the limits of command planning, the role of incentives, and the possible introduction of market-like mechanisms within socialism. Hungary, Poland, Yugoslavia, and the Soviet Union each supplied points of comparison, though Yugoslavia occupied a special position outside the Warsaw Pact and with its own self-management model. The Economic Institute of the Czechoslovak Academy of Sciences became one of the centres where these comparative debates could be analysed and adapted to domestic conditions (*Kosta, 1989*). Socialist economic networks thus enabled both conformity and critique. They allowed reformers to argue that change was not simply a Western import but part of a socialist discussion. This was politically useful because criticism could be framed as internal correction rather than ideological betrayal. At the same time, comparison with other socialist countries revealed that the Soviet model was not the only possible socialist arrangement. The Academy's economic research therefore used socialist networks to expand the range of legitimate reform questions.

In the natural sciences, socialist networks often developed around large facilities, specialised instruments, and technical standardisation. Nuclear physics had Dubna. Space research had Interkosmos. Some forms of meteorology, geophysics, seismology, oceanography, and environmental observation depended on coordinated data collection across territories. Chemistry, metallurgy, electronics, and engineering were tied to industrial cooperation and Comecon priorities. In such fields, cooperation was practical as well as ideological. No single institute could produce all data, instruments, or materials required by modern research. Socialist networks could reduce duplication, allocate tasks, and create shared programmes. However, the success of such cooperation depended on real competence. Political agreement could not make an instrument precise or a dataset reliable. For this reason, professional standards re-entered even the most politically organised networks. Czechoslovak scientists could gain influence when their expertise was recognised by colleagues, not merely when their state signed an agreement. The Academy's role in socialist networks therefore depended on the quality of its research communities.

Scientific publishing within socialist networks also deserves attention. Journals, translations, abstracting services, conference proceedings, and academy publishing houses circulated research across the bloc. Russian often functioned as a lingua franca in official socialist scientific communication, while Czech, Slovak, Polish, German, Hungarian, and other languages remained important in regional and disciplinary contexts. Translation was not a neutral technical act. It shaped the reception of methods, concepts, and theories. Soviet

terminology could enter Czech and Slovak scholarly language through official translations, while Czechoslovak work could reach Soviet or other socialist audiences through Russian-language publications. The Academy's publishing activity therefore participated in a socialist textual space. This space was broader than domestic publication but narrower than open world science. It enabled communication, yet it also carried ideological expectations. Scholars had to decide when to publish in Czech or Slovak, when to publish in Russian, and when to seek Western-language outlets. These choices shaped visibility, reputation, and intellectual orientation.

The asymmetry between socialist and Western publication cultures was a constant problem. Publication in a socialist-bloc journal could be politically safer and institutionally recognised, but it might have limited impact in the wider scientific world. Publication in a Western journal could bring international prestige, but it required language competence, access to peer networks, and political permission. In some fields, especially the natural sciences, Western publication was almost indispensable for global recognition. In others, socialist publication networks sustained regional debate and ideological legitimacy. The Academy had to operate in both systems. This dual publication environment created a layered intellectual life. Researchers might present one version of their work for domestic or socialist audiences and another for international disciplinary audiences. Such layering could be strategic, but it could also fragment scholarly communication. Socialist networks thus supported scientific exchange while also marking the boundaries of bloc-specific visibility. The Academy's international reputation depended on its ability to move beyond these boundaries without losing institutional support at home.

Cooperation with socialist countries beyond Europe added a further dimension. Cuba is one important example. Research on Czechoslovak-Cuban relations notes that the Czechoslovak Academy of Sciences contributed significantly to the creation of the Cuban Academy of Sciences and that from 1963 there was an agreement for direct collaboration between the two organisations, with cooperation especially in biological science, geography, geology, electronics, and meteorology (*Bortlová, 2012*). This shows that socialist scientific networks were not limited to the Warsaw Pact or European Comecon members. They also formed part of a broader Cold War politics of development, solidarity, and institution-building. For Czechoslovakia, cooperation with Cuba offered a way to project scientific expertise into the revolutionary Third World. For Cuba, it offered access to specialists, training, and institutional models. The Academy thus participated in a global socialist scientific diplomacy. This diplomacy combined genuine assistance, ideological solidarity, and the search for international prestige. It also gave Czechoslovak scientists opportunities for long-term work abroad in environments very different from Central Europe.

Such cooperation with Cuba and other non-European socialist or socialist-oriented countries reveals the wider political use of scientific expertise. Czechoslovakia was a small state in geopolitical terms, but it possessed relatively advanced industrial, medical, educational, and scientific capacities. Through expert missions, academy cooperation, training programmes, and technical assistance, it could act as a mediator of socialist modernity. The Academy's institutes could contribute to institution-building, biological research, meteorology, geology, electronics, and other fields in allied countries. This gave Czechoslovak science an international role beyond passive dependence on Moscow. However, this role was still embedded in Soviet-bloc politics. Assistance to Cuba, Vietnam, or African countries was often framed as socialist solidarity and anti-imperialist development. It allowed Czechoslovakia to

gain diplomatic visibility while supporting the broader geopolitical aims of the socialist camp. The Academy's participation in such networks therefore illustrates how scientific cooperation could become development policy. It also complicates any simple picture of Czechoslovak science as merely trapped between East and West. It was also active in South-oriented socialist and post-colonial circuits.

The Academy's cooperation within socialist networks also had a bureaucratic side that often frustrated scientists. Agreements could be ambitious on paper but poorly implemented in practice. Delegations could produce reports without sustained research results. Political anniversaries could generate ceremonial conferences whose intellectual value was limited. Language barriers, uneven equipment, differences in administrative procedures, and shortage of hard currency could restrict cooperation. The planned nature of socialist economies sometimes made even simple exchanges difficult, because travel, materials, and publication distribution required formal approval. Scientists could find themselves attending ideologically important meetings while struggling to obtain the literature or instruments they actually needed. These frustrations did not nullify the value of socialist cooperation, but they reveal its limits. The Academy's researchers learned to distinguish between real cooperation and ritual cooperation. The most productive networks were usually those grounded in shared disciplinary problems rather than political obligation alone. In this respect, socialist scientific cooperation worked best when it became genuinely scientific.

The contrast between cooperation with Western science and cooperation within socialist networks was therefore not simply a contrast between freedom and control. Western contacts could be highly productive but politically restricted. Socialist contacts could be politically approved but scientifically uneven. Western cooperation offered access to cutting-edge methods and broader peer communities, but it could be limited by travel permissions and ideological suspicion. Socialist cooperation offered institutional channels, shared facilities, and official legitimacy, but it could be burdened by hierarchy, bureaucracy, and Soviet dominance. Czechoslovak scientists had to use both. The Academy's international strategy in the 1960s was therefore pragmatic. It drew on socialist networks for facilities, bloc programmes, and politically safe exchanges, while also seeking Western contacts for disciplinary comparison and global recognition. This dual orientation was one of the marks of the 1960s scientific thaw. It reflected the Academy's effort to remain loyal enough to function and open enough to develop. The tension between these orientations would become sharper during and after the Prague Spring.

The Prague Spring placed socialist scientific networks under new pressure. As Czechoslovak society opened in 1968, many scientists and intellectuals demanded greater freedom of travel, more equal international cooperation, and less ideological interference. This inevitably affected relations with the Soviet Union and other conservative socialist regimes. Scientific cooperation that had previously been presented as fraternal could become politically strained when Czechoslovak institutions defended reform. The Academy's leadership and many institutes supported the reform atmosphere, and after the Warsaw Pact invasion the Academy's position became sensitive. The institutional history of the Academy's 1963–1970 period notes that the Academy and its leadership generally managed to uphold institutional integrity in the difficult late 1960s, which contributed to its being viewed by the authorities as one of the centres of "counter-revolution" (*Franc, Dvořáčková, et al., 2024*). This shows that socialist scientific cooperation was not immune to political crisis. Networks built in the name

of fraternity could become channels of pressure. Scientific internationalism inside the bloc depended on political conformity more than its rhetoric admitted.

After the invasion of August 1968, relations with Soviet and socialist institutions changed in atmosphere. Formal cooperation continued, but it was increasingly marked by normalisation, supervision, and the demand for political loyalty. For many Czechoslovak scientists, the invasion damaged the moral legitimacy of Soviet-led internationalism. Cooperation with Soviet institutions could no longer be experienced in the same way by those who had supported reform or condemned the intervention. At the same time, the Academy could not simply break with socialist networks. Czechoslovakia remained inside the Warsaw Pact, Comecon, and the Soviet sphere, and scientific cooperation with socialist partners continued to be administratively required and materially important. This produced a painful contradiction. Scientists might need Dubna, Interkosmos, Soviet institutes, or bloc conferences for professional reasons while personally or politically resenting the restored hierarchy. The normalisation period would deepen this contradiction. For the 1960s, however, the decisive point is that socialist networks were both scientific infrastructure and political framework. Their meaning changed sharply when the political framework turned coercive.

The Czechoslovak Academy's cooperation with socialist networks also affected its domestic identity. Participation in international socialist institutions confirmed its status as the leading research organisation of the country. It represented Czechoslovakia in bloc-wide programmes, supplied experts, hosted delegations, and coordinated institutes. This gave the Academy diplomatic and administrative weight. Yet it also placed the Academy under scrutiny. It had to demonstrate loyalty in official socialist forums while maintaining professional credibility among scientists. The more prominent the Academy became internationally, the more visible its internal reformism became. This visibility was double-edged. In the mid-1960s, it could support prestige and openness. After 1968, it could attract suspicion. The Academy's socialist international role therefore strengthened its institutional importance but also increased its vulnerability. International communication was never outside politics; within the socialist bloc, it was one of the main ways politics entered science.

The Slovak Academy of Sciences occupied a specific place in these socialist networks. As part of the broader Czechoslovak academy structure after 1960, it participated in international cooperation through both Czechoslovak and Slovak channels. Adam Hudek's research shows that relations between the Slovak and Czechoslovak academies before 1970 were shaped by tensions over autonomy, integration, and institutional competence (*Hudek, 2022*). Socialist international cooperation could either reinforce Prague-centred coordination or help Slovak institutes build their own international profiles. For fields such as biology, geology, linguistics, history, sociology, and regional development, Slovak participation in socialist networks had national-institutional significance. It allowed Slovak science to appear not merely as a regional branch but as a participant in broader academic communication. At the same time, decisions about representation, delegation membership, and cooperation priorities could reproduce internal Czechoslovak asymmetries. Thus, socialist scientific networks had a domestic constitutional dimension. They affected not only relations between Czechoslovakia and the Soviet bloc, but also relations between Czech and Slovak science within the common state.

The socialist networks also shaped the Academy's understanding of scientific modernity. In official discourse, modernity was not supposed to be Western; it was supposed to be socialist, collective, rational, and planned. JINR, Interkosmos, Comecon research programmes, and

academy agreements were all presented as evidence that socialism could organise science on an international scale. There was some truth in this. Large facilities and coordinated programmes did allow smaller countries to participate in fields otherwise beyond their means. Yet the socialist model of modernity was burdened by political centralisation and ideological control. It could mobilise resources, but it often struggled with feedback, flexibility, competition, and openness. Czechoslovak scientists experienced this contradiction directly. They could benefit from socialist structures while also seeing their limitations. This experience shaped the reformist imagination of the 1960s. Many researchers did not want to abandon socialism; they wanted socialist science to become more professional, more open, and less bureaucratic. Cooperation within socialist networks therefore became one of the arenas in which the meaning of socialist modernity was tested.

One should also note the emotional and symbolic dimension of socialist scientific cooperation. For some scientists, especially those committed to socialist ideals, cooperation with Soviet, Polish, East German, Hungarian, Bulgarian, Cuban, or Vietnamese colleagues could carry genuine enthusiasm. It could express the hope that science might overcome national egoism and serve peaceful development. For others, the same cooperation could feel obligatory, formal, or politically contaminated. These attitudes could coexist within the same institute. A researcher might admire a Soviet physicist but dislike Soviet political dominance. A Czechoslovak economist might learn from Hungarian reform debates while rejecting Soviet conservatism. A biologist might enjoy cooperation in Cuba while seeing the ideological staging around it. Socialist networks therefore generated complex loyalties. They were not experienced in a single emotional register. The Academy's international life was made of ambition, solidarity, irritation, dependence, curiosity, and caution. Such complexity is essential if the history is to remain human rather than schematic.

The long-term legacy of socialist scientific cooperation was equally mixed. Some networks produced durable expertise, trained specialists, and supported research in strategic fields. Czechoslovak participation in nuclear physics, space research, and selected technical fields cannot be understood without socialist institutions such as JINR or Interkosmos. Some academy-to-academy contacts helped preserve scholarly exchange during periods when Western contact was restricted. Cooperation with Cuba and other socialist or post-colonial partners contributed to institution-building and international scientific diplomacy. At the same time, socialist networks often reinforced dependency, bureaucratic habits, political loyalty tests, and limited visibility beyond the bloc. After 1989, many of these networks were re-evaluated, transformed, or abandoned, but their scientific traces did not disappear completely. Instruments, careers, research habits, and institutional memories remained. The Academy's 1960s experience in socialist networks therefore belongs to both the history of constraint and the history of capacity-building. It was neither simply imposed nor simply chosen. It was part of the structural condition of doing science in a socialist country during the Cold War.

Thus, cooperation within socialist scientific networks gave the Czechoslovak Academy of Sciences an international environment that was politically approved, scientifically necessary in some fields, and institutionally ambiguous. Through Comecon, bilateral academy agreements, the Joint Institute for Nuclear Research in Dubna, Interkosmos, cooperation with the Soviet Academy and other socialist academies, and assistance to countries such as Cuba, the Academy participated in a wide system of socialist scientific exchange. These networks supplied facilities, mobility, technical cooperation, and international status, but they also

reproduced Soviet-centred hierarchy, bureaucratic planning, and ideological supervision. Their value depended on whether cooperation was grounded in real research problems or reduced to ceremonial internationalism. For Czechoslovak scientists, socialist networks were at once opportunity and limitation: they opened access to nuclear physics, space research, technical standardisation, and bloc-wide contacts, yet they also reminded researchers that scientific internationalism under socialism was inseparable from political power. In the reform atmosphere of the 1960s, the Academy tried to use these networks creatively while also seeking broader Western contacts and stronger professional autonomy. The crisis of 1968 revealed the fragility of this balance. Socialist scientific cooperation could support modern science, but when political conformity was demanded, the same networks could become instruments of pressure. For this reason, the Academy's cooperation within socialist networks must be seen as a central, contradictory, and deeply formative part of its international history in the 1960s.

3. Conferences, Publications, Travel, and International Reputation

The international reputation of the Czechoslovak Academy of Sciences in the 1960s was not created by a single discovery, a single conference, or a single diplomatic opening. It was formed through a wider ecology of scientific communication: conferences hosted in Prague and elsewhere, foreign travel, journal exchange, international publications, visiting scholars, academy-to-academy agreements, and the growing visibility of Czechoslovak research in selected disciplines. These channels mattered because they gave the Academy a position beyond the domestic hierarchy of socialist science. A laboratory or institute could be praised by political authorities at home, but international reputation required recognition from disciplinary communities that operated according to broader standards. This did not mean that Cold War politics disappeared from science. On the contrary, every journey, invitation, symposium, publication, and collaboration carried political meaning. Yet the Academy's reputation in the 1960s grew precisely because its scientists could increasingly move, publish, correspond, and host colleagues across borders. The second institutional history of the Czechoslovak Academy of Sciences presents the period 1963–1970 as one of political easing, civil-society development, increasing openness to Western impulses, and remarkable development in many disciplines under František Šorm's leadership (*Franc, Dvořáčková, et al., 2024*). Conferences, publications, and travel were among the practical mechanisms through which that openness became real. They transformed the Academy from a centrally planned national research organisation into a more visible participant in European and world science. They also exposed the contradiction at the heart of the reform decade: scientific excellence required openness, while political power continued to fear the consequences of open communication.

Conferences occupied a special place in this transformation because they created moments of concentrated international presence. A conference is more than a sequence of papers. It is a temporary community in which research results, methods, personal reputations, informal conversations, institutional ambitions, and political signals converge. For Czechoslovak Academy institutes, hosting or attending international conferences served several purposes at once. It showed that Czechoslovak science was not isolated behind the Iron Curtain. It allowed domestic researchers to test their work before foreign colleagues. It helped younger scientists encounter living disciplinary debate rather than merely read delayed publications. It also gave

institute directors and Academy leaders evidence that their fields deserved resources, travel budgets, and greater professional discretion. The importance of conferences was especially visible in disciplines where Prague could claim a recognised place in international research, such as macromolecular chemistry, physical chemistry, polarography, cybernetics, mathematics, and selected areas of biology and economics. In these cases, conferences were not decorative events attached to science; they were part of the substance of disciplinary development. They allowed the Academy to convert scientific achievement into institutional prestige. At the same time, they required negotiation with political authorities, because invitations, visas, travel permissions, and foreign guests were never purely administrative details in a socialist state.

The Prague tradition in macromolecular chemistry offers one of the clearest examples of the conference as an instrument of international reputation. The Institute of Macromolecular Chemistry records that Prague hosted important IUPAC International Symposia on Macromolecules in 1957, 1965, and 1992, and that the Prague Meetings on Macromolecules have been organised by the Institute every year since 1967 and became well known in the polymer community (*Institute of Macromolecular Chemistry, n.d.*). This tradition was important because it placed Prague on the map of a rapidly developing international discipline. Polymer science was not a marginal speciality. It was connected with new materials, medicine, industry, consumer technologies, and the broader post-war expansion of chemical research. For Czechoslovak scientists, especially those associated with Otto Wichterle and his institutional environment, such meetings created opportunities to present results, form contacts, and show that research produced inside a socialist country could meet international standards. The Prague meetings also gave foreign scientists a reason to come to Czechoslovakia not as political observers but as disciplinary colleagues. In that sense, the conference room became a controlled but genuine crossing point of the Iron Curtain. The regime could celebrate the prestige of hosting international experts, while researchers used the event for real professional exchange. The success of these conferences showed that international reputation depended not only on individual discoveries but on the capacity to organise durable scientific communities.

The 1965 Prague macromolecular symposium was especially representative of the Academy's international role in the middle of the decade. It occurred at a time when Czechoslovak science was becoming more open, while political control had not disappeared. A contemporary report preserved in the Delft repository identifies the event as the International Symposium on Macromolecular Chemistry held in Prague from 30 August to 4 September 1965 (*Wright, 1965*). The date matters because it places the symposium before the Prague Spring but after the beginning of the wider reform atmosphere. By then, the Academy was already seeking stronger contact with the international scientific community. The symposium allowed the Institute of Macromolecular Chemistry to demonstrate its maturity, and it confirmed that Prague could host highly specialised scientific events of recognised international significance. It also showed that Czechoslovak science could build reputational capital even within political constraints. Foreign participants did not come only to observe a socialist country; they came because the field itself had reason to be in Prague. Such events made the Academy's international reputation more concrete. They connected names, laboratories, methods, and institutional spaces. They also helped younger Czechoslovak chemists enter a disciplinary world larger than the national system that employed them.

The importance of publication was no less decisive. Conferences create direct encounter, but publications create durability. A scientific paper, monograph, conference volume, or specialised journal allows research to circulate beyond the time and place of its presentation. For the Academy, publication was one of the main ways to convert domestic research into international recognition. In the natural sciences, this often-meant publishing in foreign-language journals, participating in international proceedings, or ensuring that results were visible in abstracting and indexing systems. In the humanities and social sciences, publication could be more complicated because language, censorship, ideological framing, and the national specificity of topics affected circulation. Nevertheless, publishing remained essential. A field becomes internationally visible when its work can be read, criticised, cited, translated, and placed in conversation with research elsewhere. The Academy's publishing infrastructure therefore had strategic importance. It supported domestic journals and monographs, but it also functioned as a bridge to wider scholarly communication. The more Academy researchers published beyond narrow domestic channels, the more they weakened the isolation that had marked the Stalinist years. Yet publication also remained politically sensitive, especially when foreign concepts, reformist arguments, or social-scientific findings challenged official language.

The foundation and development of *Kybernetika* illustrates how a journal could become both a disciplinary instrument and an international signal. The journal was founded in 1964 through the initiative of the Professional Group of Cybernetics at the Czechoslovak Academy of Sciences, with its first issue appearing in January 1965, and it was published by the Publishing House of the Czechoslovak Academy of Sciences through the Institute of Information Theory and Automation (*Kybernetika, 2024*). This was significant because cybernetics had earlier been ideologically suspect in the Soviet bloc, but by the 1960s it had become central to automation, control theory, information theory, applied mathematics, and systems thinking. The creation of a specialised journal gave the field institutional legitimacy. It also allowed Czechoslovak cyberneticists to communicate with foreign readers and to demonstrate that the discipline had a serious domestic base. A journal title itself can become a reputational marker. It says that a community exists, that it possesses standards, and that it expects to participate in ongoing debate. The founding of *Kybernetika* therefore belonged to the same history as travel and conferences. It was a channel through which Czechoslovak science presented itself as modern, technically competent, and methodologically open. In a broader sense, it showed that publication culture could help rehabilitate methods once condemned by ideological simplification.

Publication also shaped the Academy's reputation through the visibility of particular scientific schools. Jaroslav Heyrovský's Nobel Prize in Chemistry in 1959 had already given Czech physical chemistry and polarography a strong international emblem at the threshold of the 1960s. The prestige of polarography did not belong only to one individual, even though Heyrovský's role was central. It rested on an institute, a method, a community of researchers, instruments, teaching, and analytical applications. Such a school could maintain reputation through continuing publications, conference participation, and the training of specialists. The Academy inherited and institutionalised such traditions, showing that Czech science possessed depth beyond the socialist reorganisation of the early 1950s. International reputation in this case was built from continuity: a discovery became a method, a method became a school, and a school became part of the Academy's international identity. This was important because it allowed the Academy to present itself not merely as a political creation

of the communist state but as the bearer of older Czech scientific achievement. The same logic applied, though differently, to polymer chemistry, organic chemistry, mathematics, and other fields. Reputation was strongest where institutional continuity, scientific originality, and international communication reinforced one another.

Travel was the most personal and often the most politically charged form of international communication. To travel abroad was to cross not only a border but also a regime of permission. A scientist needed institutional justification, funding, political reliability, and often approval from authorities who treated mobility as a privilege rather than a right. Yet travel was indispensable for serious scientific work. It allowed researchers to attend conferences, visit laboratories, inspect instruments, negotiate collaborations, obtain literature, and build personal trust. Riikka Nisonen-Trnka's study of Czechoslovak natural scientists emphasises academic travel, contacts, and cooperation as central themes in understanding the Prague Spring of science and the reconsideration of the Iron Curtain (*Nisonen-Trnka, 2012*). Her earlier article similarly identifies cooperation with the West as a major paradox of Czechoslovak liberalisation because it was both necessary and politically sensitive (*Nisonen-Trnka, 2008*). This paradox shaped the Academy's everyday international life. Travel opened scientific horizons, but it also exposed researchers to comparison with Western research systems. It could strengthen loyalty by bringing prestige home, or weaken conformity by revealing alternative institutional possibilities. For that reason, academic travel was never just travel.

The experience of travelling to a Western laboratory or conference often changed a scientist's understanding of what research could be. A chemist might see different relations between university laboratories and industry. A physicist might observe instrumentation unavailable at home. A sociologist might encounter survey techniques or debates conducted with less ideological constraint. A philosopher or historian might discover forms of disagreement that were normal in academic life elsewhere. Such experiences did not automatically turn Academy researchers into political dissidents. Many remained loyal reform socialists, cautious professionals, or primarily discipline-oriented scholars. Yet travel altered expectations. It made bureaucratic delay, poor equipment, travel restrictions, limited journals, and ideological supervision appear less natural. It also allowed researchers to compare not only scientific results but scientific cultures. These comparisons fed back into debates about planning, evaluation, and autonomy inside the Academy. The traveller returned not simply with information but with a sense of possibility. This was why political authorities feared uncontrolled travel. They understood that mobility could carry back not only knowledge but also a different measure of normality.

Travel within socialist networks had a different but also important meaning. Visits to Soviet institutes, Dubna, Warsaw, Budapest, East Berlin, Sofia, or other socialist centres were politically easier to justify than travel to Western countries. They allowed Czechoslovak researchers to participate in official socialist internationalism, work with large facilities, and compare experiences with colleagues who faced similar institutional constraints. Such travel could be genuinely valuable, especially in fields like nuclear physics, space research, geophysics, metallurgy, and applied technology. The Joint Institute for Nuclear Research at Dubna, founded in 1956 by eleven member states including Czechoslovakia, gave scientists from smaller socialist countries access to large-scale research infrastructure that would otherwise have been difficult to obtain (*Joint Institute for Nuclear Research, n.d.*). For Academy-related researchers, travel to Dubna could mean contact with big science, international teams, and advanced instrumentation under Soviet leadership. Yet this mobility

remained politically structured. It was encouraged as socialist cooperation, but it also reinforced the hierarchy of the bloc. The Academy's reputation inside socialist networks was therefore built through participation, competence, and loyalty, while its reputation in wider world science required more open comparison. Both circuits mattered, but they did not carry the same intellectual meaning.

The Academy's international reputation was also shaped by visiting foreign scholars in Czechoslovakia. When foreign scientists came to Prague, Brno, Bratislava, or specialised institutes, they brought methods, questions, habits of discussion, and personal networks. A lecture by a visiting chemist, mathematician, physicist, sociologist, or philosopher could have effects beyond the formal programme. Informal conversations, laboratory visits, shared meals, and small seminars often mattered more than official speeches. Such visits also had symbolic importance. They showed domestic researchers that their institutes were worthy of attention. They gave the Academy an opportunity to display laboratories, libraries, and research achievements. They also allowed political authorities to present Czechoslovakia as an open and advanced socialist country. Yet the intellectual substance of visits could exceed the political staging. A foreign guest could ask questions that domestic colleagues had learned to avoid. He or she could bring books, reprints, contacts, or invitations. Visiting scholars thus helped create channels of intellectual circulation that were partly official and partly personal.

The Academy's reputation grew unevenly across disciplines. Chemistry was one of the strongest fields, supported by the international standing of Šorm, Wichterle, Heyrovský, and the institutional development of chemical research. Macromolecular chemistry gave Prague a distinctive place in the polymer community. Physical chemistry and polarography carried the prestige of Nobel-level achievement. Cybernetics, information theory, and automation signalled methodological modernity. Mathematics and selected areas of physics benefited from strong Central European traditions and international networks. Sociology and economics gained reputation in a different way, through their connection with reform, empirical research, and the search for a modern socialist society. Philosophy and interdisciplinary social theory became visible through debates on technology, human development, and the scientific-technological revolution. The humanities had a more difficult path because political sensitivity limited free circulation, but even there Czech and Slovak scholarship preserved traditions in linguistics, history, literary studies, archaeology, and cultural research. The Academy's international reputation was therefore plural. It did not consist of one image, but of several reputational profiles formed through different channels.

The international circulation of reform ideas was especially important in the social sciences. Czechoslovak economics, sociology, and philosophy did not become internationally visible only because they adopted Western concepts. They became visible because they tried to solve problems specific to a socialist industrial society undergoing reform. Ota Šik's economic reform debates, the revival of empirical sociology, and Radovan Richta's work on the scientific and technological revolution all made Czechoslovakia intellectually interesting abroad. The Academy helped provide institutional spaces for this work. Kosta identifies the Economic Institute of the Czechoslovak Academy of Sciences as a central location of criticism and reform proposals during the crisis years of the early 1960s (*Kosta, 1989*). Richta's *Civilization at the Crossroads* reached an international readership because it addressed the social and human implications of technological change within a reform-socialist framework (*Richta, 1969*). These works were not simply domestic policy texts. They became part of broader debates about planning, automation, modernity, and socialism. The Academy's reputation in this sphere was

therefore tied to the intellectual originality of the Prague reform environment. It showed that Czechoslovak science could export concepts, not only receive them.

The Prague Spring made the Academy's international reputation more visible and more politically vulnerable. In 1968, foreign observers looked to Czechoslovakia as a place where socialism might be reformed through democracy, expertise, openness, and public debate. Academy researchers, especially in economics, sociology, philosophy, history, and the natural sciences, were among the groups whose work gave intellectual substance to this image. The phrase "science with a human face", used by Nisonen-Trnka in her study of František Šorm and Otto Wichterle, captures the connection between scientific reform and the broader reformist aspiration of the period (*Nisonen-Trnka, 2012*). International reputation now had a civic dimension. It was no longer only a matter of successful laboratories or conference participation. It was linked to the idea that science could support a more truthful, humane, and rational society. This made the Academy admired in some foreign circles and distrusted by conservative socialist authorities. After the invasion, the same international visibility could become evidence of ideological danger. The Academy's reputation was thus both an asset and a liability. It protected some scholars through recognition, but it also made reformist networks easier to identify.

The role of Academy publishing in this international reputation should be understood in both domestic and foreign terms. Domestically, Academy publications helped build disciplines by providing journals, monographs, edited volumes, and proceedings. Internationally, they allowed Czechoslovak research to be translated, reviewed, exchanged, and cited. Foreign-language publication was especially important. English, German, French, and Russian each opened different routes of communication. Russian connected Czechoslovak work with the socialist bloc; English increasingly connected it with global science; German and French preserved older Central European and European scholarly channels. The choice of language could shape the audience and meaning of a text. A paper in Russian might strengthen socialist cooperation. A paper in English might seek wider disciplinary recognition. A Czech or Slovak monograph might deepen domestic debate but remain internationally less visible unless translated or reviewed abroad. The Academy therefore lived within a multilingual publication field. Its international reputation depended partly on its ability to move between these languages without losing scholarly precision.

Censorship and ideological review complicated this publication field. Even when the 1960s brought easing, publication was not fully free. Editors had to judge what could be printed, how arguments should be framed, and which foreign references were acceptable. Academic publishing under state socialism required negotiation between scholarly standards and political permission. Later research on Czech and Hungarian academic publishing under socialism has shown how censorship, institutional gatekeeping, and professional strategies shaped scholarly communication, particularly in the normalisation period after 1969 (*Kopeček & Wciślik, 2021*). The 1960s were more open than normalisation, but the structural problem was already present. The Academy's publications had to serve both science and institutional survival. This created a layered style of writing in some fields, especially the humanities and social sciences. A text might include official vocabulary while pursuing serious methodological work beneath it. International readers sometimes had to interpret such writing carefully. Publication was therefore both a channel of reputation and a field of compromise. The very success of Academy publications in the 1960s rested on the ability to widen discussion without always breaking the boundaries openly.

International reputation also depended on the material credibility of institutes. Foreign scientists could recognise the seriousness of a research community when they saw laboratories, instruments, libraries, trained staff, and long-term projects. The Academy's institutes varied widely in this respect, but several had enough material and intellectual infrastructure to command respect. The Institute of Macromolecular Chemistry, the Institute of Organic Chemistry and Biochemistry, the Institute of Physical Chemistry, the Institute of Information Theory and Automation, nuclear and mathematical institutions, and selected social-scientific centres all contributed to the Academy's visibility. Buildings and equipment were not mere background. They signalled that Czechoslovakia could support advanced research. They also made conferences and visits more meaningful because foreign guests could see science being practised, not merely proclaimed. In a planned economy with chronic shortages, maintaining such infrastructure required institutional skill. Academy leaders used international reputation to argue for resources, and resources in turn supported further reputation. This circular relationship between prestige and capacity was one of the engines of the 1960s development.

The reputation of individual scientists often served as the gateway to the reputation of institutes. František Šorm represented high-level chemistry and Academy leadership. Otto Wichterle represented invention, polymer science, and the link between research and practical innovation. Jaroslav Heyrovský represented the international authority of Czech physical chemistry and polarography. Radovan Richta represented interdisciplinary reformist theory of technological civilisation. Ota Šik represented economic reform and the analytical critique of planning. These figures differed greatly in field, political role, and public profile, but each gave the Academy a recognisable face abroad. International science often works through names before it recognises institutions. A respected individual attracts invitations, correspondence, citations, and visitors; over time, the institute behind that individual gains visibility. This could protect research communities, but it also concentrated risk. If a prominent scholar became politically suspect, the institute's reputation could become politically dangerous. The Academy's international standing was therefore personalised as well as institutional. Its public image depended on scientists whose authority sometimes exceeded the boundaries acceptable to the regime.

The Academy's international reputation was also affected by the reception of Czechoslovakia as a scientifically sophisticated small country. Unlike the Soviet Union, Czechoslovakia could not claim massive scale. Its strength lay in selected high-quality traditions, industrial competence, technical education, and dense Central European intellectual culture. This made conferences and publications especially important. They allowed the country to appear larger scientifically than its geopolitical size. A successful Prague symposium, an internationally cited paper, or a recognised institute could project the Academy into global debates. This was particularly valuable in the Cold War, when small states often struggled to maintain intellectual visibility between superpower blocs. The Academy used its strengths selectively. It could not compete equally in every field, but it could become respected in particular disciplines. This selective excellence was one of the foundations of its reputation. It also shaped internal debates about planning and priorities, because international visibility could be used to justify concentrating resources in fields where Czechoslovak science had genuine comparative advantage.

The social life surrounding conferences and travel also mattered. Informal conversations often carried more intellectual significance than official sessions. A dinner after a symposium, a

laboratory walk, a private discussion in a hotel lobby, or the exchange of reprints could produce future collaborations. In a controlled political environment, such informal communication had special value because it allowed scientists to speak more freely than in official reports. It also created trust across borders. Trust is one of the invisible foundations of scientific reputation. A foreign colleague who trusts the competence and seriousness of an Academy scientist may recommend publication, invite cooperation, or send students and materials. Such relationships cannot be planned mechanically. They grow through repeated contact. Conferences, travel, and visits therefore built the interpersonal infrastructure of international science. The Academy's reputation was made not only by formal achievements but by these quieter human networks.

The limits of international communication remained sharp despite the opening. Not every scientist could travel, not every book could be obtained, not every invitation could be accepted, and not every foreign collaboration could proceed. Political reliability, financial constraints, bureaucratic delay, language barriers, and institutional hierarchy shaped access. Senior and internationally recognised researchers usually had more opportunities than younger or politically marginal colleagues. Natural scientists often had more defensible reasons for travel than humanists or social scientists. Prague-based institutes often had better access than more peripheral institutions. These inequalities affected the distribution of reputation inside the Academy. Some institutes became strongly internationalised, while others remained more provincial. Some researchers built careers through foreign contacts, while others remained isolated. The Academy's international communication was therefore real but uneven. Its openness should not be romanticised as universal freedom. It was a selective and negotiated system of mobility and visibility.

The aftermath of 1968 demonstrated the fragility of the Academy's international reputation. The Warsaw Pact invasion and the subsequent normalisation process damaged the reformist image of Czechoslovak science. Travel restrictions increased, personnel purges affected institutes, and some researchers lost positions, publication opportunities, or access to international networks. Nisonen-Trnka's study notes that after the invasion many scientists' possibilities were sharply limited, including through separation from research work, institutes, teamwork, and national and international scientific communities (*Nisonen-Trnka, 2012*). This is one of the clearest signs that conferences, publications, and travel were not secondary matters. To cut a scientist off from travel and publication was to cut him or her off from the living community of science. Normalisation did not destroy all research, and some international cooperation continued, especially in politically safer fields. But the spirit of the 1960s opening was broken. The Academy's international reputation survived in parts, yet it was now burdened by the political defeat of the reform horizon.

Still, the 1960s created a memory of international scientific normality that could not be entirely erased. Researchers who had attended conferences, hosted foreign guests, published abroad, or participated in international projects remembered that Czechoslovak science could belong to wider disciplinary communities. Institutes that had built reputations in polymer chemistry, physical chemistry, cybernetics, economics, sociology, or interdisciplinary theory retained traces of those connections even when restrictions returned. Younger scientists who had glimpsed international standards carried those standards into later decades, sometimes privately or indirectly. The reputation built in the 1960s also helped preserve foreign awareness of Czechoslovak science during more difficult years. International colleagues remembered names, institutes, and traditions. Such memory mattered after 1989, when the Academy again

had to rebuild its position in world science. The conferences, publications, and travels of the 1960s therefore had a long afterlife. They were not simply episodes of Cold War communication. They created durable expectations about what scientific life should be.

Thus, conferences, publications, travel, and international reputation were central to the Czechoslovak Academy of Sciences' dynamism in the 1960s. Conferences allowed the Academy to host and enter international disciplinary communities; publications gave research durability and visibility; travel created personal networks and comparative horizons; and reputation gave institutes leverage in domestic struggles over resources and autonomy. These channels were never politically innocent. They operated inside Cold War constraints, socialist planning, censorship, travel control, and the unresolved tension between openness and ideological supervision. Yet their intellectual effects were profound. They helped make Czechoslovak science more methodological, more comparative, more ambitious, and more conscious of world standards. They also showed that the Academy's value could not be measured only by domestic political loyalty or plan fulfilment. Its strongest institutes and scholars gained authority because they were recognised beyond the borders of the socialist state. In the reform atmosphere before 1968, this international reputation strengthened the Academy's role as a centre of scientific and civic modernisation. After 1968, the restriction of travel and communication revealed how deeply international exchange had mattered. The history of the Academy in the 1960s is therefore also a history of movement: movement of people, texts, methods, instruments, reputations, and expectations across borders that politics tried, but failed completely, to close.

Major Figures and Research Directions of the 1960s

1. František Šorm and the Internationalisation of Czechoslovak Chemistry

František Šorm stands at the centre of any serious account of Czechoslovak chemistry in the 1960s, not only because he was an outstanding organic chemist, but because he embodied the complicated fusion of science, institutional power, political loyalty, reformist openness, and international ambition that defined the Czechoslovak Academy of Sciences during that decade. His importance cannot be reduced to a personal biography, however striking that biography was. Šorm was one of those figures through whom the institutional history of science becomes visible in human form: a laboratory organiser, a founder of research teams, a high-ranking Academy official, a communist functionary, an advocate of international cooperation, and later a victim of the post-1968 political reversal. In the history of the Academy, he represented a transition from the ideologically demonstrative leadership of Zdeněk Nejedlý to a model in which the head of the Academy was himself a practising scientist of international rank. That transition mattered because it gave the Academy a different kind of authority in negotiations with the state. When Šorm defended chemistry, research institutes, foreign contacts, instruments, patents, and team-based scientific work, he spoke not merely as an administrator but as a man who had built a discipline. His rise also showed how the communist regime, despite its suspicion of autonomous intellectual authority, needed powerful scientists

who could deliver prestige, innovation, and international credibility. The Institute of Organic Chemistry and Biochemistry's own history identifies Šorm as the crucial figure behind the post-war chemical group that became the institutional basis of the Institute, formally founded in 1953 and later renamed the Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences (*Institute of Organic Chemistry and Biochemistry, n.d.*). Thus, Šorm's importance belongs simultaneously to the history of organic chemistry, the Academy's organisational development, and the internationalisation of Czechoslovak science.

Šorm's scientific formation was rooted in the Czech chemical tradition that had survived war, occupation, university closure, and the post-war restructuring of higher education. The closure of Czech universities by the Nazi occupation authorities in November 1939 forced many young scholars, teachers, and students to seek alternative institutional spaces, including industrial research. This experience proved decisive for post-war Czechoslovak chemistry. Martin Franc's study of the Institute of Organic Chemistry and Biochemistry stresses that some future academic chemists found refuge in industrial research and development, and that this strongly influenced the work methods later carried into the Academy (*Franc, 2024*). In Šorm's case, the industrial environment did not produce a narrow applied mentality; rather, it encouraged large-team organisation, practical orientation, and the habit of connecting basic research with future technological use. He belonged to a generation for whom laboratory work, institutional improvisation, and national reconstruction were inseparable experiences. This helps explain why his later Academy model differed from the older image of the solitary university professor. Šorm built groups, programmes, and institutes. He thought in terms of research capacity, not only individual discovery. The war years therefore became, paradoxically, one of the formative conditions of the later internationalisation of Czechoslovak chemistry. They taught Šorm and his colleagues that science required institutional resilience as much as intellectual talent.

The specific research culture that Šorm developed drew heavily on synthetic organic chemistry, natural compounds, plant substances, terpenes, peptides, proteins, nucleic-acid derivatives, and biologically active molecules. These fields were exceptionally well suited to the post-war expansion of chemistry because they stood at the intersection of basic science, medicine, agriculture, pharmacology, and industry. Šorm's group became known for the synthesis and structural study of natural compounds, especially terpenes and biologically active plant components, and this line of work placed Czech organic chemistry within international research currents rather than provincial national specialisation. The significance of these topics lay in their breadth. Terpenes connected chemistry with botany, pharmacology, fragrance, plant metabolism, and structural theory. Peptides and proteins connected organic chemistry with biochemistry and physiology. Nucleic-acid antimetabolites connected chemistry with virology, oncology, and later pharmaceutical research. Šorm's programme therefore did not merely add another institute to the Academy; it helped create a chemical research culture capable of moving between molecule, organism, medicine, and technology. This mobility was one of the conditions of internationalisation. A national chemical school becomes internationally visible when it works on problems that foreign colleagues recognise as central. Šorm understood this very clearly, and his institute was organised around themes that could speak to world chemistry.

The Institute of Organic Chemistry and Biochemistry became the institutional monument of this strategy. It began as the Institute of Organic Chemistry and then acquired a broader biochemical identity, reflecting the post-war transformation of chemistry itself. The official

history of IOCB records that the institute was formally founded in 1953 as the Institute of Organic Chemistry and later bore the name Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences between 1960 and 1992 (*Institute of Organic Chemistry and Biochemistry, n.d.*). That change of name was not cosmetic. It expressed the movement from classical organic synthesis toward the chemistry of life processes, biologically active compounds, and molecular intervention in physiology and medicine. The institutional inclusion of biochemistry helped the institute enter a field that was growing rapidly across the world. It also matched broader Cold War priorities, because both East and West understood chemistry and biochemistry as strategic sciences linked to health, agriculture, materials, and state prestige. Šorm's institute therefore became a privileged site of Czechoslovak scientific modernity. It was not merely one laboratory among many. It was one of the Academy's most visible arguments that socialist Czechoslovakia could support advanced, internationally relevant, experimentally demanding research.

Šorm's working method was especially important for the institutional culture of the Academy. Franc describes the group around Šorm as using large teams focused on specific topics while anticipating practical use within a defined time horizon, a method shaped partly by industrial research experience and then transferred into the Academy environment (*Franc, 2024*). This is essential for understanding both his success and his limitations. Šorm's institute was not a loose association of individual scholars working independently under one roof. It was a coordinated research organism, with groups of chemists pursuing related families of compounds, generating variants, testing properties, and looking for applications. In this respect, his approach resembled post-war big science more than 19th-century academic chemistry. It also matched the socialist state's desire for organised, socially useful research. Yet the method required time, resources, instruments, skilled personnel, and a certain freedom from short-term bureaucratic demands. Annual plans with precisely defined deliverables did not fit easily with a research strategy based on the generation and selection of molecular variants. Šorm's model therefore exposed the contradiction between socialist planning and scientific creativity. It served the state's practical ambitions, but only when the state gave the institute enough professional space to work seriously.

The internationalisation of Czechoslovak chemistry under Šorm was not a simple matter of copying Western science. It was an attempt to build a Prague-based chemical centre that could engage Western, Soviet, and broader international science from a position of recognised competence. Šorm did not want Czechoslovak chemistry to be only a receiver of foreign methods or a subordinate participant in Soviet-bloc networks. He wanted it to be a producer of results, patents, publications, and scientific authority. Franc notes that Šorm's main aim was to build the Institute of Organic Chemistry and Biochemistry into one of the world's foremost chemical research centres, and that he used his privileged positions in the Academy and Communist Party to pursue this goal (*Franc, 2024*). This ambition was historically significant even when it exceeded the economic capacity of Czechoslovakia. It reveals the scale of scientific aspiration that existed inside the socialist system. Šorm's internationalism was therefore not politically liberal in a simple sense, but it was professionally expansive. He believed that a socialist research institute could compete with leading centres abroad if it concentrated talent, resources, organisation, and political support. The tragedy of this ambition was that Czechoslovakia could not consistently supply the hard currency, instruments, and openness needed to sustain equality with the best Western institutes.

Nevertheless, the aspiration itself raised the standard by which Czechoslovak chemistry judged itself.

The fact that Šorm became president of the Czechoslovak Academy of Sciences in 1962 gave chemistry a special institutional advantage in the reform decade. Nisonen-Trnka notes that natural scientists were better able than social scientists or humanists to prove the importance of their work to the state, that they were closely linked to economic demands, and that in chemistry it was a major advantage that the president of the Academy was himself a chemist (*Nisonen-Trnka, 2012*). This observation is crucial. It means that chemistry did not merely benefit from general de-Stalinisation; it occupied a privileged position within the Academy's leadership structure. The president understood the needs of laboratories, international networks, instruments, and team research from within. He could argue for chemistry in the language of national development, industrial usefulness, health, and international reputation. This gave the field leverage in resource allocation and international communication. It also strengthened the symbolic position of natural science within the Academy. In the 1960s, when Czechoslovakia sought technological modernisation and economic reform, chemistry appeared as a discipline that could deliver concrete evidence of scientific value. Šorm's presidency thus turned one discipline's authority into an institutional strategy for the Academy as a whole.

Šorm's political position was both a resource and a danger. He was a committed communist and held important party positions, yet his use of political influence was often directed toward scientific institution-building rather than purely ideological policing. Franc argues that Šorm's communist conviction seems to have been connected with his belief that the system could concentrate resources for chemical research, which he considered the essential condition for scientific success (*Franc, 2024*). This helps explain the apparent paradox of his career. Šorm was not an outsider to the regime; he was one of its trusted scientific leaders. Yet his institutional project required international contacts, professional competence, and scientific standards that could not be reduced to ideological obedience. He therefore used the language and mechanisms of the socialist state to build a research centre whose real logic was disciplinary and international. This made him powerful in the 1950s and 1960s, but also vulnerable after 1968. Once the political atmosphere changed, the same autonomy and internationalism that had made his institute successful could be interpreted as insufficient loyalty. Šorm's career shows that the regime's relationship with leading scientists was transactional and unstable. It rewarded them when they delivered prestige, but it could discard them when their conscience or institutional autonomy crossed political boundaries.

The internationalisation of Šorm's chemistry was deeply connected with publication strategy. Scientific reputation in chemistry depends on publication, citation, reproducibility, and entry into international discussions. Šorm understood that research produced in Prague had to circulate. At the same time, he attempted to strengthen Czechoslovak publication channels rather than simply send all important work abroad. Franc notes that Šorm demanded that his staff publish their outputs solely in *Collection of Czechoslovak Chemical Communications*, a journal he wanted to make one of the most important periodicals in the field (*Franc, 2024*). This strategy was ambitious and revealing. On one level, it tried to build an international journal around Czech chemical excellence, thereby making Prague a publication centre rather than a peripheral contributor. On another level, it risked limiting the visibility of research if the journal could not compete with leading Western outlets. The policy therefore embodied a tension common to smaller scientific countries: whether to internationalise by publishing abroad or by

strengthening national journals until they become internationally visible. Šorm chose the second path more strongly than many later scientists would consider prudent. Yet the choice reflected his broader institutional ambition. He wanted Czechoslovak chemistry not merely to enter world science but to host part of it.

Instrumentation was one of the hard limits of this ambition. High-level organic chemistry and biochemistry in the 1960s required spectroscopy, chromatography, analytical equipment, reliable reagents, technical workshops, and access to rapidly changing laboratory technologies. Franc's account emphasises that the Czechoslovak economy could not provide enough hard Western currency, especially US dollars, for the necessary instruments, and that the Institute sometimes waited years for equipment or had to build instruments in its own workshops or in the Academy's central development workshops (*Franc, 2024*). This detail is crucial because it shows the material reality behind Cold War scientific internationalisation. It was not enough to have talented chemists or political support. International equality required machines, spare parts, chemicals, journals, and currencies that socialist Czechoslovakia often lacked. The institute's researchers were therefore forced into a mixture of ingenuity and frustration. They improvised, cooperated with other centres, shared overloaded instruments, and tried to compensate for material shortage through collective effort. This could produce a heroic internal culture, but it also widened the gap between Prague and the richest Western laboratories. Šorm's dream of parity with leading American or West European centres collided with the economic structure of the socialist state.

Patents and technology transfer formed another major dimension of Šorm's internationalisation project. The Institute of Organic Chemistry and Biochemistry was not only a centre of basic research; it also pursued practical results, compounds, and applications. Franc notes that successful Academy institutes such as IOCB profiled themselves as producing practical results, including patents, and that the late 1960s saw efforts within the Academy to develop a more independent patent policy (*Franc, 2024*). This was a decisive issue for chemistry because biologically active compounds could have medical and commercial value beyond Czechoslovakia. Yet the socialist foreign-trade system created obstacles. Institutes could not freely conclude contracts with Western partners, and specialised foreign-trade enterprises such as Polytechna controlled international patent licences. This meant that scientific invention passed through administrative and commercial channels that were often remote from the researchers themselves. Šorm's institute could produce valuable knowledge, but it did not fully control its international exploitation. The problem was not simply bureaucratic inconvenience. It exposed the deeper mismatch between globally circulating chemical innovation and a centrally controlled socialist economy. The internationalisation of chemistry therefore required not only travel and publications, but also new legal and economic mechanisms for protecting and transferring results.

Šorm's importance also lies in his ability to join basic research with anticipated application without reducing science to immediate utility. His institute often produced series of compounds before their practical use was fully known, an approach that could appear inefficient from a narrowly administrative perspective but could later yield major results. This approach reflected a sophisticated understanding of chemical discovery. One does not always know in advance which molecule will become biologically or technologically significant. Systematic synthesis, variation, testing, and accumulation can create a reservoir of possibilities. The socialist planning system often wanted defined outputs, but chemical innovation often advances through prepared uncertainty. Šorm's model therefore challenged

short-term planning while still satisfying the state's desire for useful results. It was a form of disciplined openness. The institute did not wander randomly; it created structured chemical diversity. This method helped explain why the Institute's later legacy, including work by Antonín Holý and others, could become so important. The deep institutional culture built under Šorm continued to shape Czech chemical research long after his fall from power.

The internationalisation of Czechoslovak chemistry under Šorm was not limited to Western contacts. It also unfolded within socialist scientific networks, including relations with Soviet and other bloc institutions. Chemistry occupied a privileged place in the Soviet bloc during the Khrushchev period, when chemicalisation was promoted as a key route to improving living standards, agriculture, materials, and industry. Franc links Šorm's interests to the extraordinary emphasis placed on chemistry in socialist countries during Khrushchev's rule (*Franc, 2024*). This helps explain why chemistry could receive political support while still demanding international openness. Socialist states regarded chemistry as strategically important, but modern chemistry was inherently international. It required knowledge from everywhere. Šorm's institute therefore had to operate in both directions: toward Soviet-bloc cooperation and toward Western centres. This dual orientation was characteristic of the Academy in the 1960s. Socialist cooperation gave legitimacy and sometimes resources, while Western contact supplied methods, comparison, instruments, and prestige. Šorm's chemistry sat precisely at the intersection of these two circuits. It shows why the Cold War geography of science was never simply divided into sealed blocs.

At the same time, Šorm did not treat international cooperation as passive dependence. Franc reports that he considered international cooperation enormously important despite the Cold War and that he strove for equality and mutuality, imagining that American scientists would come regularly for internships and long-term stays at his Prague institute (*Franc, 2024*). This ambition is revealing because it shows how Šorm imagined Czechoslovak chemistry's place in the world. He did not want his institute's staff merely to travel westward as students of richer laboratories. He wanted Prague to attract foreign scientists as a destination of serious research. That aspiration was bold, perhaps unrealistic, but historically important. It shows that the internationalisation of Czechoslovak chemistry was not simply a thaw in restrictions; it was a claim to institutional dignity. Šorm's Prague was to be a centre, not a periphery. The fact that this claim could not be fully realised because of economic and political constraints does not make it insignificant. On the contrary, it reveals the gap between Czechoslovak scientific ambition and the structural limits of the socialist system. Internationalisation, in Šorm's sense, meant recognition through reciprocity.

The relationship between Šorm and Otto Wichterle is also important for understanding Czechoslovak chemistry in the 1960s. Both men were born in 1913, both represented internationally visible Czech chemistry, and both linked laboratory research with practical invention. Yet they occupied different institutional positions and embodied different scientific styles. Wichterle's macromolecular work and soft contact-lens invention became a symbol of research creativity crossing into everyday life, while Šorm's organic and biochemical empire represented large-team institutional power. Their careers were also intertwined through the Academy's chemical landscape, including the splitting and differentiation of institutes from the broader chemical research structure. Franc notes that the Institute of Macromolecular Chemistry, led by Wichterle, was one of the specialised institutes that split from the larger chemical institutional complex connected with Šorm's Institute (*Franc, 2024*). This differentiation was healthy for Czech chemistry because it allowed specialised fields to

develop their own methods, leaders, and international networks. It also shows that the Academy's chemistry was not a single school under one man. It was a constellation of related but distinct research cultures. Šorm's role was central, but the internationalisation of Czechoslovak chemistry depended on a broader ecosystem of institutes and personalities.

Šorm's presidency of the Academy shaped the international opportunities of natural scientists more broadly. Nisonen-Trnka argues that by the end of the 1960s Czechoslovakia had gone further than other socialist-bloc countries in its aspiration to improve Western cooperation, and that from the Soviet point of view close contacts with the West, calls for Academy autonomy, and the removal of ideological obstacles from scientific issues were alarming signals (*Nisonen-Trnka, 2012*). This broader observation places Šorm's role in a larger political frame. He did not merely internationalise one institute; he presided over an Academy whose reformist scientific circles increasingly demanded openness. In chemistry, this demand could be defended by practical need and international standards. In social sciences and humanities, it carried more visible political implications. The Soviet reaction after 1968 shows that scientific openness itself had become suspect. Šorm's position as a chemist-president was therefore historically double-edged. It helped natural science gain status and foreign contacts, but it also associated the Academy's leadership with a reform process that Moscow and domestic hardliners later considered dangerous. The internationalisation he fostered became part of the evidence against the reformist Academy.

The human drama of Šorm's fall after the invasion of August 1968 gives this story a tragic dimension. Eugene Garfield's essay described Šorm as a prolific, highly cited Czech chemist whose life was broken by the Warsaw Pact invasion and whose later fate made him a "nonperson" in official life (*Garfield, 1992*). Garfield's account is written after the Velvet Revolution and carries a rehabilitative tone, but it captures a historical reality that is essential for this chapter. Šorm had been a powerful man inside the communist scientific establishment, yet he opposed the occupation and paid heavily for that position. His forced removal from leadership demonstrated that scientific service, party membership, and institutional achievement did not protect a scholar once political loyalty was judged insufficient. The same state that had benefited from his organisational genius could erase him from public authority. This is why Šorm's biography is more than a story of personal downfall. It shows the fragility of professional autonomy under a regime that ultimately subordinated science to political obedience. The internationalist chemist became unacceptable when his conscience collided with Soviet power.

Šorm's fall also had consequences for the Institute of Organic Chemistry and Biochemistry. Franc argues that his forced departure from his positions had an adverse effect on the Institute, although his legacy and working methods remained alive there and contributed to later development (*Franc, 2024*). This continuity is one of the most important aspects of his historical significance. Political normalisation could remove a leader, restrict travel, and discipline institutions, but it could not immediately erase the research culture that had been built over decades. The institute retained personnel, methods, habits of teamwork, and a memory of international ambition. Its later achievements, including the work of Antonín Holý, cannot be reduced to Šorm, but they developed within an institutional culture that he had profoundly shaped. This is how scientific legacies often survive political rupture. They live not only in publications and buildings, but in methods, expectations, and tacit standards transmitted through teams. Šorm's internationalisation project was damaged after 1968, but its deeper institutional effects persisted. That persistence complicates any simple narrative of

total normalisation. Even in constrained conditions, the memory of a high-standard research culture could remain operative.

The internationalisation of Czechoslovak chemistry under Šorm also reveals the specific role of small-state science in the Cold War. Czechoslovakia was not a superpower and could not match the scale of American or Soviet research systems. Its path to international standing depended on selective excellence, strong schools, concentrated institutes, and personalities capable of linking domestic resources to global problems. Chemistry was well suited to this strategy. It did not always require facilities as gigantic as nuclear physics, although it required expensive instruments and materials. A strong group could achieve international visibility through synthesis, structural determination, biologically active compounds, publications, and patents. Šorm understood this opportunity and built his institute accordingly. His project was therefore a small-state strategy of scientific concentration. It aimed to make Prague internationally visible through depth rather than scale. This strategy was rational, but it required openness to the world. Without foreign literature, instruments, conferences, and exchange, selective excellence would turn into isolation. Šorm's career shows how a small socialist country could aspire to global science while being constrained by bloc politics and economic scarcity.

The moral ambiguity of Šorm's earlier political loyalty must be addressed carefully. He was not a dissident from the beginning, and he used communist structures to build his scientific authority. Some contemporaries criticised his arrogance, his power, and his close relationship with the political leadership. Franc notes that during the reforms of 1968 Šorm had to face criticism because of his loyalty to the communist leadership and his often arrogant positions, even though he retained strong support from his own institute (*Franc, 2024*). This makes him a more complex figure than a simple martyr of science. He belonged to the system, benefited from it, and helped shape it. Yet he also used that system to create a research institution of real scientific value, and when the invasion came, he opposed the occupation. His life therefore illustrates the morally complicated position of many reform-era scientists. They were neither pure victims nor mere servants of power. They navigated a system in which scientific ambition, political compromise, institutional responsibility, and personal conscience were entangled. Šorm's later punishment does not erase his earlier compromises, but his earlier compromises do not erase his scientific achievement or his opposition to the occupation.

The Academy under Šorm also helped redefine the social image of the scientist. In the Stalinist period, the scientist was often publicly imagined as a loyal builder of socialism. Under Šorm's leadership, the image expanded. The scientist became a creator of internationally visible knowledge, an organiser of large research teams, an inventor, a negotiator with the state, and a representative of national prestige. Chemistry was central to this transformation because it offered tangible results: compounds, technologies, medical possibilities, patents, instruments, and publications. The state could understand such results more easily than it could understand philosophical nuance or historical revision. This gave chemists a special public status. At the same time, the chemical scientist's authority was not merely technical. Through Šorm, chemistry became connected with institutional autonomy, international exchange, and reformist openness. The chemist-president symbolised the idea that science itself should help govern science. This was a profound departure from the older priority of ideological supervision. In that sense, Šorm contributed to the professionalisation of authority within the Academy.

The wider European and global context of organic chemistry also shaped Šorm's international orientation. Post-war chemistry was undergoing a rapid transformation through new analytical techniques, molecular biology, pharmaceutical research, polymer science, and the chemistry of natural products. The boundary between organic chemistry and biochemistry became increasingly porous. A chemist who remained within pre-war disciplinary categories would soon be left behind. Šorm's Institute responded by integrating organic synthesis with biochemical questions and biologically active compounds. This gave Czechoslovak chemistry access to fields that mattered internationally. It also positioned the Academy to contribute to medicine and biotechnology before those terms acquired their later institutional meanings. The internationalisation of Czechoslovak chemistry therefore was not only geographical; it was conceptual. It meant entering new scientific problem spaces. Šorm's work helped move Czech chemistry from classical synthesis toward molecular life sciences. This was one of the reasons his institute remained relevant long after his presidency ended.

Šorm's case also clarifies the relationship between scientific internationalisation and national prestige. For a country whose political sovereignty was limited by Soviet dominance, scientific achievement could become a form of symbolic national agency. Czechoslovak chemistry's international recognition showed that the country possessed intellectual capacity not reducible to its geopolitical subordination. This mattered in the 1960s, when national dignity, reform socialism, and European belonging became increasingly important themes. Šorm himself was not a nationalist in any simple anti-Soviet sense, but his institutional ambition gave Czechoslovak science a strong national profile. A world-class institute in Prague was a statement that Czechoslovakia could contribute to global knowledge from its own centres. This aspiration helped explain why international cooperation had to be reciprocal in his imagination. He wanted foreign scientists in Prague because Prague itself was to be recognised as a place of scientific authority. The Academy's international reputation therefore also had a national-cultural dimension. It reinforced the idea that Czechoslovak modernity required participation in world science, not isolation within a subordinate bloc role.

The limits of Šorm's project became most visible in the gap between institutional ambition and economic reality. Franc observes that by the 1960s it had become clear that, despite privileges, the Czechoslovak economy could not finance a research institute that would function as a full counterpart to American chemical research centres, and that the gap between the world's top centres and the Prague institute tended to widen despite the thaw (*Franc, 2024*). This is a sober corrective to any romantic view of the period. Liberalisation improved creativity and openness, but it could not eliminate structural economic disadvantages. Hard currency shortages, delayed instruments, limited patent mechanisms, and restricted contractual freedom constrained international competitiveness. Šorm's institute was privileged within Czechoslovakia, yet even privilege was insufficient when measured against the richest centres abroad. This does not diminish the institute's achievements. It makes them more impressive, because they were achieved under conditions of material shortage and administrative constraint. But it also shows why internationalisation required more than political permission. It required an economic and institutional infrastructure that state socialism struggled to provide.

The story of Šorm and Czechoslovak chemistry also illuminates the difference between scientific visibility and scientific freedom. Šorm's institute could be visible abroad, publish important work, host contacts, and produce valuable results. Yet its freedom remained conditional. Foreign contracts were mediated by state enterprises. Instruments depended on

currency allocation. Travel was controlled. Publication strategy was shaped by institutional ambition and political context. Leadership depended on the party-state. After 1968, political judgement could override scientific value. This combination is characteristic of many Cold War socialist research institutions. They could produce excellent science while lacking secure autonomy. The Academy's chemistry under Šorm therefore cannot be described simply as oppressed or free. It was powerful and constrained, internationally connected and politically dependent, creative and bureaucratically limited. This ambivalence is precisely what makes it historically important. It shows how science can flourish partially inside an authoritarian system, but also how fragile such flourishing remains.

Šorm's internationalisation of chemistry had consequences beyond his own field. It helped legitimise the Academy's broader claim that professional science required international contact and institutional autonomy. If chemistry could produce globally recognised results through research teams, foreign exchange, publications, and patentable compounds, then other fields could argue for similar conditions. Natural scientists used such examples to defend travel, equipment, and autonomy. Social scientists and humanists could not always claim the same kind of laboratory utility, but they benefited from the broader climate in which professional competence gained prestige. Šorm's presidency therefore strengthened the Academy's internal hierarchy of expertise. It also helped shift the political conversation from ideological loyalty toward performance, quality, and international standards. The effects were uneven, because natural sciences remained more protected than politically sensitive disciplines. Nevertheless, the symbolic importance of a chemist-president was considerable. It showed that science could speak to power with some authority. It also showed that the state needed scientists who were more than obedient functionaries.

The post-1968 suppression of Šorm and the restriction of scientific openness reveal how threatening this authority had become. Nisonen-Trnka argues that after the Soviet-led invasion and subsequent normalisation, Czechoslovakia had to prove loyalty to the Soviet Union, and the political as well as scientific elite of the country was radically replaced (*Nisonen-Trnka, 2012*). Šorm's removal was part of this broader transformation. The normalisation regime did not merely correct personnel; it reasserted political primacy over science. It punished the belief that Academy autonomy and Western cooperation could expand beyond strict ideological limits. Chemistry remained important, but the reformist meaning attached to internationalisation was curtailed. The Academy could continue to participate in science, but under closer political discipline. Šorm's fate therefore marks a boundary between the reform decade and normalisation. His career had helped make the 1960s scientifically dynamic; his fall showed that this dynamism had depended on a political opening that could be closed by force. In this sense, Šorm is one of the key figures through whom the promise and defeat of the Prague Spring can be read within the history of science.

Nevertheless, it would be wrong to end Šorm's story only with defeat. His institute survived, his scientific school persisted, and his organisational methods continued to influence Czech chemical research. The later success of IOCB, including its strong post-1989 development and pharmaceutical relevance, cannot be understood without the institutional foundations laid in the Šorm era. Scientific institutions often outlive political humiliations. They preserve practices, archives, cultures of work, and expectations of excellence. Šorm's name was politically damaged during normalisation, but his scientific legacy could not be fully erased. Garfield's post-communist essay on Šorm's restoration is itself evidence of later rehabilitation and of the recognition that his scientific and moral significance had been suppressed for

political reasons (*Garfield, 1992*). The post-1989 return to his legacy also reflects a broader reassessment of the Academy's 20th-century history. Figures who had been compromised, silenced, or simplified by political narratives could be re-read in their complexity. Šorm emerges from that reassessment not as a flawless hero, but as a founder of modern Czech chemical science whose life reveals the entanglement of knowledge and power.

Thus, František Šorm's role in the internationalisation of Czechoslovak chemistry was decisive because he joined scientific creativity, institutional construction, political influence, and international ambition in one powerful but fragile historical project. He built and shaped the Institute of Organic Chemistry and Biochemistry as a centre of large-team research, biologically oriented organic chemistry, patentable compounds, and international aspiration. His presidency of the Czechoslovak Academy of Sciences gave chemistry a privileged voice in the 1960s and helped natural science defend travel, instruments, publications, and professional autonomy. At the same time, his career exposed the limits of socialist scientific modernisation: lack of hard currency, bureaucratic control over patents and contracts, dependence on political favour, and vulnerability after the Warsaw Pact invasion. Šorm's story is therefore not only the story of one chemist, nor only the story of one institute. It is the story of how Czechoslovak science tried to become international while remaining inside a controlled socialist system. His achievements show the capacity of Czech chemistry to reach beyond national and bloc boundaries; his fall shows how quickly that reach could be punished when scientific openness became politically suspect. For this reason, Šorm must be seen as one of the central figures of the Academy's 1960s history: a builder of scientific modernity, a beneficiary and later casualty of communist power, and a symbol of the unresolved tension between international science and authoritarian politics.

2. Otto Wichterle and the Link between Research and Invention

Otto Wichterle occupies a distinctive place in the history of the Czechoslovak Academy of Sciences because his career makes visible the difficult relationship between basic research, invention, technological implementation, institutional control, and political power. He was not only a chemist who invented modern soft contact lenses; he was also a scientist whose life showed how fragile the passage from discovery to social use could be in a socialist research system. His work emerged from polymer chemistry, but its consequences reached medicine, ophthalmology, industrial production, patent law, international licensing, and the public image of Czechoslovak science. This is why Wichterle's role in the 1960s cannot be treated as a technical episode in the history of contact lenses. It belongs to the institutional history of the Academy itself. The Institute of Macromolecular Chemistry records that it was established within the Czechoslovak Academy of Sciences in 1959, that Wichterle was its founder and first director, and that its new building was completed in 1963 (*Institute of Macromolecular Chemistry, n.d.*). The same institutional history stresses that the Institute from the beginning balanced polymer chemistry, polymer physics, basic research, applied research, and implementation into practice (*Institute of Macromolecular Chemistry, n.d.*). This balance is precisely what makes Wichterle historically important. He demonstrated that invention is not the opposite of science, but one of the ways in which deep scientific understanding becomes socially transformative.

Wichterle's scientific background was shaped by the Czech tradition of chemical engineering and polymer research, but also by the violent interruptions of 20th-century history. Born in

Moravia in 1913, he entered science in a country whose universities, industries, and laboratories were repeatedly disrupted by occupation, war, Stalinisation, reform, and normalisation. Optica's biographical account notes that after earning his doctorate from the Czech Technical University in Prague, Wichterle was forced out of the university after the Nazi occupation and worked at the Baťa research institute in Zlín, where he developed a material similar to nylon, known as Silon (*Optica, 2023*). This experience mattered because it gave him a practical understanding of polymers not only as laboratory objects but as materials with industrial and social futures. Like František Šorm, he belonged to a generation for whom the boundary between academic chemistry and applied research was never entirely stable. The war and post-war years pushed scientists into factories, institutes, and improvised research settings. Wichterle's later invention of soft contact lenses was therefore not an accident of isolated genius. It grew out of a scientific culture in which chemistry, material technology, medical need, and institutional improvisation were already connected. The Academy later gave this culture a research infrastructure, but the habits of invention had deeper roots.

The decisive scientific foundation of Wichterle's invention was the development of hydrophilic polymers suitable for biological use. In 1960, Wichterle and Drahoslav Lím published their famous article "Hydrophilic Gels for Biological Use" in *Nature*, identifying materials that could absorb water, remain transparent, and show promise for contact with living tissues (*Wichterle & Lím, 1960*). The article has become one of the classic points of origin in the modern history of hydrogels and biomedical polymers. Its importance lies not only in the material itself, poly(2-hydroxyethyl methacrylate), or pHEMA, but in the conceptual leap it represented. Traditional plastics were often too hard, too dry, or too irritating for direct biological contact. Hydrophilic gels suggested another possibility: a synthetic material that could behave, in certain respects, with the softness and water content required for medical use. The later history of soft contact lenses depends on this shift from plastic as rigid object to polymer as hydrated, biocompatible medium. Wichterle's work therefore belongs simultaneously to polymer chemistry and to the early history of biomaterials. It helped open a field in which synthetic chemistry could enter intimate contact with the human body.

The idea of a soft contact lens was scientifically elegant but technically difficult. A suitable material was not enough; it had to be shaped into a lens with stable optical properties, sufficient comfort, and reproducibility in production. Wichterle's great achievement was to connect polymer material with a manufacturable form. The later account by Michálek explains that the first hydrogel contact lenses were produced through an improvised spin-casting device and that the method relied on mould shape, centrifugal force, surface tension, and polymerisation to create the lens form (*Michálek, 2022*). This is one of the most important moments in the history of invention because it shows that technological creativity often lies in the bridge between principle and process. The scientific principle was the hydrogel; the invention was the way to shape it reliably into a usable lens. A less inventive scientist might have stopped at the material. A less scientifically grounded inventor might have lacked the chemistry required to control the polymer. Wichterle possessed both forms of intelligence. He could think as a chemist and as a maker.

The famous story of Wichterle's home-made apparatus has sometimes been told as a charming anecdote, but it is more than that. The National Inventors Hall of Fame notes that he worked at his kitchen table using an old phonograph and a construction set, and that in 1961 he developed a spin-casting process for producing soft, pliable lenses from HEMA (*National Inventors Hall of Fame, 2026*). The story is memorable because it turns a major biomedical

invention into an image of domestic improvisation. Yet its deeper meaning is institutional. Wichterle was not working in ideal conditions, and the crucial experiment was not the product of a smoothly functioning innovation system. It emerged from a scientist who had both institutional knowledge and personal determination, but who also had to overcome administrative and political obstacles. The home laboratory became a substitute for an institutional environment that did not yet fully support the path from research to invention. In this sense, the kitchen-table machine is not only a symbol of genius. It is also a sign of the deficiencies of the system around that genius.

The 1960s are therefore central to understanding Wichterle because this was the decade in which his invention moved from experimental possibility toward international technological significance. The Institute of Macromolecular Chemistry states that hydrophilic polymers based on pHEMA, developed under Wichterle's personal guidance, led to the production of soft contact lenses in the 1960s and later to intraocular lenses in the 1980s (*Institute of Macromolecular Chemistry, n.d.*). That institutional statement is concise, but its implications are large. The soft contact lens represented a new kind of relationship between the Academy and everyday life. Many Academy discoveries remained within laboratories, industrial processes, or specialised publications. Wichterle's invention reached millions of people through the correction of vision. It changed how people experienced their own bodies, appearance, work, mobility, and medical care. The Academy could therefore point to Wichterle as evidence that fundamental research could produce a direct human benefit. This was politically useful, but it was also scientifically true. The invention made the value of polymer chemistry visible to the public.

Wichterle's work also challenges the false opposition between pure and applied research. The Institute of Macromolecular Chemistry's history explicitly states that from the beginning it maintained a balance between theoretical, basic, and applied research, and that implementation into commercial practice was pursued (*Institute of Macromolecular Chemistry, n.d.*). This statement could almost serve as a motto for Wichterle's scientific philosophy. He did not treat basic chemistry as an isolated intellectual game, but neither did he reduce research to immediate technical service. The invention of the soft lens required deep knowledge of polymerisation, material behaviour, water absorption, mechanical properties, transparency, and biological tolerance. It also required attention to patients, production, optical precision, and manufacturing technique. If any one of these elements had been missing, the invention would have remained incomplete. Wichterle's importance therefore lies in the continuity he established between knowledge and use. He showed that a research institute could be both theoretically serious and practically fertile. That lesson was particularly important in a socialist system that often demanded usefulness without always understanding the conditions that make useful science possible.

The institutional setting of the Institute of Macromolecular Chemistry was essential for this continuity. Polymer science is not a single narrow discipline; it stands between chemistry, physics, materials science, engineering, medicine, and industrial production. The Institute's equal attention to polymer chemistry and polymer physics gave Wichterle's environment an interdisciplinary character from the start (*Institute of Macromolecular Chemistry, n.d.*). This mattered because soft contact lenses could not be produced by chemistry alone. The behaviour of hydrated polymers had to be understood physically, optically, mechanically, and biologically. The new building completed in 1963 symbolised the Academy's attempt to provide a proper institutional home for such research. Yet the building itself came after the decisive

home experiments, which gives the story a certain irony. Institution followed invention as much as invention followed institution. Nevertheless, once the Institute existed, it gave Czech polymer science a durable base. It allowed research groups, conferences, publications, and international contacts to develop around macromolecular science.

The international dimension of Wichterle's work is especially important. The Institute of Macromolecular Chemistry emphasises that, despite restrictions imposed by the communist regime, its research was never confined within national limits and that Prague hosted major IUPAC International Symposia on Macromolecules in 1957, 1965, and 1992 (*Institute of Macromolecular Chemistry, n.d.*). Wichterle was deeply connected with this international macromolecular community. His invention could not remain a purely Czechoslovak matter because the demand for comfortable contact lenses was global. The 1965 licence agreement between the Czechoslovak Academy of Sciences and the National Patent Development Corporation in the United States became one of the decisive steps in this international circulation (*Michálek, 2022*). In 1966, the American sublicense moved to Bausch & Lomb, which later became central to mass production in the United States (*Michálek, 2022*). This trajectory shows how an invention born in a socialist research environment entered capitalist medical markets. It also reveals the awkward position of the Academy as owner, mediator, and negotiator of scientific property. The invention crossed borders more effectively than the inventor himself often could.

The licensing history of the soft contact lens also reveals the weaknesses of the Czechoslovak innovation system. The National Inventors Hall of Fame notes that Wichterle made little money from his invention because the Czechoslovak government owned the rights, and that the rights were sold through arrangements that benefited others far more than the inventor (*National Inventors Hall of Fame, 2026*). Michálek's more technical account stresses that the first licensing deal was signed in 1965 between the Czechoslovak Academy of Sciences and NPDC, and that later disputes and decisions by the Czechoslovak side led to serious losses in potential proceeds (*Michálek, 2022*). This is one of the clearest cases in which the link between research and invention was weakened by institutional control. The scientist created the knowledge, the Academy held the institutional rights, and foreign commercial partners developed the market. The socialist system claimed to protect collective ownership, but in practice it often failed to reward inventors, reinvest efficiently, or defend patents strategically. Wichterle's invention thus exposes the gap between scientific creativity and administrative competence. The Academy produced world-class invention, but the state did not know how to handle its global value.

The patent story is not a marginal legal appendix; it belongs to the core of Wichterle's historical significance. Invention becomes socially powerful only when it is stabilised through production, legal protection, licensing, distribution, and medical acceptance. The soft contact lens had to survive not only laboratory tests but international patent disputes, corporate negotiations, and regulatory procedures. Michálek describes later litigation over patent priority and notes the complications created by Czechoslovak authorities when Wichterle's participation in American court proceedings became necessary (*Michálek, 2022*). This is a striking example of political control interfering with the defence of a scientific invention. The regime could celebrate the discovery but still obstruct the inventor's international legal agency. The result was not merely personal injustice. It weakened the capacity of Czechoslovak science to benefit from its own achievement. Wichterle's case therefore demonstrates that

innovation requires institutional intelligence beyond the laboratory. Without legal, economic, and diplomatic competence, even brilliant inventions can be mishandled.

Wichterle's role in the Academy also reveals how invention could become politically uncomfortable. He was not a conventional political dissident in the early stages of his career, but his scientific independence and public courage repeatedly brought him into conflict with authority. Optica notes that he was forced out of institutional positions more than once for political reasons and that in 1970 he was again dismissed after the reform period (*Optica, 2023*). The Czech Academy's historical overview identifies Wichterle as one of the main authors of the June 1968 manifesto "Two Thousand Words" and notes that he later became the last chairman of the Czechoslovak Academy of Sciences after the fall of the communist regime (*Czech Academy of Sciences, n.d.*). This trajectory is crucial. Wichterle's authority as an inventor helped make him a public intellectual, and his public role made him vulnerable. The regime could not easily separate the scientist from the citizen. Once he used his moral authority in the reform atmosphere of 1968, his scientific prestige became politically dangerous. The link between research and invention thus expanded into a link between invention and civic responsibility.

The "Two Thousand Words" connection shows that Wichterle belonged to the broader culture of the Prague Spring, not only to the technical history of polymer science. The manifesto called for continued democratisation and civic engagement, and its authorship and support made many signatories vulnerable after the Warsaw Pact invasion. For Wichterle, the consequences were serious because political punishment attacked the very conditions of scientific work. The Czech Academy's history notes that normalisation was particularly hard on the Czechoslovak Academy because the party leadership took revenge for the role played by groups from Academy social-science institutes in the Prague Spring reform efforts (*Czech Academy of Sciences, n.d.*). Wichterle's case shows that natural scientists were not immune from this revenge when they entered public life. He represented the scientist whose invention had given the state international prestige, yet the state punished him when his civic judgement contradicted political obedience. This is one of the most revealing contradictions of authoritarian science policy. The regime wanted creative scientists but feared independent citizens. Wichterle was both.

The contrast between Wichterle and Šorm is illuminating. Šorm was a builder of large chemical institutions and used political authority to concentrate resources for organic chemistry and biochemistry. Wichterle was also an institution-builder, but his public image rests more strongly on invention, improvisation, and the direct social use of research. Šorm's Institute of Organic Chemistry and Biochemistry represented large-team, programme-driven research. Wichterle's Institute of Macromolecular Chemistry represented the interdisciplinary world of polymers, materials, and biomedical application. Both men were central to the internationalisation of Czechoslovak chemistry, and both were damaged after 1968. Yet Wichterle's story contains a sharper contrast between personal inventiveness and bureaucratic failure. His soft lens emerged from a home-built machine, while the state later mishandled the economic and legal value of the invention. This contrast made him an especially powerful symbol after 1989. He represented not only scientific genius, but also the injustice done to creative intelligence by a controlling system.

Wichterle's invention also changed the image of the Academy itself. Before the 1960s, the Academy could be perceived as a large state research apparatus, distant from everyday life

and heavily embedded in socialist planning. The soft contact lens made Academy science visible in a different way. It showed that research carried out under Academy auspices could affect ordinary human experience. Contact lenses were intimate objects, placed on the eye, connected with sight, comfort, appearance, and daily confidence. The success of such an invention gave the Academy a public argument for the value of basic research. It also showed that Czech and Czechoslovak science could produce technologies of global significance, not merely follow Soviet models or Western inventions. The official historical overview of the Academy uses Wichterle's worldwide recognition for contact lenses as one of the examples proving that Czech science retained creative energy and contact with the world scientific community under ideological pressure (*Czech Academy of Sciences, n.d.*). This recognition is central to the Academy's memory of itself. Wichterle became one of the names through which the institution could claim both scientific excellence and moral resilience.

At the scientific level, Wichterle's work helped establish hydrogels as a major class of biomedical materials. The original 1960 *Nature* article by Wichterle and Lím is still cited as a foundational contribution to the field (*Wichterle & Lím, 1960*). Later biomedical materials research has built on the idea that hydrophilic polymer networks can be used in contexts where flexibility, water content, permeability, and tissue compatibility matter. Soft contact lenses became the most famous application, but the broader significance extended to implants, drug delivery, tissue engineering, and other medical technologies. The Institute of Macromolecular Chemistry notes that the pHEMA-based work led not only to soft contact lenses in the 1960s but also to intraocular lenses in the 1980s (*Institute of Macromolecular Chemistry, n.d.*). This long trajectory confirms that Wichterle's invention was not a single product but a platform of material thinking. It opened a way of imagining synthetic polymers as partners of biological systems. In this respect, Wichterle belongs not only to Czech history but to the global history of biomaterials.

The soft contact lens also demonstrates the importance of collaboration. Although public memory often focuses on Wichterle alone, Drahoslav Lím's role in the development of hydrophilic gels was fundamental. The *Nature* article was co-authored by Wichterle and Lím, and the chemistry of pHEMA emerged from the work of a research group, not from one isolated person (*Wichterle & Lím, 1960*). Scientific invention often becomes associated with one emblematic name, especially when the later public story requires a hero. Yet the Academy's history must preserve the collective dimension. Wichterle's genius lay partly in his capacity to connect people, materials, devices, and institutional possibilities. Lím's contribution reminds us that invention is usually distributed across a research environment. The Institute of Macromolecular Chemistry itself was necessary because polymer science required teams and disciplinary continuity. Wichterle was the central figure, but the invention was also a product of a scientific school. This distinction matters because the Academy's achievement was institutional as well as personal.

The Academy's treatment of Wichterle after 1968 revealed the destructive effect of political retaliation on scientific continuity. A scientist's removal from leadership does not only harm the individual. It weakens research groups, interrupts communication, discourages younger scholars, and signals that professional authority is subordinate to political obedience. Optica notes that Wichterle's career was repeatedly affected by politics, and that after 1970 he did not regain a full-time appointment until the political changes of 1989 (*Optica, 2023*). This means that the normalisation regime did not merely punish an inventor; it damaged a channel through which invention, leadership, and international reputation were connected. The restriction of

foreign contacts was especially harmful because polymer science depended on international exchange. Wichterle's case therefore illustrates one of the central themes of the Academy's 1960s history: scientific creativity can survive under pressure, but it cannot fully flourish when civic independence is punished. The state could continue to use the prestige of the contact lens, but it curtailed the authority of the scientist who had made it possible. This contradiction is morally and institutionally decisive.

After 1989, Wichterle's appointment as president of the Czechoslovak Academy of Sciences carried strong symbolic meaning. The Czech Academy's historical overview notes that he became the first president of the Academy after the revival of democracy in Czechoslovakia and that under his chairmanship the purposeful reconstruction of the research organisation was initiated (*Czech Academy of Sciences, n.d.*). This later event belongs chronologically outside the 1960s, but it is important for interpreting his earlier role. The Academy turned to Wichterle after the fall of communism not only because he was a famous inventor, but because he represented the broken continuity between scientific excellence and institutional autonomy. His presidency was a form of historical repair. It recognised that the scientist punished after the Prague Spring had embodied values the post-communist Academy wished to restore: professional independence, international openness, and the moral dignity of research. Wichterle's later leadership therefore casts retrospective light on the 1960s. It shows that his invention and his civic stance were remembered as parts of the same institutional legacy.

Wichterle's case also helps to understand why the Academy's link with industry was both necessary and problematic. Polymer chemistry naturally leads toward industrial production, but the socialist economy did not always provide flexible mechanisms for transferring research into practice. The state enterprise system could produce and distribute technologies, but it was often slow, bureaucratic, and weak in international commercial negotiation. The soft lens required cooperation with production facilities, medical users, patent agents, and foreign companies. Each step created potential friction. The Academy could create knowledge, but it depended on other institutions to manufacture, license, defend, and market that knowledge. This division of labour was not unique to socialism, but in Czechoslovakia it was complicated by state monopoly, hard-currency shortages, and political control over foreign contacts. Wichterle's invention therefore became a test of whether a planned economy could handle high-value biomedical innovation. The result was mixed: the invention succeeded globally, but Czechoslovakia did not benefit from it as fully as it might have.

The wider cultural meaning of Wichterle's invention lies in its combination of modest apparatus and enormous consequence. The image of a world-changing lens made through a home-built centrifugal device has entered Czech scientific memory because it expresses a particular kind of intelligence: practical, playful, precise, and stubborn. Yet this image should not obscure the scientific sophistication behind the apparatus. The machine worked because Wichterle understood polymerisation, surface tension, centrifugal force, optical shape, and the behaviour of hydrated materials. Improvisation without theory would have produced a toy. Theory without improvisation might have remained an article. Wichterle's genius was to allow each to complete the other. This makes him an ideal figure for a chapter on research and invention. He shows that invention is not merely applied science; it is science under the pressure of form, use, and material resistance. It is the moment when knowledge must become a working thing.

Wichterle's international reputation also strengthened the position of Czech polymer science as a distinct field. The Institute's conference tradition, including the IUPAC macromolecular symposia and the Prague Meetings on Macromolecules beginning in 1967, helped establish Prague as a recognised location in the polymer community (*Institute of Macromolecular Chemistry, n.d.*). This reputation cannot be separated from Wichterle's scientific and institutional authority. International scientists came to Prague because the field had substance there. Such events also helped overcome the provincialising effects of Cold War division. They allowed Czechoslovak scientists to show that they were not merely working behind the Iron Curtain but participating in the discipline's development. The soft contact lens gave this participation a spectacular example, but the reputation was broader than a single product. It rested on polymer chemistry, polymer physics, materials research, and the Institute's ability to host sustained scientific communication. Wichterle therefore helped give Czechoslovak chemistry a place on the international map. His invention was the most famous sign of a wider scientific culture.

The political tragedy of Wichterle's career is that the qualities that made him a great inventor also made him difficult for authoritarian power to tolerate. He was independent, practical, ironic, technically resourceful, and morally unwilling to reduce truth to obedience. Such a personality could produce extraordinary invention under conditions of constraint, but it could not easily become a disciplined servant of normalisation. The regime's treatment of him after 1968 therefore reveals the deeper incompatibility between creative science and political conformism. Creativity requires initiative, error, dissent from routine, and confidence in one's own judgement. Authoritarian politics demands obedience, predictability, and hierarchy. For a time, the Academy's 1960s reform climate allowed these opposing logics to coexist. Wichterle's soft lenses were born in that space of partial openness and institutional contradiction. After the invasion, the contradiction was resolved by force in favour of politics. But the invention itself remained as evidence that the creative logic had been real.

Wichterle also complicates the history of socialist science because he proves that major inventions could emerge inside a socialist research system, even while that system mishandled them. It would be too simple to say that state socialism only suppressed innovation. The Academy and its institutes did provide education, research positions, laboratories, and institutional concentration. The Institute of Macromolecular Chemistry was created within the Czechoslovak Academy, and its existence was crucial for the consolidation of polymer science (*Institute of Macromolecular Chemistry, n.d.*). Yet it would be equally false to claim that the system successfully translated innovation into social and economic benefit. The patent and licensing history of the soft lens shows major failures of governance, reward, and strategic protection. Wichterle's case therefore demands a balanced interpretation. Socialist science could produce brilliance, but its political economy could waste the value of that brilliance. The Academy was both enabling institution and constrained institution. That dual character defines much of its 1960s history.

The legacy of Wichterle's invention continued far beyond the 1960s because it helped create a global industry and a new biomedical material culture. Contact lenses became increasingly common after American production and regulatory approval, and the hydrogel lens changed ophthalmic practice by making lenses more comfortable and widely wearable. The National Inventors Hall of Fame summarises the practical advantage of Wichterle's lenses by noting that they were more comfortable than traditional glass or hard plastic lenses, required a shorter adjustment period, and could be worn for longer periods (*National Inventors Hall of*

Fame, 2026). This practical improvement explains why the invention mattered socially. It was not merely a laboratory novelty. It solved a human problem at scale. The Academy's connection to this invention therefore gave Czechoslovak science a rare form of global visibility in everyday life. Many people who never knew Wichterle's name benefited from the material logic he helped create. That is one of the strongest possible forms of scientific legacy.

From the perspective of institutional history, Wichterle's story also shows that research institutes need autonomy not as a privilege but as a condition of invention. Invention often requires following a problem beyond the boundaries of formal plans. It may require working after official support has weakened, using improvised devices, testing unorthodox methods, or crossing from chemistry into medicine and production. A rigid research system can support routine development, but it struggles with unexpected invention. The 1960s Academy partly understood this, which is why institutes such as the Institute of Macromolecular Chemistry could flourish. Yet the political system surrounding the Academy never fully accepted the implications of scientific autonomy. Wichterle's later punishment made this clear. The same independence that produces invention can also produce civic judgement. Authoritarian institutions often want the first without the second. Wichterle's life shows that the two are difficult to separate.

Thus, Otto Wichterle's role in the history of the Czechoslovak Academy of Sciences lies in the way he connected research and invention under the difficult conditions of state socialism. His work on hydrophilic polymers and soft contact lenses emerged from deep polymer chemistry, but it became a global biomedical technology through experiment, improvisation, patenting, licensing, and production. He showed that basic research could lead to practical transformation when scientific understanding was joined with material imagination. At the same time, his career exposed the weaknesses of the institutional system that surrounded him: political purges, restricted autonomy, poorly managed patent rights, limited international mobility, and the punishment of civic courage after 1968. The Institute of Macromolecular Chemistry gave his field an institutional base, while his invention gave the Academy one of its most powerful examples of socially transformative science. Wichterle therefore stands as both a symbol of Czechoslovak scientific creativity and a witness to the costs imposed when political control obstructs the natural movement from knowledge to innovation. His soft contact lens was not only a technical achievement. It was a historical argument that science needs freedom, institutions need flexibility, and invention cannot be fully commanded from above.

3. Scientific Schools, Laboratories, and Disciplinary Communities

The scientific dynamism of the Czechoslovak Academy of Sciences in the 1960s cannot be understood only through the biographies of František Šorm and Otto Wichterle, however central those figures were. The decade was also shaped by scientific schools, laboratories, institute cultures, and disciplinary communities that gave individual brilliance a durable institutional form. A discovery becomes historically significant when it is absorbed into a research environment capable of reproducing methods, training younger scholars, attracting collaborators, publishing results, and maintaining continuity under pressure. In this sense, the Academy's true strength lay not only in famous names but in the dense social organisation of research. The 1960s were a period in which several such communities matured at once: organic chemistry and biochemistry, macromolecular chemistry, physical chemistry and

polarography, cybernetics and information theory, nuclear physics, experimental biology, sociology, economics, philosophy, history, and selected humanities. These communities differed in method, political exposure, international visibility, and degree of institutional protection, but together they transformed the Academy into a complex research organism. The recent institutional history of the Czechoslovak Academy of Sciences describes the period 1963–1970 as one in which political control eased, Western impulses became more visible, internal reforms advanced, and many disciplines experienced a "golden era" of development (*Franc, Dvořáčková, et al., 2024*). That judgement becomes most convincing when one looks not only at the Academy as a central organisation, but at the laboratories and disciplinary worlds in which science was actually produced.

The notion of a scientific school is especially useful for this period. A scientific school is not merely an administrative department or a list of employees. It is a living community of problems, methods, instruments, teachers, pupils, research habits, intellectual loyalties, and shared standards of excellence. In the Academy of the 1960s, scientific schools could function as semi-autonomous centres of professional authority. They gave researchers a practical identity stronger than formal political classification. A chemist could belong to Šorm's organic and biochemical world, a polymer scientist to Wichterle's macromolecular environment, a physical chemist to the polarographic tradition associated with Jaroslav Heyrovský, a systems theorist to the emerging cybernetic community, or a sociologist to the newly reconstituted empirical social-scientific field. These affiliations mattered because they created continuity across generations and political ruptures. A strong school could preserve standards even when public language remained ideologically cautious. It could also protect younger researchers by giving them a recognised professional home. Under state socialism, such communities were never fully independent, but they could create a practical autonomy of competence. The Academy's institutes therefore became more than workplaces; they became the carriers of disciplinary cultures.

Chemistry was the most visible field in which scientific schools, laboratories, and institutional communities converged. The Institute of Organic Chemistry and Biochemistry developed out of the post-war chemical group led by František Šorm and was formally founded in 1953 as the Institute of Organic Chemistry, later renamed the Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences from 1960 to 1992 (*Institute of Organic Chemistry and Biochemistry, n.d.*). Its history shows how a scientific school could become a powerful institute. Šorm's environment connected synthetic organic chemistry with natural products, biochemistry, biologically active compounds, and anticipated application. This was not simply a collection of individual projects. It was a research culture based on large teams, systematic synthesis, structural analysis, and the expectation that basic chemistry could eventually lead to medical, agricultural, or industrial use. The institute's later successes in medicinal chemistry cannot be projected mechanically back into the 1960s, but their roots lay in this earlier culture of disciplined chemical exploration. The school was international in ambition, yet deeply institutional in practice. It needed publications, instruments, workshops, patents, and stable personnel. Thus, chemistry became one of the strongest examples of how the Academy turned scientific talent into durable laboratory power.

The Šorm school also illustrates the relationship between leadership and collective work. Šorm's personal authority was immense, but the institute's importance did not rest on personality alone. It depended on groups of researchers who could work on related families of compounds, test hypotheses, produce variants, and accumulate knowledge over time. Martin

Franc's study of the Institute of Organic Chemistry and Biochemistry stresses the importance of large-team work, practical orientation, and the formative impact of wartime and industrial research experience on the later methods of the Institute (*Franc, 2024*). This collective style suited the post-war expansion of chemistry, when research increasingly required instruments, technicians, documentation, and coordination among specialists. It also suited the Academy's institute-based model better than the older image of the solitary professor. Yet the same collective organisation required protection from excessive bureaucratic interference. If a research team was to pursue a difficult problem over years, it needed continuity and trust. The Šorm school therefore embodied a central contradiction of socialist science: it could benefit from concentrated state resources, but it also needed freedom from the very administrative rigidity that accompanied state concentration. The success of the school lay in negotiating that contradiction for as long as the political climate allowed.

The Institute of Macromolecular Chemistry formed another major scientific community, one organised around polymers, materials, and the relation between basic science and application. Founded within the Czechoslovak Academy of Sciences in 1959, with Otto Wichterle as its founder and first director, the Institute completed its new building in 1963 and deliberately balanced polymer chemistry, polymer physics, theoretical research, applied research, and implementation into practice (*Institute of Macromolecular Chemistry, n.d.*). This combination gave the institute a distinctive disciplinary identity. It was not a conventional chemical laboratory, nor was it merely an industrial development office. It stood at the intersection of molecular synthesis, physical properties, material behaviour, optical use, biomedical application, and technological production. Wichterle's soft contact lenses became the most famous public symbol of this world, but they were only one expression of a broader macromolecular research culture. The institute also created an international conference tradition through the Prague IUPAC symposia and the Prague Meetings on Macromolecules, which began in 1967 (*Institute of Macromolecular Chemistry, n.d.*). The school's strength came from its capacity to place Czechoslovak polymer science inside international disciplinary communication. It showed that a socialist institute could be simultaneously theoretical, experimental, applied, and internationally recognised.

The macromolecular school also demonstrates how laboratory architecture and disciplinary identity could reinforce one another. The new building of the Institute of Macromolecular Chemistry, completed in 1963, was not merely a physical container for research. It symbolised the confidence of a field that wanted to appear modern, international, and structurally different from older institutional forms. Laboratories, conference rooms, workshops, and technical spaces shaped the everyday life of the community. They allowed chemists, physicists, technicians, and visiting scholars to work in proximity. Such proximity mattered because polymer science required the crossing of disciplinary boundaries. A material had to be synthesised, characterised, physically interpreted, shaped, tested, and sometimes transferred toward use. The laboratory therefore became a place where theory and practice encountered one another daily. Wichterle's own career, especially the invention of soft contact lenses, showed how deeply this connection mattered. Yet the school was larger than the invention. It trained researchers to think in terms of materials as dynamic systems. In that sense, macromolecular chemistry became one of the Academy's most visible laboratories of modern scientific interdisciplinarity.

Physical chemistry and polarography formed a third major tradition, one rooted in Jaroslav Heyrovský's internationally recognised work. The Institute of Polarography was founded in

1950 under Heyrovský's directorship and became part of the newly constituted Czechoslovak Academy of Sciences two years later; its work focused on the theory of polarography, electrode processes, methodology, instrumentation, and analytical applications (*J. Heyrovský Institute of Physical Chemistry, n.d.*). This tradition gave the Academy a scientific school with rare symbolic capital. Heyrovský's Nobel Prize in Chemistry in 1959 stood at the threshold of the reform decade and demonstrated that Czech science possessed world-level authority even after years of ideological pressure. Polarography was important not only as a method but as an institutional culture. It joined theory, measurement, instrumentation, and analytical practice. It also created a community of researchers trained in a specific way of seeing chemical processes through electrochemical curves, electrodes, and instrument-mediated observation. This school connected Czech physical chemistry with international analytical science. In the 1960s, it strengthened the Academy's reputation by showing that its achievements were not only future-oriented but also historically grounded in strong pre-communist and post-war scientific continuity.

The polarographic community is important because it illustrates how a method can become a discipline-building force. A method is not merely a tool used by scientists; when sufficiently powerful, it reorganises research questions, instruments, training, and applications. Polarography gave Czech physical chemistry a recognisable identity and a place in world science. Researchers trained in this tradition learned not only how to use an instrument but how to formulate problems suitable for electrochemical analysis. They also participated in a wider analytical culture in which instrumentation and theory had to develop together. The Academy's institutionalisation of polarography therefore preserved a scientific school that could survive beyond the founding genius of Heyrovský himself. This mattered in the 1960s because the Academy needed examples of continuity to counter the disruptions of war and Stalinisation. The polarographic school showed that Czech science had not begun in 1952 with the creation of the Czechoslovak Academy. It carried earlier traditions into the new institutional form. That continuity gave the Academy historical depth. It also helped stabilise professional standards during the reform decade.

Cybernetics, information theory, automation, and applied mathematics represented a newer type of disciplinary community. Unlike polarography, this was not a long-established Czech school with pre-war prestige. It was a post-war and post-Stalinist field whose legitimacy had to be created after earlier ideological suspicion. The Institute of Information Theory and Automation was established on 1 January 1959 by merging the Laboratory for Automation and Telemechanics with the Information Theory Department of the Institute of Radio Engineering and Electronics (*Institute of Information Theory and Automation, n.d.*). This institutional origin is revealing because cybernetics required the combination of mathematics, engineering, communication theory, control theory, and machine systems. The journal *Kybernetika*, founded through Academy initiative and published continuously from 1965, became a major platform for computer science, technical cybernetics, applied mathematics, and related interdisciplinary applications (*Kybernetika, 2024*). The emergence of such a journal shows that the field had achieved enough coherence to sustain a community. Cybernetics also provided a language through which socialist planning, automation, and systems thinking could be reimagined. Its laboratories and seminars were thus not only technical spaces; they were intellectual sites where feedback, control, information, and adaptation became categories of modern thought.

The cybernetic community had a special significance in the 1960s because it offered a language of reform without necessarily presenting itself as political. Feedback, information flow, control, and system adaptation could be discussed in relation to machines, but they could also be applied to organisations, economies, and society. This made cybernetics attractive to reform-minded intellectuals who wanted socialism to become more rational and less bureaucratic. A system that does not receive feedback cannot correct itself; this apparently technical statement had broader implications in a state where information was often distorted by hierarchy and fear. The Academy's cybernetic institutes and journals therefore helped create a conceptual bridge between technical science and social reform. They encouraged interdisciplinary cooperation among mathematicians, engineers, economists, philosophers, and social scientists. This did not mean that cybernetics was inherently democratic or politically liberal. It could serve planning and control as much as reform. Yet in the Czechoslovak context of the 1960s, it expanded the methodological imagination of the Academy. It gave researchers a modern vocabulary through which to criticise crude command without always appearing to attack political authority directly.

Nuclear physics formed another important laboratory culture, though one more dependent on large facilities and socialist international networks. The Nuclear Physics Institute at Řež traces its origins to 1955, when it was founded as a basic Czechoslovak institution in nuclear fields (*Nuclear Physics Institute of the CAS, n.d.*). Nuclear science required reactors, accelerators, detectors, radiation protection, theoretical physics, instrumentation, and international cooperation. This made it structurally different from many humanities and social sciences, and even from some branches of chemistry. It was a field of "big science", in which national capacity had to be supplemented by cooperation with institutions such as the Joint Institute for Nuclear Research at Dubna. Czechoslovak physicists were thus embedded in both domestic Academy structures and socialist multinational networks. Their scientific community was shaped by technical demands, state priorities, and Cold War prestige. Nuclear physics enjoyed political importance because it symbolised modernity, power, and technological progress. At the same time, its professional standards were determined by highly specialised knowledge that political authorities could not easily replace. The field therefore created another form of conditional professional autonomy inside the Academy.

Experimental biology and genetics also deserve attention because they show that the Academy's disciplinary communities were not limited to chemistry and physics. The later Institute of Molecular Genetics traces its history to the Department of Experimental Biology and Genetics of the Institute of Biology of the Czechoslovak Academy of Sciences, headed from 1953 by Milan Hašek, who was a co-discoverer of immunological tolerance (*Institute of Molecular Genetics, n.d.*). This institutional lineage is important because biology in socialist countries had been deeply affected by ideological campaigns, especially the legacy of Lysenkoism. The development of experimental biology, genetics, immunology, and later molecular approaches therefore represented not merely scientific growth but a recovery from dogmatic distortion. A laboratory community in this field needed methods, animals, tissue techniques, microscopy, biochemical tools, and international literature. It also needed the freedom to accept genetic and immunological evidence against earlier ideological simplifications. In the 1960s, biological research increasingly reconnected with modern international science. The Academy's biological communities therefore formed part of the wider methodological renewal of the decade. They show that the post-Stalinist opening also involved the reconstruction of fields previously damaged by ideological science.

The biological communities of the Academy reveal how scientific schools can carry intellectual repair. When a field has been deformed by ideology, rebuilding it requires more than new institutes or new terminology. It requires re-establishing experimental trust: trust in observation, in international evidence, in laboratory reproducibility, and in the authority of methods over doctrine. The work of experimental biologists and geneticists in the Academy therefore had a quiet but deep significance. It restored the right of living systems to be studied through evidence rather than ideological decree. This restoration was not always publicly dramatic, but it changed the epistemic culture of the institution. Biology also required interdisciplinary contact with chemistry, medicine, physiology, agriculture, and later molecular science. It linked the Academy to practical questions of health and production while retaining a strong basic-research dimension. In this respect, experimental biology resembled polymer chemistry and organic biochemistry: it showed that life-science research develops best when fundamental inquiry and application interact. The disciplinary community around experimental biology therefore broadened the Academy's scientific profile beyond the better-known chemical and physical fields.

The social sciences developed under very different conditions, but they also formed significant disciplinary communities in the 1960s. Sociology is the most important example. After being marginalised in the Stalinist period, sociology returned in the mid-1960s through associations, journals, university teaching, empirical projects, and Academy institutions. Miloslav Illner described the partial renewal of sociology in the mid-1960s as part of the de-Stalinisation atmosphere and noted the creation of the Institute of Sociology within the Academy of Sciences (*Illner, 2011*). The Slovak Institute for Sociology was also established in 1965, confirming that the sociological revival had a Czechoslovak rather than purely Czech dimension (*Institute for Sociology of the Slovak Academy of Sciences, n.d.*). Sociology's disciplinary community was built around empirical research, surveys, social structure, public opinion, urbanisation, work, education, and everyday life. This was a different kind of laboratory. Its instruments were questionnaires, interviews, statistical procedures, fieldwork protocols, and theoretical debates. Yet it too created a scientific school, because it trained researchers to see society as an object of investigation rather than ideological assertion.

The sociological community was politically more exposed than chemistry or polymer science because it studied the society the regime claimed to represent and understand. An empirical survey could reveal dissatisfaction, inequality, social differentiation, or institutional mistrust. A study of education or labour could show that socialist society did not function according to official narratives. For this reason, sociology's institutional revival was one of the boldest forms of intellectual liberalisation in the Academy. It created a disciplinary community whose method itself had critical potential. Sociologists did not necessarily reject socialism; many hoped to reform and humanise it through knowledge. Yet the act of observing society independently weakened the monopoly of ideological self-description. The Academy's sociological institutes and journals therefore became spaces where empirical reason entered public life. This made them influential during the Prague Spring and vulnerable during normalisation. The later suppression of reformist social science confirms that these communities had become politically significant.

Economics formed another reform-oriented community. The Economic Institute of the Czechoslovak Academy of Sciences, headed from early 1962 by Ota Šik, became one of the major sites where criticism of existing economic practice was articulated during the crisis years of the early 1960s (*Kosta, 1989*). This community differed from a laboratory in the natural-

scientific sense, but it had its own research culture. It worked with models, comparative data, enterprise behaviour, planning mechanisms, incentives, prices, and institutional reform. Its practical importance was enormous because the Czechoslovak economy was facing stagnation and the old command-administrative model was no longer convincing. The Economic Institute became a place where expertise moved toward policy. Economists tried to analyse the defects of central planning while still speaking within a socialist reform framework. This made the institute both useful and dangerous. It supplied the state with concepts for reform, but it also revealed that existing state mechanisms were part of the problem. Thus, economic research became one of the Academy's most politically charged disciplinary communities.

The economic school around reform debates also illustrates the Academy's capacity to produce public expertise. Unlike a laboratory result that could remain within specialist circles, economic analysis immediately touched questions of power, management, enterprise autonomy, and the legitimacy of planning. Ota Šik and his colleagues did not simply offer technical corrections; they helped create the intellectual framework of the economic reform associated with the Prague Spring. Their community needed access to international debates, including Yugoslav, Hungarian, Soviet, and Western discussions of planning and market mechanisms. It also needed enough institutional protection to criticise policy from within the socialist system. The Academy gave this protection only partially, but enough to make reform thought influential. The Economic Institute therefore shows that disciplinary communities can become political actors without formally becoming parties or movements. They shape reality by defining problems, supplying concepts, and authorising certain solutions as rational. In the 1960s, economics became one of the bridges between scientific expertise and reform politics. Its fate after 1968 would demonstrate how fragile that bridge was.

Philosophy and interdisciplinary social theory formed another important community, especially through the work of Radovan Richta and his team. *Civilization at the Crossroads*, first published in Czech in 1966 and later translated into English, analysed the social and human implications of the scientific and technological revolution (*Richta, 1966/1969*). Vítězslav Sommer has described Richta's team as one of the key sites where reform communism, technological modernity, and theories of social change intersected (*Sommer, 2017*). This was not a laboratory of instruments, but a laboratory of synthesis. Philosophers, sociologists, economists, technologists, and other specialists tried to think together about automation, labour, education, human development, and the future of socialism. The importance of this community lay in its interdisciplinarity. It gave the Academy a language for connecting scientific progress with social reform. It also transformed philosophy from a guardian of ideological orthodoxy into a field capable of conceptual innovation. The Richta team therefore represented one of the Academy's most distinctive contributions to the intellectual atmosphere of the 1960s.

The community around the scientific and technological revolution reveals how the Academy could produce ideas that travelled beyond disciplinary boundaries. Its work influenced public debates, reformist language, and international perceptions of Czechoslovak socialism. The phrase "socialism with a human face" is often associated with the political vocabulary of the Prague Spring, but its intellectual background included precisely this attempt to think technology, science, and human development together. Richta's team did not simply celebrate machines or automation. It asked how scientific knowledge could reshape work, culture, education, and human self-realisation. This gave reform socialism a more ambitious

civilisational horizon. It also made the Academy a producer of future-oriented imagination. Such imagination was not free from ideological limits, and some later developments of Richta's career under normalisation were more complicated. Nevertheless, in the 1960s his team belonged to the reformist intellectual energy of the Academy. It showed that disciplinary communities could become interdisciplinary publics.

Historical scholarship and the humanities developed in a more vulnerable but equally important way. The Institute of History had older roots in the Czechoslovak State Historical Publishing Institute founded in 1921, and it was integrated into the Czechoslovak Academy of Sciences in 1952 (*Institute of History of the CAS, n.d.*). In the 1960s, historical scholarship became part of the broader return to complexity after Stalinist simplification. Historians worked with sources, editions, historiographical debate, and questions of Czech, Slovak, European, and world history. Their community was not as protected as chemistry or physics because history touched national memory, democratic traditions, the communist seizure of power, resistance, occupation, and the legitimacy of the regime. The later consequences after the Prague Spring were severe: the Institute was renamed in 1970, its research subjects were restructured, and leading experts such as František Šmahel and Jaroslav Mezník suffered forced resignation or imprisonment (*Institute of History of the CAS, n.d.*). This later repression shows how significant the 1960s historical community had become. Its pursuit of professional historical standards was politically meaningful because it challenged the reduction of the past to ideological narrative.

The humanities more broadly helped maintain the Academy's connection to cultural memory. Linguistics, literary scholarship, archaeology, ethnography, art history, and philosophy did not always produce spectacular inventions, but they preserved the interpretive depth of national and European culture. Their laboratories were archives, libraries, field sites, editorial offices, textual corpora, and seminars. Their methods were source criticism, philology, structural analysis, comparison, interpretation, and reconstruction. These communities were crucial because a scientific academy in the Czech and Czechoslovak context was never only a natural-science institution. It also carried responsibility for language, history, culture, and intellectual continuity. In the 1960s, when cultural liberalisation was widening, humanities scholars helped recover traditions suppressed or simplified in the 1950s. They reintroduced nuance into discussions of literature, historical consciousness, and national identity. This made their work less visibly technological but deeply important for the intellectual climate. The Academy's disciplinary diversity therefore allowed scientific dynamism to include both laboratories of matter and laboratories of meaning.

Scientific schools also depended on journals and publication communities. A research community matures when it can publish its results regularly, receive criticism, define standards, and create a shared archive of debate. Chemistry had *Collection of Czechoslovak Chemical Communications* and other channels. Cybernetics had *Kybernetika* from 1965. Sociology developed *Sociologický časopis* in the mid-1960s as part of the revival of the discipline. Historical scholarship had editions, proceedings, and specialised journals. Publication was not merely output; it was the visible form of community. It allowed researchers to recognise one another as participants in a field. It also connected domestic communities with international readers. Under socialism, publication was complicated by censorship and institutional gatekeeping, but in the 1960s the opening of publication culture became one of the most important signs of disciplinary development. A journal could signal that a field had

returned to life. A conference volume could show that a community was internationally connected. A monograph could stabilise an argument beyond the seminar room.

Laboratories and scientific schools were also training environments. The Academy's institutes produced not only results but people. Younger researchers learned how to ask questions, handle instruments, interpret data, write articles, argue in seminars, and navigate institutional politics. In strong schools, training was not only formal supervision; it was immersion in a style of work. A young chemist learned from the rhythms of synthesis, testing, publication, and group discussion. A sociologist learned how to design surveys and interpret data without reducing society to slogans. A historian learned how to respect the archive even when ideology demanded simplification. A cyberneticist learned how to move between mathematical theory and applied systems. These practices created continuity even when political conditions changed. The Academy's schools were therefore generational institutions. Their greatest achievement may have been the formation of researchers who carried professional standards beyond the 1960s. Even after normalisation disrupted many careers, the habits formed in these communities did not entirely disappear.

The relationship between scientific communities and the Academy's central administration was often delicate. Strong schools needed institutional backing, but they also resisted excessive central control. Institute directors and senior scientists negotiated for budgets, staff, equipment, travel, publication permissions, and research priorities. The Academy's leadership under Šorm could support natural sciences strongly, but resources remained limited and politically mediated. Some fields enjoyed prestige and relative protection; others struggled for recognition. Social sciences and humanities were more vulnerable because their research could become politically sensitive. Yet the Academy's internal diversity made it possible for different communities to develop in parallel. This diversity was one of the institution's strengths. It prevented the Academy from being reduced to a single ideological or disciplinary identity. At the same time, it created unevenness. Not every institute flourished equally, and not every promising community received adequate support. The history of the Academy in the 1960s is therefore a history of selective dynamism rather than universal renewal.

International communication was central to the survival and development of these schools. The macromolecular community needed IUPAC symposia, polymer meetings, and foreign visitors. The polarographic school needed international recognition and analytical networks. Cybernetics needed exchanges with mathematicians, engineers, and systems theorists abroad. Sociologists needed access to empirical methods and comparative studies. Economists needed debates on reform, planning, and markets from both socialist and Western contexts. Historians and humanists needed foreign literature and scholarly comparison. Internationalisation therefore did not exist only at the level of the Academy presidency or official agreements. It entered the everyday life of laboratories and seminars. A foreign journal in an institute library, a visiting professor, a conference paper, a translated article, or a letter from a colleague abroad could influence research direction. Scientific schools become provincial when they lose such contact. The 1960s were dynamic partly because many Academy communities escaped complete provincialisation.

The Slovak dimension of disciplinary communities should not be overlooked. The Czechoslovak Academy structure included relations with the Slovak Academy of Sciences, and these relations became more important as debates about federalisation and institutional equality developed. The Slovak Institute for Sociology was established in 1965, and Slovak

research communities in history, linguistics, biology, geography, economics, and other fields sought stronger institutional recognition (*Institute for Sociology of the Slovak Academy of Sciences, n.d.*). Adam Hudek's study of relations between the Slovak and Czechoslovak academies shows that questions of autonomy, integration, and competence became central before normalisation (*Hudek, 2022*). Scientific schools were therefore not only disciplinary formations; they were also national and regional formations. A Slovak sociological or historical community had to define itself within both a disciplinary and a Czechoslovak institutional framework. This added complexity to the Academy's internal life. It also made disciplinary development part of the broader constitutional and cultural transformation of the 1960s. The growth of scientific communities in Slovakia showed that Czechoslovak science was becoming more plural, even if asymmetries remained.

The strongest disciplinary communities of the 1960s often shared several traits. They had recognised leaders, stable institutional homes, younger researchers, publication channels, methodological clarity, and some degree of international contact. They also had problems large enough to sustain collective work. Organic chemistry had biologically active compounds and natural products. Macromolecular chemistry had polymers and materials. Polarography had electrochemical analysis. Cybernetics had systems, control, and information. Sociology had social structure and empirical investigation. Economics had planning reform. Philosophy had scientific-technological civilisation. History had memory and source criticism. These problems gave communities intellectual coherence. Without such coherence, an institute could become merely administrative. With it, a laboratory or seminar could become a school. The Academy's achievement in the 1960s was that several such schools reached maturity at the same time. Their coexistence gave the institution its distinctive dynamism.

Nevertheless, these communities were not free from internal hierarchy or conflict. Scientific schools can be creative, but they can also become dependent on powerful personalities. A charismatic founder may protect a field while limiting dissent. A director may secure resources but also impose research priorities. Younger scholars may benefit from training but struggle for independence. Political conditions could intensify these tensions because access to travel, publication, promotion, and resources depended on personal and institutional mediation. The Academy's schools therefore should not be idealised as purely open communities. They were shaped by authority, ambition, competition, and compromise. Yet their internal complexity does not diminish their historical value. On the contrary, it makes them recognisably human institutions. They produced knowledge through cooperation and hierarchy, loyalty and disagreement, inspiration and constraint. This is why the history of laboratories must be written as social history as well as intellectual history.

The post-1968 reversal revealed the vulnerability of these communities. Some, especially in the natural sciences, could continue working under normalisation, though often with restricted travel and greater political caution. Others, especially in sociology, economics, philosophy, and history, suffered serious interventions. The Institute of History's experience after the Prague Spring is one visible example, but the broader pattern included personnel purges, publication restrictions, ideological reorientation, and the weakening of reformist networks (*Institute of History of the CAS, n.d.*). The post-1968 regime understood that scientific communities could carry political meaning even when they were not political organisations. A sociological school could preserve empirical truthfulness; an economic school could preserve reformist concepts; a philosophical team could preserve humanist categories; a historical institute could preserve memory. These were precisely the kinds of intellectual continuity that

normalisation sought to discipline. The repression of communities was therefore more damaging than the punishment of individuals alone. It attacked the social conditions under which knowledge had developed.

Yet the communities of the 1960s also proved more durable than political authorities expected. Laboratories preserved tacit knowledge. Researchers maintained personal networks. Methods survived in technical routines. Some younger scholars carried standards into less visible work. International colleagues remembered names and institutions. In chemistry, polymer science, and physical chemistry, continuity was especially strong because technical research could more easily be justified. In the humanities and social sciences, continuity often became more private, fragmented, or delayed until after 1989. But it did not vanish. The Academy's later reconstruction drew partly on memories of the 1960s as a time when science had seemed more open, ambitious, and connected to the world. Scientific schools create institutional memory precisely because they train people to remember how serious work should be done. Even when interrupted, such memory can become a resource for renewal. The 1960s therefore left a legacy larger than the decade itself.

Thus, scientific schools, laboratories, and disciplinary communities were the deep institutional foundation of the Czechoslovak Academy of Sciences' dynamism in the 1960s. Famous individuals such as Šorm and Wichterle mattered because they built communities capable of continuing research beyond personal achievement, but the Academy's real vitality came from the interaction of many such communities across chemistry, polymer science, polarography, cybernetics, nuclear physics, biology, sociology, economics, philosophy, history, and the humanities. These communities created methods, trained younger researchers, hosted seminars, published journals, maintained laboratories, and entered international networks. They also gave the Academy forms of professional autonomy that could not be fully reduced to political command. Their development shows that the 1960s were not only a period of political thaw or administrative reform, but a period in which the social fabric of science itself was renewed. The later normalisation backlash demonstrated how significant these communities had become, especially where empirical, reformist, or historical knowledge challenged ideological simplification. Yet their legacy survived in methods, memories, institutes, and reputations. For this reason, the Academy's history in the 1960s must be read not only as the story of leadership and policy, but as the story of laboratories and schools in which Czechoslovak science learned again how to think, test, argue, invent, and remember.

The Academy and the Prague Spring

1. Scientific Autonomy and Reform Politics

The relationship between scientific autonomy and reform politics during the Prague Spring was not an accidental convergence of two separate histories. It grew from the internal development of the Czechoslovak Academy of Sciences throughout the 1960s, when questions of method, evaluation, internationalisation, institutional reform, and professional responsibility had

already begun to press against the limits of the party-state. By 1968, the Academy had become more than a research organisation in the administrative sense. It was a public reservoir of expertise, a network of institutes in which reformist concepts had been tested, and a social space where the demand for scientific freedom increasingly overlapped with the demand for political renewal. The Prague Spring did not invent this overlap; it made it visible. Economists, sociologists, philosophers, historians, chemists, cyberneticists, and natural scientists had all discovered in different ways that knowledge could not flourish if it was treated merely as a servant of doctrine. The second institutional history of the Czechoslovak Academy of Sciences describes the years 1963–1970 as a period of easing political control, civil-society growth, openness to Western impulses, internal reform, and exceptional disciplinary development under František Šorm's leadership (*Franc, Dvořáčková, et al., 2024*). This is the necessary background to the Academy's role in 1968. Scientific autonomy had become a practical need before it became a political slogan. The Academy entered the Prague Spring already carrying the unresolved tensions of the whole reform decade.

The phrase "scientific autonomy" in the Czechoslovak context of 1968 must be used carefully. It did not mean the complete independence of science from the state, nor did it mean a simple transition to a Western liberal model of academic self-government. The Academy was still financed by the socialist state, still embedded in the structures of the Communist Party's rule, and still dependent on political decisions about leadership, appointments, publication, travel, and resources. Yet scientific autonomy meant that researchers and institutes increasingly claimed the right to define problems, choose methods, evaluate results, maintain international contacts, and speak truthfully about social and natural reality. This claim was modest in language but radical in implication. If science had the right to correct political assumptions, then political authority could no longer treat ideology as the highest court of knowledge. If economists could diagnose the irrationality of central planning, if sociologists could measure social attitudes, and if historians could return to source criticism, then society itself became more complex than official discourse admitted. The Academy's autonomy was therefore professional, epistemic, and moral before it was constitutional. It was professional because it defended disciplinary standards. It was epistemic because it defended the authority of evidence. It was moral because it resisted falsification.

The Prague Spring gave these claims an unusual public resonance. The reform movement that began inside the Communist Party under Alexander Dubček did not immediately abolish the socialist framework, but it opened a political space in which criticism, debate, and institutional reform could be expressed with unprecedented force. The slogan of a more humane socialism was not only a political formula; it resonated with the language that Academy researchers had already used in discussions of economic reform, scientific-technological development, social diagnosis, and human responsibility. The Academy's social-scientific institutes were especially important because they supplied concepts and analyses that connected reform politics with expert knowledge. The Czech Academy's historical overview explicitly states that the later normalisation leadership took revenge on the Czechoslovak Academy because groups from its social-science institutes had played a leading role in the reform efforts of the Prague Spring (*Czech Academy of Sciences, n.d.*). This statement is significant because it confirms that the Academy was not merely a passive observer of 1968. Its institutes were perceived by the regime itself as actors in the reform process. The political authorities after 1968 punished the Academy precisely because scientific autonomy had become politically meaningful.

The Economic Institute of the Czechoslovak Academy of Sciences was one of the clearest examples of this connection between autonomy and reform politics. Under the influence of Ota Šik and his colleagues, economic research had moved from doctrinal political economy toward analysis of planning mechanisms, enterprise incentives, prices, decentralisation, and the limits of the command-administrative model. Jiří Kosta identifies the Economic Institute as a crucial centre where radical criticism of existing economic practice emerged during the crisis years of 1962–1964 (*Kosta, 1989*). By 1968, such work had become part of the intellectual infrastructure of reform. Economists did not merely complain about inefficiency; they supplied a language in which the reform of socialism could be discussed as a rational necessity. This was scientific autonomy in action. The economist's right to analyse failure became inseparable from the politician's need to reform policy. Yet the same right also threatened the monopoly of political authority. If expert analysis could show that the system's mechanisms were irrational, then political loyalty could no longer replace truth. The Economic Institute therefore illustrates why reform politics needed autonomous knowledge and why conservative forces feared it.

Sociology followed a similar path, though its object was society rather than the economy. The revival of sociology in the mid-1960s had already weakened the ideological monopoly over the description of socialist society. Empirical sociology required surveys, statistics, fieldwork, interviews, and attention to everyday life. It asked how people actually lived, worked, believed, consumed, trusted institutions, and interpreted social change. Such questions were dangerous because they could reveal differentiation and dissatisfaction inside a society officially described as unified and progressive. The reform atmosphere of 1968 gave sociological knowledge new importance. Sociologists could contribute to debates on public opinion, education, youth, social structure, bureaucracy, and civic participation. A symposium published by *Sociologický časopis/Czech Sociological Review* later described the Prague Spring as one of the most critical periods in the 20th-century history of Czechs and Slovaks, a judgement that reflects the lasting significance of these reform debates for social scientists (*Sociologický časopis/Czech Sociological Review, 2018*). In the Academy, sociology made social reality visible in a way that ideological language could not control. Its autonomy consisted in the right to observe society without first confirming official assumptions.

Philosophy and interdisciplinary social theory also connected scientific autonomy with reform politics. The work of Radovan Richta and his team on the scientific and technological revolution provided one of the most ambitious intellectual frameworks of the decade. *Civilization at the Crossroads* interpreted science and technology as forces transforming labour, education, culture, social organisation, and human development (*Richta, 1966/1969*). This project was not simply a theoretical exercise. It gave reform socialism a language of modernisation, humanisation, feedback, creativity, and technological civilisation. It implied that a modern socialist society could not be governed only by administrative command and ideological discipline. A society shaped by science required educated citizens, flexible institutions, and respect for the human consequences of technological change. Such ideas aligned naturally with the reformist aspirations of 1968. They also made the Academy a producer of political imagination, not only scientific data. The autonomy of philosophy in this context meant the right to think about the future of society beyond inherited dogma. It transformed scientific reflection into a civilisational argument for reform.

Natural scientists approached reform politics from another direction. Chemists, physicists, biologists, mathematicians, and cyberneticists were often less directly engaged in public political debate than economists or sociologists, but their demand for autonomy was no less

important. They needed international travel, access to foreign journals, modern instruments, collaboration, peer evaluation, and protection from ideological interference. Riikka Nisonen-Trnka's study of Czechoslovak natural scientists presents scientific cooperation with the West as one of the characteristic paradoxes of the Prague Spring: the state needed international science for prestige and modernisation, but feared the political implications of open contact (*Nisonen-Trnka, 2008*). This paradox became sharper in 1968. For natural scientists, autonomy often meant the normalisation of scientific life: the ability to correspond, travel, publish, and cooperate according to disciplinary need. Yet this "normal" scientific demand had political meaning in a closed system. To insist that science belonged to a world community was to challenge the isolation imposed by ideological suspicion. The natural sciences therefore contributed to reform politics by defending the practical conditions of truth and creativity.

František Šorm's position as president of the Academy gave this natural-scientific demand for autonomy a particular institutional weight. Šorm was both a leading organic chemist and a high-ranking Academy official, a figure who could speak to the state from inside the system while defending the needs of professional science. His presidency coincided with the Academy's most dynamic reform period, and his leadership gave chemistry and other natural sciences a strong voice in questions of internationalisation, equipment, patents, and institutional development. Nisonen-Trnka's doctoral study emphasises the roles of Šorm and Otto Wichterle in the scientific reforms of the period and frames their activity under the revealing phrase "science with a human face" (*Nisonen-Trnka, 2012*). The phrase captures the link between scientific autonomy and the wider reform language of the Prague Spring. It suggests that science was not merely asking for technical privileges. It was asking for a humane, open, and responsible social order in which knowledge could function honestly. Šorm's later fall after the invasion shows that this claim had become politically unacceptable. His fate demonstrates that even a loyal communist scientist could be punished when scientific autonomy crossed into civic independence.

Otto Wichterle's role made the connection between science, invention, and civic responsibility even more visible. His soft contact-lens work had given Czechoslovak science international prestige, and his Institute of Macromolecular Chemistry stood as one of the strongest examples of research moving from basic polymer science toward practical invention. Yet Wichterle was not merely an inventor safely confined to laboratory achievement. He became associated with the reform atmosphere of 1968 and was one of the prominent figures linked to the "Two Thousand Words" manifesto, a text that became one of the symbolic documents of the Prague Spring. The Czech Academy's historical overview identifies Wichterle as one of the main authors of the manifesto and later as the first president of the Academy after the restoration of democracy (*Czech Academy of Sciences, n.d.*). This biographical arc is crucial for understanding scientific autonomy in 1968. Wichterle's authority as a scientist gave moral force to his public stance. At the same time, his public stance made him politically vulnerable. The regime wanted the prestige of his invention, but not the independence of his judgement.

The "Two Thousand Words" manifesto represented the moment when reformist civic language moved beyond cautious institutional debate. It called for continued democratisation, public responsibility, and civic vigilance at a time when conservative forces were already pressing against the reform process. The manifesto was not an Academy document, and it should not be treated as if the Academy as a whole authored it. Yet the participation of figures such as Wichterle shows how the authority of science entered the public sphere. The scientist became not only a specialist but a citizen whose professional credibility made his civic words matter.

This was one of the most important transformations of 1968. Expert authority, previously tolerated when it served planning or technological development, began to claim the right to speak about the moral and political direction of society. Conservative forces interpreted such claims as dangerous because they blurred the boundary between professional competence and political legitimacy. For Academy scientists, however, this boundary had already been eroding for years. Once research had taught them the value of truthfulness, feedback, and openness, it was difficult to remain silent about the conditions that made those values impossible.

The Academy's social-science institutes were especially exposed because their autonomy directly touched political reform. Economics, sociology, philosophy, law, history, and political analysis all dealt with questions of power, legitimacy, memory, participation, and institutional design. In 1968, these disciplines could not remain neutral in any simple sense. The reform of economic planning required economists. The discussion of civil society required sociologists and philosophers. The debate over federalisation required historians, lawyers, political theorists, and social scientists. The reconsideration of Stalinist distortions required historians and humanists. The Academy's research communities therefore became part of the public process by which Czechoslovakia attempted to redefine socialism. This does not mean that every Academy scholar was a reformer or that every institute acted courageously. The institution remained plural, cautious, and internally uneven. Yet the intellectual resources generated inside its institutes were indispensable to the reform atmosphere. The later accusation that the Academy had been a centre of "counter-revolution" was politically distorted, but it reflected a real perception: knowledge had become active.

The demand for scientific autonomy during the Prague Spring was also a demand for better institutional governance. Researchers wanted planning to be more flexible, evaluation to be more professional, institutes to have greater responsibility, and international cooperation to be less obstructed by ideological suspicion. These demands had been developing throughout the 1960s, but 1968 made them more explicit. The Academy sought not merely more freedom for individual scholars, but a redefinition of the relationship between science and the state. A modern research institution, reformers argued in practice if not always in formal doctrine, could not be run like a ministry department. It needed peer judgement, long-term continuity, and trust. This was not an anti-socialist argument in its original form. Many reformers believed that socialism would be strengthened if science were allowed to function properly. Yet the implication was serious. If scientific institutions needed self-government to serve society, then the party-state's monopoly over decision-making was no longer rational. Scientific autonomy thus became one strand of the broader critique of bureaucratic centralism.

The Academy's international orientation intensified this critique. Western contacts, socialist-bloc cooperation, conferences, publications, and travel had all shown researchers that scientific life could be organised in different ways. By 1968, the demand for academic travel and international communication had become part of scientific reform. Nisonen-Trnka's doctoral work notes that limited contact with the international scientific community, especially restrictions on academic travel, had been a serious obstacle, and that removing those restrictions became one of the priorities of scientific reform during the Prague Spring (*Nisonen-Trnka, 2012*). This demand was professional, but it also had political meaning. Free movement of scientists implied trust in citizens. Open publication implied confidence in debate. International cooperation implied that knowledge could not be confined within bloc discipline. For conservative socialist authorities, such openness appeared as ideological vulnerability.

For scientists, it appeared as the normal condition of serious work. The Prague Spring made these two interpretations collide.

The language of autonomy in 1968 also included the problem of institutional dignity. The Academy had been created by the socialist state, but by the 1960s many of its institutes had acquired strong professional identities. They no longer wanted to be treated as mere executors of ideological or administrative instructions. Their directors, researchers, and scientific councils increasingly expected to be consulted about research priorities, personnel decisions, evaluation, and international relations. This was especially important because scientific work depends on tacit competence that cannot be fully understood by external administrators. A central committee can approve a plan, but it cannot judge all experimental possibilities, archival complexities, or methodological risks. The Academy's claim to autonomy therefore rested on an epistemic argument: those who know the research must help govern it. This was a deeply reformist principle. It replaced command with competence. It also paralleled wider Prague Spring demands for participation, public debate, and institutional responsibility. Scientific self-government became one form of democratic reform within socialism.

The Slovak dimension of reform politics also affected the Academy's autonomy debates. The Prague Spring was not only about censorship, economic reform, and political liberalisation; it was also about the national structure of Czechoslovakia and the movement toward federalisation. Relations between the Czechoslovak Academy of Sciences and the Slovak Academy of Sciences had long involved questions of centralisation, competence, and institutional equality. Adam Hudek's study of relations between the two academies shows that the late 1960s brought calls for fundamental reform of their relationship and that these debates belonged to the wider transformation before normalisation (*Hudek, 2022*). Scientific autonomy therefore had both professional and national meanings. Slovak institutes sought stronger recognition and more meaningful participation in defining research priorities. Czech central bodies had to confront the limits of Prague-centred governance. The reform of science and the reform of the state were thus connected. In this sense, the Academy mirrored the constitutional tensions of the Prague Spring.

The Academy's position in August 1968 revealed the full political weight of scientific autonomy. Nisonen-Trnka's dissertation records that the main building of the Academy on Národní Street in Prague was among the first objects occupied during the early hours of the invasion on 20–21 August 1968 (*Nisonen-Trnka, 2012*). This detail is symbolically powerful. It shows that the Academy was not simply an abstract scientific body untouched by military intervention. Its physical space was part of the political landscape of the crisis. The occupation of the Academy building suggested that the invading forces and their domestic supporters understood institutions of knowledge as politically significant. A research academy might appear harmless compared with ministries, radio stations, or party offices, but in the Prague Spring context it was one of the places where reform had acquired intellectual substance. The occupation therefore marked a violent interruption not only of political liberalisation but of scientific autonomy. It signalled that the conditions of open inquiry could be overridden by force.

The reaction of Academy leaders and scientists to the invasion further demonstrates the link between science and civic responsibility. Šorm, Wichterle, and many others experienced the occupation not only as a geopolitical act but as a direct assault on the reformist hopes that had made scientific openness possible. The scientific reforms of the 1960s had depended on a gradual loosening of fear, and the invasion restored fear as a political instrument. For

researchers who had built international networks, defended institute autonomy, or participated in public reform debates, the invasion threatened both their civic freedom and their scientific future. It also forced choices. Some scientists protested openly, some signed statements, some tried to protect institutes, some withdrew, and some adapted to the new order. The Academy did not act as a single heroic body, and historical honesty requires acknowledging its internal diversity. Yet the institution's later punishment shows that enough of its members and institutes were associated with reform to make the Academy suspect. The politics of 1968 thus transformed scientific autonomy from a professional demand into a test of institutional conscience.

The Soviet and hard-line interpretation of scientific reform was very different from the Academy's own reformist self-understanding. To reform-minded researchers, autonomy meant competence, truthfulness, international contact, and the normal conditions of scientific work. To conservative forces, the same autonomy could appear as a weakening of ideological control, a channel of Western influence, and a threat to party leadership. Nisonen-Trnka notes that from the Soviet point of view, close contacts with the West, calls for Academy autonomy, and attempts to remove ideological obstacles from scientific issues could be interpreted as alarming signals (*Nisonen-Trnka, 2012*). This contrast is essential. The conflict was not only about particular scientists or particular institutes. It was about the meaning of science under socialism. Was science to be a professionally governed sphere serving society through truth, or was it to remain an instrument supervised by party doctrine? The Prague Spring pushed this question into the open. The invasion answered it by force, but not by persuasion.

The fate of social science after 1968 confirms how politically important scientific autonomy had become. Normalisation did not merely restore administrative order; it targeted the intellectual environments that had made reform thinkable. The Czech Academy's historical overview explicitly links the harshness of normalisation in the Academy to the revenge taken by the party leadership for the role played by social-science institutes in the Prague Spring reform efforts (*Czech Academy of Sciences, n.d.*). This means that the regime understood reformist science as a political actor. Economists, sociologists, philosophers, and historians had not taken power, but they had supplied language, evidence, and legitimacy to those who wanted change. The suppression of these fields was therefore an attempt to cut reform politics off from its intellectual foundations. The normalisation authorities wanted science to return to service, not judgement. They wanted expertise without autonomy. The damage was not only personal but institutional. Research teams were broken, publication channels narrowed, international contacts restricted, and intellectual trust weakened.

Natural scientists also suffered, although the pattern differed by field and by individual. Some laboratories continued to work because their technical usefulness remained important, but politically active or symbolically significant scientists could be removed from leadership, denied travel, or isolated. Wichterle's later exclusion from full institutional authority and Šorm's removal from power illustrate this pattern. The state did not abolish chemistry or polymer science, but it punished scientists whose autonomy had acquired civic meaning. This distinction matters. Normalisation did not destroy all science; it re-politicised the boundaries of scientific life. It allowed useful research to continue under discipline while curtailing the public authority of independent scientists. In this sense, the post-1968 order tried to separate invention from citizenship, laboratory work from public conscience, and technical

competence from institutional autonomy. The 1960s had shown that these separations were artificial. The normalisation regime tried to impose them again.

The Academy's role in reform politics also reflects a broader European pattern of intellectuals and experts in state-socialist societies. In countries where party ideology claimed to possess comprehensive truth, professional knowledge could become a source of limited pluralism. An economist, sociologist, historian, or natural scientist did not need to declare formal opposition to undermine dogmatism. It was enough to ask serious questions, demand evidence, compare systems, and insist on methodological standards. The Academy concentrated such knowledge in institutional form. This made it more powerful than scattered individual criticism. It could produce reports, host seminars, publish journals, organise teams, and train younger researchers. Reform politics in 1968 drew strength from this institutionalised expertise. The Prague Spring was not only a revolt of writers, students, or reform politicians; it was also a moment when expert communities believed that knowledge could help reorganise society. The Academy was one of the central places where that belief lived.

Yet the Academy's reformist role should not be exaggerated into institutional unanimity. There were conservatives, cautious administrators, loyal party functionaries, opportunists, and scholars who avoided public politics altogether. Some researchers feared that rapid reform would endanger their institutes. Others supported autonomy in their own field but remained indifferent to broader civic issues. Some social scientists moved further toward public engagement, while many natural scientists preferred to defend professional freedoms without entering political debate. This diversity is important because it keeps the history realistic. The Academy was not a party of reform; it was an institution in motion. Its contribution to the Prague Spring came from the cumulative effect of many communities rather than a single collective decision. That cumulative effect was nevertheless powerful. Even cautious professional demands could become politically significant when repeated across institutes and disciplines. The reform politics of 1968 amplified claims that had previously remained internal.

The moral significance of scientific autonomy in 1968 lay in the defence of truthful speech. Under Stalinism, truth had often been subordinated to doctrine. The 1960s reopened the possibility that reality could correct ideology. The Prague Spring extended this principle from laboratories and seminars into public life. If economic data showed failure, policy had to change. If sociological research showed dissatisfaction, society had to be heard. If historical scholarship revealed complexity, memory had to be revised. If natural science required international contact, isolation had to end. These were not merely technical points. They formed an ethic of knowledge. The Academy's autonomy mattered because it protected the institutional conditions under which this ethic could survive. Reform politics and scientific autonomy therefore shared a deeper moral grammar: both opposed the falsification of reality by power. That is why their alliance in 1968 was so historically significant.

The tragedy of 1968 was that this alliance remained institutionally unsecured. The Academy had developed professional communities, international contacts, and reformist authority, but it lacked constitutional protection strong enough to resist military intervention and political normalisation. Its autonomy depended on the reform atmosphere, the courage of leaders, the prestige of institutes, and the temporary weakening of ideological discipline. Once force returned, these supports proved insufficient. The Academy's fate after 1968 shows that professional autonomy cannot be fully safe without legal guarantees, political pluralism, and civic rights. This does not mean that the earlier autonomy was illusory. It was real in practice,

but not secure in structure. It produced genuine research, reform concepts, and public authority. It also revealed the vulnerability of science when political power refuses to recognise limits. The Prague Spring therefore exposed both the necessity and the fragility of scientific autonomy.

The connection between science and reform politics also had a long afterlife. After normalisation, many of the hopes of 1968 were suppressed, but they were not erased from memory. Nisonen-Trnka argues that ideas allowed to be expressed openly in the late 1960s survived at least at the level of individual scientists and were symbolised after 1989 by the election of Otto Wichterle as president of the Czechoslovak Academy of Sciences (*Nisonen-Trnka, 2012*). This later event reveals how the memory of the Prague Spring remained attached to the idea of scientific autonomy. Wichterle's presidency after the Velvet Revolution was not merely an administrative appointment. It was a symbolic restoration of the scientist-citizen whose authority had been damaged by normalisation. The Academy's post-1989 reconstruction drew partly on the interrupted reform horizon of the 1960s. The link between science and civic freedom, forged in the Prague Spring, returned as one of the foundations of institutional renewal.

The Prague Spring also changed the historical meaning of the Academy's earlier reforms. Institutional debates about planning, evaluation, international travel, publication, and institute autonomy might have seemed technical when viewed separately. In 1968, they appeared as parts of a larger democratic transformation of knowledge. Planning reform became a critique of bureaucratic command. Evaluation reform became a defence of professional judgement. Travel reform became a demand for openness to the world. Publication reform became a defence of truthful communication. Institute autonomy became a model of responsible self-government. The Academy's internal reforms therefore acquired public meaning because the whole society was asking similar questions about participation, competence, and freedom. The history of 1968 cannot be understood if these institutional continuities are ignored. The Prague Spring was not only a political episode imposed from above by party reformers. It was the convergence of many earlier reforms, including those inside scientific institutions.

The international dimension intensified this convergence. Western observers were interested in Czechoslovakia because the Prague Spring seemed to offer a third possibility between Soviet-style command socialism and Western capitalism. The Academy contributed to this image through its reform economists, sociologists, philosophers, and natural scientists who defended international openness. At the same time, Soviet and conservative socialist observers saw the same openness as a threat. The Academy's contacts with Western science, its calls for autonomy, and its reformist social-scientific work could be interpreted as evidence that Czechoslovakia was moving beyond acceptable socialist limits. Scientific autonomy thus became part of the geopolitical drama of 1968. It was not the cause of the invasion, but it belonged to the set of developments that made the reform process unacceptable to Moscow. The fate of Academy scientists after the invasion shows that the internationalisation of science had become inseparable from political sovereignty. To open science was also to open the country.

The relationship between scientific autonomy and reform politics in 1968 therefore reveals one of the central paradoxes of state socialism. The regime needed science in order to modernise, but modern science required habits that weakened authoritarian control: openness, criticism, peer judgement, uncertainty, international comparison, and methodological pluralism. The

Academy made this paradox visible because it concentrated the country's most advanced research communities in one institution. During the Prague Spring, the paradox briefly seemed capable of resolution through a more humane and democratic socialism. Scientists could imagine that their autonomy would serve a reformed society rather than oppose it. Economists, sociologists, chemists, philosophers, and historians could all believe, in different ways, that truth and socialism might be reconciled. The invasion destroyed this hope politically, but it did not invalidate the problem. It showed that the Soviet-bloc system could not tolerate the degree of autonomy that modern science increasingly required. The Academy's tragedy was that it came close enough to this reconciliation for its loss to be historically profound.

Thus, scientific autonomy and reform politics were deeply intertwined in the Czechoslovak Academy of Sciences during the Prague Spring. The Academy's demand for autonomy grew from years of methodological renewal, internationalisation, professional self-assertion, and critical expertise. By 1968, this demand had become part of the broader reform movement because the same principles applied to science and society: openness, feedback, truthfulness, responsibility, participation, and freedom from arbitrary command. Economists, sociologists, philosophers, historians, chemists, cyberneticists, and natural scientists each contributed differently to this convergence. The Academy did not become a unified political opposition, but it became one of the institutions where reform acquired intellectual depth and practical credibility. Its social-science institutes helped formulate reform ideas; its natural scientists defended international openness and professional standards; its leading figures such as Šorm and Wichterle embodied the link between scientific authority and civic responsibility. The invasion and subsequent normalisation revealed how dangerous this convergence appeared to conservative power. Yet the suppression of the Academy's autonomy also confirmed its historical importance. In 1968, the Academy showed that science could not remain merely an instrument of the state once it had learned to speak in the name of evidence, method, and human responsibility.

2. The Position of Academicians and Institutes in 1968

The position of academicians and institutes in 1968 was shaped by a long accumulation of professional, institutional, and moral tensions inside the Czechoslovak Academy of Sciences. The Academy did not enter the Prague Spring as a politically neutral technical body, even if many of its institutes were primarily concerned with research rather than public politics. By the late 1960s, it had become one of the major institutional environments in which reformist knowledge was produced, tested, and circulated. Its economists had analysed the crisis of the command economy; its sociologists had begun to restore empirical knowledge of society; its philosophers had connected technological modernity with human development; its natural scientists had defended international exchange; its historians and humanists had reopened questions of memory and interpretation. This meant that the Academy's position in 1968 was already structurally reformist in many fields, even where individual scholars remained cautious. The institutional history of the Czechoslovak Academy of Sciences for 1963–1970 describes the decade as a time of easing political control, growing civil society, increasing openness to Western impulses, and disciplinary flourishing under František Šorm's leadership (*Franc, Dvořáčková, et al., 2024*). The Academy "fully embraced" these changes according to the publisher's summary of that monograph, and this helps explain why its institutes became visible during the Prague Spring. The question in 1968 was not whether the Academy was

formally part of the socialist state; it clearly was. The deeper question was how far its academicians and institutes could use their professional authority to support reform without being destroyed by the political forces that opposed it. In this sense, the Academy's position was one of commitment, caution, exposure, and internal plurality.

The term "academicians" in this context should be understood broadly. It included formally elected members of the Academy, members of its presidium, institute directors, senior researchers, and internationally recognised scholars whose authority extended beyond their administrative titles. These figures did not all think alike. Some were committed reform communists, some were cautious experts, some were older scholars whose intellectual formation predated communist rule, and some were politically careful professionals who defended scientific work but avoided open confrontation. The Academy as an institution therefore cannot be described as a single political actor with one unified will. Yet it did have a recognisable institutional profile in 1968. Its leading figures and institutes tended to defend professional autonomy, reform of research governance, international communication, and greater space for expert judgement. This gave the Academy a special place in the reform process. It was not a mass political organisation, nor was it an opposition party. It was a concentrated body of knowledge whose members increasingly believed that scientific truthfulness required a more open society. That belief did not automatically produce political radicalism, but it made the Academy less compatible with the restoration of rigid ideological control.

The presidency of František Šorm gave the Academy's 1968 position a particular symbolic weight. Šorm was not merely a high official; he was an eminent chemist and organiser of science who had built one of the most important research environments in Czechoslovak chemistry. His presidency placed a practising scientist at the head of the Academy during the reform decade, and this changed the tone of institutional self-defence. Under Šorm, the Academy could speak in the name of professional excellence, international reputation, and the practical requirements of modern research. His position was politically complex because he had been a communist and had benefited from the system's institutional resources, yet he also defended a degree of scientific openness that conservative forces increasingly mistrusted. Nisonen-Trnka's study of Šorm and Wichterle describes the Prague Spring of science as a moment when natural scientists reconsidered the Iron Curtain and demanded wider international cooperation, including freer movement and removal of ideological obstacles from scientific life (*Nisonen-Trnka, 2012*). Šorm's Academy was therefore not anti-socialist in its original reformist self-understanding. It sought to make socialist science more rational, humane, and internationally viable. The tragedy was that, after August 1968, this position could be reinterpreted as political unreliability. The president of the Academy thus embodied both the possibility and the vulnerability of reformist science.

Otto Wichterle represented another type of academic authority in 1968. Unlike Šorm, he was most widely known as an inventor, a polymer chemist, and the creator of modern soft contact lenses. His authority came from the visible social value of invention and from the international reputation of Czechoslovak macromolecular chemistry. Yet in 1968 he also became a public moral figure. The Czech Academy's own historical overview identifies Wichterle as one of the main authors of the famous "Two Thousand Words" manifesto of June 1968 and later as the last chairman of the Czechoslovak Academy of Sciences after the fall of the communist regime (*Czech Academy of Sciences, n.d.*). The manifesto was signed by well-known figures from science, culture, and public life, and Wichterle's association with it made his scientific

authority part of civic reform. This is crucial for understanding the position of academicians in 1968. They were not only specialists defending laboratory privileges; some of them entered the public sphere as responsible citizens. Wichterle's case showed that scientific prestige could be converted into moral-political authority. It also showed why the post-invasion regime would later regard such figures as dangerous.

The Academy's institutes did not all participate in reform politics in the same way. Natural-scientific institutes often defended reform through the language of professional normality: access to journals, instruments, travel, conferences, foreign guests, patent protection, and less ideological interference. Social-scientific and humanistic institutes were more directly involved in reform debates because their research touched economic policy, society, law, culture, history, and the future of socialism. The Economic Institute, the Institute of Sociology, philosophical teams around the scientific-technological revolution, and historical institutes each contributed differently to the intellectual atmosphere of 1968. These institutes did not necessarily issue political programmes as institutes, but their research helped define the problems that reform politics sought to address. The very existence of empirical sociology, reform economics, and critical historical inquiry changed what could be said publicly. The Academy's position therefore emerged through a division of intellectual labour. Some institutes supplied technologies and international prestige; others supplied concepts and analyses of social transformation. Together they gave the Prague Spring a stronger scientific and scholarly foundation than a purely political movement could have had.

The Economic Institute was one of the most politically consequential Academy institutes in 1968. Its importance rested on years of work before the Prague Spring, especially the reform debates associated with Ota Šik and his colleagues. Kosta identifies the Economic Institute of the Czechoslovak Academy of Sciences as one of the key centres where criticism of existing economic practice was articulated during the crisis years of 1962–1964 (*Kosta, 1989*). By 1968, this analytical work had become part of the reform programme's intellectual infrastructure. The economists' position was delicate because they were not simply external critics; they were experts inside the socialist system, attempting to reform it through analysis of planning, enterprise autonomy, prices, incentives, and decentralisation. Their authority came from the regime's own need for answers to economic stagnation. Yet the more seriously they analysed the economy, the more they exposed the weaknesses of administrative command. In 1968, therefore, economists from the Academy occupied the position of expert reformers whose knowledge had direct political implications. They were useful to reformist politicians but threatening to conservative power. Their institute became one of the clearest examples of how academic expertise could enter the centre of public decision-making.

The revived sociological community was similarly significant, though its political role was less centred on a single reform programme. Sociology had returned in the 1960s as a discipline capable of studying socialist society empirically rather than repeating ideological declarations. Its institutes, journals, and research projects made social life visible in new ways. By 1968, sociologists could contribute to debates on public opinion, youth, work, education, stratification, bureaucracy, and civic participation. The Czech Sociological Review's later symposium on the Prague Spring emphasised the continuing biographical and academic importance of 1968 for sociologists and political scientists, showing that the reform process became a defining moment for the discipline's historical memory (*Sociologický časopis/Czech Sociological Review, 2018*). This retrospective significance reflects the role sociology had begun to play in 1968. The sociologist's position was not that of a propagandist but of an

observer whose findings could complicate official narratives. This made the discipline both reformist and vulnerable. In the Academy, sociology became one of the key institutional sites where society could begin to recognise itself outside the simplified language of the party-state.

Philosophers and interdisciplinary theorists within the Academy also occupied a prominent position in 1968. Radovan Richta's team, with its work on the scientific and technological revolution, had developed a language that connected science, labour, education, technology, social change, and human development. *Civilization at the Crossroads* did not function as a party manifesto, but it gave reform socialism an intellectual horizon beyond administrative correction (*Richta, 1966/1969*). It suggested that a modern society shaped by science could not be governed through dogma, rigid bureaucracy, and passive obedience. This made the philosophical community around such work politically relevant even when it remained formally theoretical. Its members helped transform the idea of reform into a question of civilisation and human possibility. The Academy's philosophical position in 1968 was therefore not limited to commentary on politics. It supplied concepts through which the Prague Spring could imagine itself as a modernising, humanising, and knowledge-based project. This intellectual contribution was one reason why the later normalisation regime treated reformist philosophical and social-scientific circles with suspicion. They had made reform thinkable in deeper terms than immediate policy change.

Historical institutes and humanities scholars occupied a more cautious but highly sensitive position. Their work touched the memory of the First Republic, the communist seizure of power, Stalinist repression, Czech and Slovak national traditions, the Nazi occupation, and the moral meaning of historical continuity. During the 1960s, historians had begun to recover more serious source criticism and more complex interpretations after the schematic distortions of high Stalinism. In 1968, such work gained new public significance because society was trying to reassess its recent past and its future. The historian's position was therefore dangerous. To restore archival seriousness was also to challenge the monopoly of official memory. The later history of the Institute of History confirms this danger: after the Prague Spring, the institute was renamed, research subjects were reorganised, and scholars such as František Šmahel and Jaroslav Mezník suffered forced resignation or imprisonment (*Institute of History of the CAS, n.d.*). This later repression shows that the authorities recognised historical scholarship as a politically meaningful field. In 1968, humanities institutes did not need to act like political parties to become part of reform. Their insistence on complexity, memory, and interpretation was already a form of intellectual resistance to dogma.

Natural-scientific institutes held a somewhat different position because their reformist claims were usually less directly political. Chemists, physicists, biologists, mathematicians, and cyberneticists demanded conditions that they considered normal for serious research: modern instrumentation, access to international literature, freer travel, better patent handling, professional evaluation, and less interference by ideological organs. Yet in the context of 1968, these professional demands became politically charged. Nisonen-Trnka notes that, from the Soviet point of view, close contacts with the West, calls for Academy autonomy, and efforts to remove ideological obstacles from scientific issues were alarming signals (*Nisonen-Trnka, 2012*). This means that even the apparently technical position of natural scientists could be interpreted as political deviation. The Institute of Macromolecular Chemistry, the Institute of Organic Chemistry and Biochemistry, and other successful laboratories were internationally connected and professionally ambitious. Their very success strengthened the argument that science needed openness. In 1968, natural-scientific institutes therefore supported reform by

defending the infrastructure of normal scientific life. Their position was less rhetorical than that of writers or politicians, but it was institutionally powerful.

The physical occupation of Academy premises during the invasion gave this institutional position a dramatic form. Nisonen-Trnka records that the main building of the Academy of Sciences on Národní Street in Prague was among the first objects occupied during the early hours of the invasion of 20–21 August 1968 (*Nisonen-Trnka, 2012*). A contemporary report on academic purges also noted that the main building of the Czechoslovak Academy of Sciences and some other parts of its premises were occupied by invading forces in August 1968 in their search for "counter-revolutionaries" (*Payne, 1972*). This fact has strong symbolic meaning. The Academy building was not a military headquarters, yet it was treated as a politically significant site. The occupation of its spaces showed that institutions of knowledge were seen as part of the reform infrastructure. It also revealed how the language of "counter-revolution" could be extended to intellectual and scientific environments. In the eyes of the invading and normalising forces, laboratories, offices, archives, and social-scientific institutes were not neutral if they had helped produce reformist thought. The Academy's position in 1968 was therefore marked physically as well as intellectually.

The response of academicians and institutes to the invasion was not uniform, but it was shaped by shock, protest, institutional defence, and fear for the future of research. Some leading scientists condemned the intervention openly or supported statements opposing occupation. Others tried to protect their institutes, records, colleagues, and research continuity. Some waited to see whether reform could survive under new conditions. Still others adapted quickly to the shifting political climate. This diversity should not be hidden, because the Academy was a large institution containing many temperaments and political orientations. Yet the later punishment of the Academy indicates that enough of its members and institutes had identified with reform to make the institution suspect. The post-invasion authorities did not view the Academy as an ordinary technical bureaucracy. They saw it as one of the environments in which reformist autonomy had taken institutional form. This perception would shape normalisation policy toward the Academy in the following years. Thus, the position of academicians in 1968 included both direct civic response and the less visible effort to preserve institutional integrity under occupation.

The Academy's Presidium and senior leadership had to navigate a particularly difficult position. On the one hand, they represented the leading scientific institution of the state and had responsibilities toward institutes, staff, property, archives, laboratories, and ongoing research. On the other hand, they could not ignore the moral and political meaning of the invasion. A purely administrative response would have betrayed the reformist hopes of the decade. A purely confrontational response could have exposed institutes and individuals to immediate danger. Šorm's leadership was therefore tested not only scientifically but institutionally and morally. The Academy's later institutional history notes that in the difficult years at the end of the 1960s, the Academy, its staff, and its leadership generally managed to uphold institutional integrity, although this later contributed to the institution being labelled by those in power as one of the centres of "counter-revolution" (*Franc, Dvořáčková, et al., 2024*). This formulation captures the dilemma. Integrity was necessary for a scientific institution; under normalisation, integrity itself became incriminating. The Academy's leadership in 1968 had to defend the institution without possessing the political power to protect it fully.

Institute directors were also placed in an exposed position. They were responsible for research teams and often acted as mediators between central Academy bodies, political authorities, and individual scholars. In 1968, a director's position could determine whether an institute became a place of courage, caution, or accommodation. Directors in the natural sciences had to defend international links and laboratory continuity. Directors in social sciences and humanities had to navigate fields where every publication or public statement could become politically sensitive. The Institute of Macromolecular Chemistry under Wichterle, the Institute of Organic Chemistry and Biochemistry associated with Šorm's legacy, the Economic Institute, the Institute of Sociology, and philosophical or historical institutes each faced different risks. A director's scientific reputation could provide some protection, but it could also increase visibility. If a director was associated with reform, the whole institute could be watched more closely. The position of institutes in 1968 therefore depended heavily on leadership. Scientific communities were not abstract; they were protected or exposed by specific people making difficult decisions under pressure.

The Academy's younger researchers experienced 1968 differently from many senior academicians. Younger scholars had often entered research during the period of methodological renewal and partial liberalisation. They had more direct expectations of international contact, empirical methods, open discussion, and professional evaluation. For them, the Prague Spring could appear not only as a political reform but as the natural extension of the scientific culture they had begun to experience. Students and young intellectuals in Czechoslovakia often pushed reform beyond the cautious horizon of older reform communists, and this generational dynamic affected academic life as well (*Ghodsee, 2019*). Within institutes, younger researchers could be more impatient with compromise and more attracted to public engagement. At the same time, they were more vulnerable because their careers were not yet secure. The post-1968 purges, travel restrictions, and publication barriers could damage an entire generation's trajectory. Thus, the position of academicians and institutes in 1968 was also a generational question. The Academy's future was being shaped by how much room young researchers would have to continue the reformist scientific culture of the 1960s.

The Slovak Academy of Sciences and Slovak institutes had their own position within the events of 1968. The Prague Spring coincided with the movement toward federalisation, and questions of scientific autonomy intersected with questions of national equality and institutional competence. Adam Hudek's study of relations between the Slovak and Czechoslovak academies shows that the late 1960s brought calls for a fundamental reform of the relationship between the two institutions (*Hudek, 2022*). For Slovak academicians, 1968 was not only about liberalisation from ideological control; it was also about gaining a more dignified place within the Czechoslovak scientific system. Slovak institutes in sociology, history, linguistics, economics, biology, geography, and other fields sought stronger recognition and more meaningful autonomy. This made their position both parallel to and distinct from that of Czech institutes. They shared the general reform demand for professional self-government, but they also pressed against Prague-centred institutional hierarchy. The Academy's 1968 history therefore must be read as both a scientific and a federal question. The position of institutes was shaped by nationality, location, discipline, and relation to central authority.

The Academy's public authority in 1968 was strengthened by the fact that many of its members were not merely specialists but recognised cultural figures. Scientists such as Wichterle, Šorm, Miroslav Holub, and others belonged to a broader public world of intellectuals, writers, doctors, and reform-minded professionals. The "Two Thousand Words" manifesto was signed

by academics, writers, artists, sports figures, and other well-known personalities, including Wichterle, and became one of the symbolic texts of the reform process (*Polish History, n.d.*). The manifesto's importance lay partly in its crossing of professional boundaries. It showed that the Prague Spring's public sphere was not divided neatly into politicians, writers, and scientists. Academicians could appear alongside poets, filmmakers, and civic figures as bearers of moral authority. This helped make the Academy's position more public than that of an ordinary research bureaucracy. It also made individual academicians vulnerable after the invasion. The normalisation regime could treat scientific prestige as politically dangerous when it had been used in defence of civic reform.

The institutes themselves were not only research units but also social spaces where 1968 was discussed, interpreted, and experienced collectively. Seminar rooms, corridors, editorial meetings, laboratories, and institute assemblies became places of debate. Researchers discussed party developments, censorship, the invasion threat, federalisation, reform of the Academy, and the future of international cooperation. In some institutes, political discussion may have been more open and intense; in others, it remained cautious or secondary to laboratory work. Yet the atmosphere of 1968 inevitably entered institutional life. A chemist waiting for an instrument, a sociologist preparing a survey, a historian editing sources, or an economist drafting reform proposals all worked under conditions that were changing by the week. The boundary between professional and political life became porous. This was one of the defining features of the Prague Spring. Institutes were no longer enclosed research spaces; they were small public spheres within the larger public sphere of reform. Their position was therefore both scholarly and civic.

The Academy's publications and journals also reflected this changed position. The easing of censorship during the Prague Spring allowed more open discussion in many cultural and scholarly venues. Academic publications could address questions that had previously been avoided or coded. In social sciences and humanities, this created a brief but significant space for methodological and political candour. In natural sciences, it strengthened arguments for international normality and professional evaluation. However, publication openness also created documentary traces that could later be used against scholars. A text, signature, editorial decision, or conference statement from 1968 could become evidence of unreliability after normalisation. This produced one of the bitter paradoxes of the period. The same written culture that made reform visible also made repression easier to target. The position of academicians was therefore exposed through print. To publish openly in 1968 was to participate in reform; after 1969, it could become a political liability.

The Academy's position was also shaped by relations with the Communist Party. Many academicians were party members, and some genuinely believed in reform communism. Others were non-party specialists or people who had adapted to the system in order to continue research. In 1968, party membership itself did not have a single meaning. Reform communists could become advocates of democratisation, while conservative party members could support restoration of discipline. Non-party scholars could be cautious, radical, or simply professionally focused. This complexity is important because it prevents the Academy from being divided into "communists" and "independent scientists" too simplistically. Šorm himself illustrates this complexity: he was deeply connected to communist structures, yet his later opposition to the occupation and his removal after 1968 show that party identity did not guarantee compliance with Soviet-backed normalisation. The Academy's position in 1968 therefore reflected the fragmentation of the socialist elite itself. Scientific authority and party

authority no longer aligned automatically. That misalignment was one of the sources of reform energy.

The invasion transformed the meaning of institutional loyalty. Before August 1968, many academicians could believe that they were loyal to a reformed socialist project and to the scientific development of Czechoslovakia at the same time. After the invasion, loyalty became more sharply defined by the normalisation authorities as acceptance of Soviet intervention and rejection of the reform process. This placed Academy members in an impossible situation. To defend the dignity of science and the legality of reform could be classified as disloyalty. To preserve one's institute might require public compromise. To protest openly could destroy a career and expose colleagues. To remain silent could feel like moral failure. The position of institutes after August was therefore marked by ethical tension. Scientific communities had to decide how much they could say, what they could protect, and whom they could defend. These decisions were often made under uncertainty, because the full scale of normalisation was not immediately clear. The tragedy of 1968 lay partly in this gradual narrowing of possible honourable action.

The accusation of "counter-revolution" later directed at reformist intellectual environments distorted the actual position of the Academy. Most academicians and institutes were not seeking a violent overthrow of socialism. Many were trying to reform it, humanise it, rationalise it, or make scientific life more normal. Yet from the viewpoint of Soviet orthodoxy and domestic hardliners, this distinction became irrelevant. Demands for autonomy, international openness, empirical truth, and public responsibility could all be interpreted as threats to party control. The Academy's social-science institutes were especially vulnerable to this interpretation, but natural scientists associated with public reform also suffered. The language of "counter-revolution" functioned as a political weapon. It converted professional and civic reform into an enemy category. This allowed the normalisation regime to punish institutes not for poor science but for excessive independence. The Academy's position in 1968 was therefore later rewritten by those who needed to justify repression.

Yet it would be misleading to imagine that the Academy's position collapsed immediately after the invasion. The academic year 1968/1969 still contained uncertainty, negotiation, and delayed consequences. Payne's contemporary account of academic purge processes noted that although Academy premises were occupied and intellectuals were attacked verbally, the academic year 1968/1969 initially saw no great immediate changes before later purges deepened (*Payne, 1972*). This is important because normalisation was a process, not a single moment. Institutes continued to work, publish, meet, and defend themselves for a time. Some scholars hoped reform could be preserved in modified form. Others anticipated retaliation. The position of academicians in this transitional period was therefore unstable and psychologically exhausting. They had to function as scientists while reading political signs and preparing for possible institutional restructuring. The delay did not reduce the danger; it prolonged it. The Academy lived through a period in which the reform horizon had been broken but its full administrative replacement had not yet been completed.

The position of academicians in 1968 also reveals the distinction between scientific prestige and political security. Internationally recognised scientists such as Wichterle and Šorm had reputations that could not easily be erased from world science. Yet their domestic authority could still be attacked. Publications, patents, inventions, and foreign recognition offered moral and professional capital, but they did not provide legal protection under a regime that placed

political loyalty above autonomy. The same was true for institutes. An institute with a strong international profile might be too valuable to destroy entirely, but its leadership could be changed, its travel restricted, its publications monitored, and its internal culture disciplined. Scientific prestige therefore offered partial protection but not immunity. This distinction is central to understanding the Academy's fate. The regime did not need to abolish excellent science in order to control it. It could preserve laboratories while removing independent voices. It could use achievements while punishing achievers. The position of Academy scientists in 1968 was defined by this precarious gap between recognition and power.

The Academy's role in 1968 also had an international resonance. Foreign scientists and observers followed developments in Czechoslovakia with interest because the Prague Spring seemed to promise a more open form of socialism. The participation of Academy figures in reform reinforced this perception. Western colleagues saw in Czechoslovak science a community that wanted normal international contact and professional autonomy. Socialist-bloc authorities, especially in Moscow, saw a dangerous loosening of control. Nisonen-Trnka's analysis emphasises that calls for Academy autonomy and closer Western contacts appeared alarming from the Soviet perspective (*Nisonen-Trnka, 2012*). This means that the Academy's position was not only domestic. It was part of the Cold War's intellectual geography. The Academy was watched from both sides because it represented the possibility that socialist science might become open without ceasing to be socialist. The invasion destroyed that possibility politically, but its brief appearance gave the Academy's 1968 position international significance.

The institutional memory of 1968 later became one of the Academy's most important moral resources. After normalisation, many reformist scholars were removed, silenced, marginalised, or forced into compromise. Yet the memory of what academicians and institutes had tried to defend did not disappear. Nisonen-Trnka argues that ideas openly expressed in the late 1960s survived at least at the level of individual scientists and were symbolised after 1989 by Wichterle's election as president of the Czechoslovak Academy of Sciences (*Nisonen-Trnka, 2012*). This later restoration shows that 1968 remained a reference point for scientific autonomy. Wichterle's post-communist leadership was not only a recognition of invention; it was a rehabilitation of the scientist-citizen punished for reformist courage. The Academy's later reconstruction drew legitimacy from this memory. The position of academicians in 1968 therefore mattered beyond the immediate crisis. It shaped how the institution would later understand its own moral history.

One should also recognise the emotional dimension of the Academy's 1968 experience. The invasion was not experienced only as a geopolitical event or administrative turning point. It was a shock to people who had invested years in rebuilding trust, openness, and professional dignity. For many academicians, the Prague Spring had made it possible to imagine that scientific work and civic responsibility could finally reinforce one another. The occupation broke that imagination. Laboratories continued, but the atmosphere changed. Travel became suspect, conversations became cautious, signatures became dangerous, and colleagues had to judge how far they could trust one another. This emotional transformation is difficult to measure but historically essential. Scientific institutions are made of people, not only statutes. When fear returns, it changes how people write, speak, mentor, collaborate, and remember. The Academy's position in 1968 was therefore not only a matter of public statements. It was a lived experience of hope, shock, courage, prudence, and later loss.

The Academy's 1968 experience also demonstrates that institutes can become political without abandoning science. The Economic Institute became political because economic truth had policy consequences. The Institute of Sociology became political because empirical society contradicted ideological simplification. The Institute of History became political because memory challenged official narratives. The Institute of Macromolecular Chemistry became political when its inventor-director used scientific prestige in civic reform. The presidency of the Academy became political because institutional autonomy challenged the restored primacy of party control. None of this means that scientific work was reduced to politics. On the contrary, the Academy's political significance came from the seriousness of its science. Its institutes mattered because they produced knowledge that society needed. This is the key to understanding the position of academicians in 1968. They were not influential despite being scientists; they were influential because they were scientists.

Thus, the position of academicians and institutes in 1968 was one of the central expressions of the Prague Spring within the Czechoslovak Academy of Sciences. The Academy was not a unified political actor, but its leading figures, research communities, and especially its social-scientific institutes had become deeply involved in the reform horizon through expertise, public authority, international openness, and defence of professional autonomy. Figures such as František Šorm and Otto Wichterle embodied the connection between scientific achievement and civic responsibility, while institutes in economics, sociology, philosophy, history, chemistry, and macromolecular science showed how disciplinary work could become part of social transformation. The invasion of August 1968 and the occupation of Academy premises revealed that institutions of knowledge were perceived as politically significant by those who wished to end reform. The later normalisation backlash confirmed this perception by targeting precisely the autonomy, networks, and intellectual communities that had made the Academy dynamic. Yet the importance of 1968 does not lie only in defeat. It lies in the fact that, for a brief period, academicians and institutes acted as if scientific truth, institutional dignity, and civic reform could belong to the same project. That project was crushed politically, but it remained one of the defining memories of the Academy's 20th-century history.

3. The End of the Reform Horizon after 1968

The end of the reform horizon after 1968 did not come as a single administrative decision, nor did it immediately erase all the intellectual and institutional changes that had accumulated in the Czechoslovak Academy of Sciences during the 1960s. It was a process of political closure, moral pressure, personnel replacement, censorship, and institutional reorientation that unfolded unevenly from the Warsaw Pact invasion in August 1968 into the early years of so-called normalisation. The Academy had entered the Prague Spring as one of the most dynamic institutions of Czechoslovak reform socialism, with strong scientific schools, increasingly open international communication, reformist social-scientific institutes, and leading natural scientists who defended professional autonomy. After the invasion, these same qualities became politically suspicious. The regime that gradually emerged after 1968 did not simply want to restore order in the streets or stabilise party leadership; it wanted to discipline the sources of reformist thought. The Academy was one of those sources because its institutes had connected knowledge with social diagnosis, economic reform, international openness, and civic responsibility. The official historical overview of the Czech Academy of Sciences states directly that normalisation was particularly hard on the Czechoslovak Academy

because the leadership of the Communist Party took revenge for the role played by groups from Academy social-science institutes in the Prague Spring reform efforts (*Czech Academy of Sciences, n.d.*). This formulation is crucial because it shows that the post-1968 attack on the Academy was not accidental. The Academy was punished not for institutional weakness, but for having become too intellectually consequential.

The Warsaw Pact invasion of 20–21 August 1968 destroyed the political conditions under which the Academy's reformist autonomy had been growing, but it did not immediately produce a fully stabilised normalisation regime. The months after the invasion were marked by uncertainty, negotiation, pressure, tactical retreat, and the gradual narrowing of public and institutional space. Many researchers still hoped that some elements of the reform process could be preserved. Others understood almost immediately that the military intervention had changed the meaning of every previous demand for autonomy. Scientific travel, foreign cooperation, open publication, empirical social research, economic reform, and institutional self-government could all now be reinterpreted as symptoms of ideological unreliability. The main building of the Academy and other parts of its premises were occupied by invading forces in August 1968, according to a contemporary account of the academic purge, in a search for alleged "counter-revolutionaries" (*Payne, 1972*). This fact had symbolic force. The Academy was not a barracks or a radio station, yet it was treated as a politically meaningful site. The physical occupation of scientific premises announced that institutions of knowledge were to be brought back under control. The end of the reform horizon therefore began not only with tanks in Prague, but with the military marking of intellectual spaces as politically dangerous.

The replacement of Alexander Dubček by Gustáv Husák as first secretary of the Communist Party on 17 April 1969 marked a decisive political turn. After that moment, the ambiguity of the immediate post-invasion period gave way to a more systematic restoration of hard-line control. Britannica's account of the Prague Spring notes that Husák replaced Dubček on that date and that the reformist experiment was brought to an end by the victorious conservative leadership (*Britannica, 2026*). In the Academy, this transition meant that reformist language could no longer be treated as a legitimate contribution to socialist renewal. It became evidence of deviation, naivety, or counter-revolutionary complicity. The vocabulary of "normalisation" was itself revealing. It implied that the reforms of 1968 had been abnormal, that autonomy had been disorder, and that public debate had been a pathological condition requiring cure. Yet from the perspective of many scientists, the "normal" life of science had precisely meant freer travel, methodological seriousness, international exchange, and professional evaluation. Thus, normalisation inverted the meaning of normality. What scholars had experienced as the return of truthful scientific life was now reclassified as political danger.

For the Academy, the turning point was not only national leadership change but the beginning of systematic personnel and institutional consequences. Payne's contemporary report observed that the full force of the leadership change began to be felt in September 1969 and that among those removed from the Central Committee of the Communist Party were Academician František Šorm, then president of the Academy, Academician Ivan Málek, and Charles University rector Oldřich Starý (*Payne, 1972*). This was not a marginal personnel adjustment. It signalled that leading representatives of reformist scientific and academic authority would be politically downgraded before being dismissed, isolated, or forced into resignation. The removal of Šorm was especially significant because he had embodied the Academy's 1960s synthesis of scientific excellence, institutional leadership, and reformist openness. His fall showed that scientific prestige could not protect a person whose position

after 1968 was judged politically unreliable. The same pattern affected others in different forms. Normalisation did not need to abolish the Academy in order to break its reformist horizon. It needed to replace or neutralise the people through whom that horizon had acquired institutional force.

The fall of Šorm revealed the fragility of the chemist-president model that had been so important in the 1960s. During the reform decade, Šorm's presidency had allowed the Academy to defend professional science through the authority of an internationally recognised researcher. After 1968, however, that same authority became vulnerable because it was connected with institutional autonomy, Western cooperation, and resistance to the occupation. Martin Franc's study of the Institute of Organic Chemistry and Biochemistry shows how Šorm had used political and institutional power to build a major chemical research centre, while later political developments damaged his position and affected the institute he had shaped (*Franc, 2024*). The normalisation regime did not simply remove an administrator. It struck at the symbolic figure of scientific self-confidence inside the Academy. Šorm's removal suggested that the state would tolerate scientific excellence only when it accepted political subordination. It also warned other institute directors that autonomy could be retroactively criminalised. The reform horizon ended, therefore, through the transformation of leadership from protection into exposure. The scientist who had negotiated openness with power became a victim of power when negotiation was replaced by obedience.

Otto Wichterle's fate carried a different but equally important meaning. Wichterle had given the Academy one of its most famous examples of research becoming invention through the development of hydrophilic polymers and soft contact lenses. Yet his public association with the Prague Spring, including his role connected with the "Two Thousand Words" manifesto, made him politically unacceptable to normalisation authorities. The Czech Academy's historical overview identifies Wichterle as one of the main authors of that manifesto and later as the first president of the Academy after the restoration of democracy (*Czech Academy of Sciences, n.d.*). This biographical arc shows how post-1968 repression and post-1989 rehabilitation belonged to the same historical line. In 1968, Wichterle represented the scientist-citizen whose inventive authority had become civic authority. Under normalisation, this combination was dangerous. The regime could use the prestige of his invention, but it could not accept the independence of his judgement. The end of the reform horizon thus involved a forced separation between science as technical production and science as public responsibility.

The social-scientific institutes were especially exposed because their work had been directly connected with the intellectual substance of the Prague Spring. Economists had analysed the failures of command planning; sociologists had restored empirical investigation of society; philosophers had developed concepts of humanised technological modernity; historians had begun to recover complexity in the interpretation of the recent past. These fields had made reform thinkable by supplying arguments, data, categories, and institutional authority. That is why normalisation struck them with particular force. The official Academy history's statement that party leadership took revenge for the role of groups from social-science institutes is not merely institutional memory; it is an interpretive key to the period (*Czech Academy of Sciences, n.d.*). The attack on social science was an attack on the right of society to know itself. If sociology could measure opinion, if economics could criticise planning, if history could revise official memory, and if philosophy could speak of human responsibility, then ideology no longer

possessed a monopoly over truth. Normalisation sought to restore that monopoly. It therefore targeted not only people, but the epistemic conditions of reform.

The Economic Institute's post-1968 fate belonged to this wider reversal. In the early and mid-1960s, the Institute had been one of the centres where Ota Šik and other economists developed proposals for reforming the command economy. Kosta identifies the Institute as a key location for criticism of existing economic practice during the crisis years of 1962–1964 (*Kosta, 1989*). By the time of the Prague Spring, that critique had become part of the reform programme's intellectual infrastructure. After 1968, however, the very capacity to criticise the planning system became politically suspect. Economic reform was no longer a legitimate experiment in socialist renewal; it was treated as a dangerous deviation from orthodox control. The re-centralisation of economic governance under normalisation did not merely reverse a policy. It delegitimised the expert communities that had argued for decentralisation, incentives, enterprise responsibility, and feedback. For the Academy, this meant that economic knowledge was pushed back from public reform into cautious, controlled, or marginalised forms. The end of the reform horizon was therefore also the end of economics as a privileged language of systemic transformation.

Sociology faced a similarly harsh reversal because its revival had been one of the clearest signs of the 1960s opening. The discipline had returned as an empirical way of studying socialist society, and its institutes and journals had begun to create a community capable of analysing public opinion, social structure, education, youth, and everyday life. A later symposium in *Sociologický časopis/Czech Sociological Review* described the Prague Spring as one of the most critical periods in 20th-century Czech and Slovak history and invited sociologists and political scientists to reflect on its biographical and academic significance (*Sociologický časopis/Czech Sociological Review, 2018*). This retrospective importance reflects how deeply the Prague Spring affected the social sciences. Under normalisation, empirical sociology's capacity to reveal social complexity became threatening. The discipline could survive only if disciplined politically, narrowed methodologically, or redirected toward safer themes. The same methods that had made society visible could now be controlled to prevent unwelcome visibility. This was one of the bitterest outcomes of the post-1968 period. A discipline revived in the name of social knowledge was forced to retreat under the pressure of political silence.

The humanities and historical institutes also entered a period of vulnerability. During the 1960s, historians, philosophers, literary scholars, linguists, art historians, and cultural researchers had begun to restore greater complexity after the schematic distortions of high Stalinism. This process had not produced full freedom, but it had weakened the monopoly of official interpretation. After 1968, that intellectual space contracted sharply. The institutional history of the Institute of History of the Czech Academy of Sciences notes that after the Prague Spring the institute was renamed, its research subjects were restructured, and leading experts such as František Šmahel and Jaroslav Mezník were affected by forced resignation or imprisonment (*Institute of History of the CAS, n.d.*). This shows that historical scholarship was not treated as politically harmless. To control memory, the regime had to control historians. The end of the reform horizon therefore involved the administrative rewriting of research priorities and the moral disciplining of those who insisted on scholarly independence. In the humanities, normalisation attacked not only public speech but the archives, editions, questions, and interpretive frameworks through which society remembered itself.

Publishing became one of the principal mechanisms through which normalisation closed the reform horizon. The 1960s had widened the range of publishable research, especially in social sciences and humanities, even if censorship and self-censorship had never disappeared. After 1968, publication again became a heavily policed route from thought to public circulation. Kopeček and Wciślik's study of Czech and Hungarian academic publishing under late state socialism emphasises the complex trajectory of scholarly texts through permissions, editorial boards, institutional gatekeeping, censorship, and professional strategies of survival (*Kopeček & Wciślik, 2021*). This framework is essential for understanding the Academy after 1968. To control publishing was to control disciplinary memory, scholarly reputation, and the public life of ideas. A manuscript could be delayed, rewritten, redirected, refused, or made safe through coded language. Scholars learned again to separate what could be thought, what could be said, and what could be printed. Normalisation therefore reintroduced a distance between intellectual life and authorised publication. The end of the reform horizon was not only the end of open speeches; it was the narrowing of the entire communicative infrastructure of scholarship.

International communication also became more restricted and politically charged. The Academy's 1960s dynamism had depended heavily on travel, conferences, correspondence, foreign journals, and cooperation with both Western and socialist scientific networks. Nisonen-Trnka's study of "science with a human face" argues that many ideas openly expressed in the late 1960s survived at least at the level of individual scientists and were later symbolised by Wichterle's election as Academy president after the Velvet Revolution (*Nisonen-Trnka, 2012*). The same study notes that after 1989 Czechoslovakia rapidly re-established academic contacts with Western scientific communities, which implies how sharply those hopes had been restricted under normalisation. The closing of international contact did not affect all disciplines equally. Natural sciences retained some channels because the state still needed technical competence and international recognition. Yet the spirit of open contact was broken. Travel again became a privilege conditioned by political trust. The scholar's passport became a measure of loyalty as much as professional need.

The Western dimension of scientific communication was particularly sensitive after 1968. During the reform decade, contacts with Western science had served as a sign of normal scientific life and as a source of methodological renewal. Nisonen-Trnka describes cooperation with the West as one of the great paradoxes of the Prague Spring of science because it was both necessary for modern research and politically suspect to the socialist authorities (*Nisonen-Trnka, 2008*). After the invasion, this paradox was resolved more harshly in favour of suspicion. Western contact could be read as evidence of ideological contamination, reformist sympathies, or insufficient loyalty to the socialist bloc. Yet complete isolation remained impossible because modern science required international information. The normalisation regime therefore sought selective internationalisation: useful contacts without political openness, technical exchange without civic freedom, and recognition without autonomy. This selective model could sustain some research, but it impoverished the Academy's broader intellectual culture. The reform horizon had promised that international science and domestic autonomy could reinforce each other. Normalisation separated them again.

The Academy's cooperation within socialist networks did not disappear after 1968, but its meaning changed. Before the invasion, socialist scientific cooperation had been one of several international circuits in which Czechoslovak researchers participated, alongside Western

contacts and global disciplinary organisations. After the invasion, the Soviet-led bloc framework became more explicitly a mechanism of political discipline. Cooperation with Soviet institutions, Comecon structures, and other socialist academies continued, and in some fields it remained scientifically useful. Nuclear physics, space research, technical standardisation, and certain applied sciences still depended on socialist infrastructures. Yet the moral atmosphere of cooperation had changed. For many Czechoslovak scientists, Soviet leadership could no longer be separated from military occupation. The language of fraternal cooperation became harder to accept without irony or bitterness. The Academy therefore continued to operate inside socialist networks, but under a burden of political memory. Scientific internationalism within the bloc now carried the shadow of coercion.

Personnel policy became the most direct instrument for ending the reform horizon. Normalisation did not need to close every institute or abolish every research programme. It could remove leaders, prevent promotions, deny travel, exclude scholars from publishing, and force resignations. Payne's account of the academic purge noted that the September 1969 changes marked the first step in a process leading to expulsion from the party and dismissal or enforced resignation from posts (*Payne, 1972*). Such measures were devastating because scientific communities depend on continuity of trust and leadership. A dismissed director leaves behind not only an empty office but a frightened institute. A scholar denied publication leaves behind unwritten books and discouraged pupils. A young researcher denied travel loses entry into international networks. Personnel policy thus became epistemic policy. By deciding who could work, lead, publish, or travel, normalisation decided what kinds of knowledge could continue to develop. The Academy's intellectual defeat was therefore implemented through career files, committees, evaluations, and loyalty tests.

The natural sciences survived normalisation better than some social sciences and humanities, but "survival" should not be mistaken for freedom. Laboratories continued, experiments were conducted, journals appeared, and some international cooperation remained possible. Chemistry, physics, mathematics, and biology still mattered to the state, especially where they had economic, medical, or technological value. Yet the public authority of natural scientists was curtailed. Figures such as Šorm and Wichterle demonstrated that even world-class scientific reputation could not protect a person who had become morally or politically inconvenient. The regime's strategy was to preserve useful research while neutralising independent authority. This produced a divided scientific life. Technical competence could continue under supervision, but civic autonomy was punished. Research teams could remain active, but their leaders learned caution. The normalisation order thus did not return the Academy to the high Stalinist destruction of science. It created instead a more selective and bureaucratic system of controlled professional activity.

For social sciences, the consequences were deeper because their knowledge touched the regime's self-description. Sociology, economics, history, philosophy, law, and political analysis could not easily be separated from questions of legitimacy, memory, participation, and social reality. Normalisation therefore reimposed ideological boundaries around precisely those disciplines that had been most intellectually alive during the Prague Spring. Reform economics was pushed away from systemic critique. Sociology was constrained in its empirical and public functions. Philosophy lost much of its reformist humanist horizon. Historical research was redirected toward safer or officially acceptable topics. The Academy's social-scientific institutes had previously functioned as laboratories of reformist reason; now they were required to become more cautious, more coded, or more silent. This transformation

did not eliminate all serious work, but it damaged the intellectual ecology in which serious work could openly flourish. The end of the reform horizon was therefore felt not only in dismissals but in the shrinking of questions. Some questions became impossible to ask in public. Others could be asked only in distorted language.

The Slovak dimension of the post-1968 closure was also complex. The Prague Spring had coincided with federalisation debates and with demands for a more balanced relationship between Czech and Slovak institutions. Relations between the Czechoslovak Academy of Sciences and the Slovak Academy of Sciences had already involved questions of autonomy, integration, and competence before 1970 (*Hudek, 2022*). After 1968, federalisation formally proceeded, but under conditions of political normalisation that limited the deeper democratic and institutional implications of reform. Slovak scientific institutions gained certain formal positions within the federal framework, yet the broader climate of party control narrowed the meaning of autonomy. This produced a paradox similar to the wider political settlement. Some institutional forms associated with reform survived, but their reformist content was emptied or tightly supervised. Scientific autonomy in the Slovak context therefore remained constrained by both national-institutional asymmetry and the restored ideological order. The end of the reform horizon did not eliminate Slovak scientific development, but it changed the political conditions under which that development could speak for itself.

The emotional and moral consequences for Academy communities were profound. Scientists and scholars who had experienced the 1960s as a period of widening possibilities now had to adjust to a culture of suspicion. Conversations became more careful, signatures more dangerous, contacts more exposed, and publications more coded. The trust that had supported seminars, interdisciplinary teams, and public expertise was weakened. Some colleagues adapted quickly; others resisted quietly; some were expelled, silenced, or pushed into marginal work; others entered inner emigration. Such differences could damage institute communities from within. Normalisation did not only divide reformers from conservatives; it divided friends, generations, and research groups. It created memories of betrayal and compromise that lasted for decades. Scientific life could continue in laboratories and archives, but the moral atmosphere had changed. The end of the reform horizon was therefore also the end of a certain belief that knowledge and public life could be reconciled inside socialism.

The post-1968 closure also changed the meaning of interdisciplinary work. During the 1960s, interdisciplinarity had been associated with the scientific and technological revolution, systems thinking, economic reform, empirical social science, and the attempt to imagine a humane modern socialism. After 1968, such synthesis became more risky when it crossed into social diagnosis or public theory. Technical interdisciplinarity could remain acceptable, especially in automation, engineering, chemistry, or applied natural science. But interdisciplinary reflection on society, technology, labour, and human development was more exposed to ideological correction. Richta's earlier work on *Civilization at the Crossroads* had expressed the reformist optimism of the decade by linking science, technology, education, and human development (*Richta, 1966/1969*). After normalisation, the same themes could be retained only if politically domesticated. The future-oriented imagination of the 1960s was narrowed. Interdisciplinarity lost much of its critical edge and became more carefully managed. The Academy's intellectual horizon contracted from open reformist synthesis to controlled thematic coordination.

One of the most significant effects of normalisation was the restoration of fear as an organising principle. The 1960s had not been free of fear, but fear had ceased to dominate every intellectual gesture. After 1968, fear returned in more bureaucratic and selective forms. Researchers did not always know which past statement, publication, signature, foreign contact, or institutional association would be used against them. This uncertainty encouraged self-censorship. The most effective control is not always direct prohibition; it is the creation of a climate in which people pre-emptively narrow themselves. Scholars avoided certain topics, softened arguments, removed names, or postponed projects. Editors anticipated objections. Institute leaders weighed whether protecting a colleague might endanger a whole department. Such habits shaped knowledge production deeply. Normalisation therefore changed the Academy not only through official decrees but through internalised caution. The reform horizon ended when scientists began again to ask, before asking a research question, whether the question was politically safe.

Yet the end of the reform horizon should not be described as total intellectual death. This would be historically inaccurate and unfair to those who continued serious work under constraint. Many laboratories remained productive. Some natural-scientific schools preserved high standards. Certain technical fields continued to develop, especially where they were politically safe or economically useful. Even in the humanities and social sciences, scholars found ways to preserve methods, teach informally, maintain private networks, or encode arguments within acceptable language. Kopeček and Wciślik's work on academic publishing under state socialism shows that scholars developed personal strategies of professional survival and communicated ideas through constrained institutional channels (*Kopeček & Wciślik, 2021*). The Academy after 1968 was therefore not simply destroyed. It was deformed, disciplined, and narrowed. The distinction matters. A deformed institution can still produce knowledge, but it produces it under damaged conditions. The tragedy of normalisation lies partly in this grey zone of survival without freedom.

The memory of 1968 became one of the hidden resources of later renewal. Nisonen-Trnka argues that ideas openly expressed in the late 1960s survived at least at the level of individual scientists and were symbolised after 1989 by Otto Wichterle's election as president of the Czechoslovak Academy of Sciences (*Nisonen-Trnka, 2012*). This is a powerful interpretation because it refuses to see the Prague Spring only as defeat. The reform horizon was politically closed, but its memory remained alive in people, methods, expectations, and moral judgements. Scientists remembered what freer travel had meant. Sociologists remembered the promise of empirical openness. Economists remembered the seriousness of reform debate. Historians remembered the brief return of complexity. Natural scientists remembered the possibility of speaking to the world as equal professionals. Such memories could be painful under normalisation, but they also preserved a standard by which the existing order could be judged. After 1989, the Academy's reconstruction drew partly on this interrupted memory.

The post-1968 period also changed the Academy's relationship to European science. In the 1960s, the Academy had increasingly imagined itself as part of a wider European and global scientific community, not merely as a socialist-bloc institution. Western contacts, conferences, publications, and international recognition had supported this self-understanding. Normalisation narrowed that European horizon. Czechoslovak science remained present in international forums, but the moral and institutional confidence of the reform decade was weakened. The Academy's European identity became more fragmented. Some institutes preserved international links; others were pushed into isolation or bloc-

oriented channels. Researchers learned to distinguish between official international cooperation and genuine intellectual exchange. This distinction had long-term consequences. It shaped how Czech and Slovak scientists later understood reintegration after 1989: not simply as a new beginning, but as the restoration of a connection that had been artificially narrowed. The end of the reform horizon therefore postponed, but did not erase, the Academy's European scientific orientation.

The closing of the reform horizon after 1968 also demonstrated the limits of reform socialism as a protective framework for science. Many Academy reformers did not seek capitalism or anti-communist revolution. They sought a more rational, humane, open, and scientifically grounded socialism. Yet the Soviet-led intervention and normalisation showed that the political system would not tolerate the degree of autonomy that such a project required. This was one of the central lessons of the Academy's experience. Modern science needs openness, criticism, uncertainty, peer judgement, and international communication. Authoritarian state socialism could use these qualities selectively, but it could not fully accept them when they threatened political monopoly. The Academy became the place where this contradiction was lived institutionally. Its reformist scientists tried to make knowledge serve social renewal; normalisation made knowledge serve political restoration. The defeat of the reform horizon therefore had philosophical significance. It showed that truth-seeking institutions cannot remain healthy when the political order reserves the right to decide truth in advance.

The broader social consequences were equally important. When academicians, researchers, editors, and institute directors were removed or silenced, society lost more than individual expertise. It lost public languages for understanding itself. Reform economics had offered a vocabulary for systemic inefficiency; sociology had offered tools for social self-observation; philosophy had offered concepts of human development; history had offered access to complex memory; natural sciences had offered models of international openness and creative invention. Normalisation weakened these languages. It returned public discourse to a narrower and more ritualised form. The Academy continued to produce knowledge, but much of its public critical function was suppressed. This impoverished society as well as science. A country without trustworthy institutions of knowledge becomes less able to diagnose its own problems. The end of the reform horizon after 1968 was therefore not only an Academy matter. It was a national intellectual loss.

At the same time, the Academy's experience after 1968 complicates simple moral judgement. Some people resisted and paid heavily. Some adapted in order to preserve laboratories, archives, students, or families. Some collaborated with normalisation out of conviction or ambition. Some occupied ambiguous positions between compromise and protection. Historical writing must acknowledge these grey zones because scientific institutions are sustained by human beings under pressure. The normalisation regime deliberately created conditions in which moral clarity was costly and compromise often appeared necessary for survival. This does not excuse opportunism, but it explains the damaged social texture of the Academy after 1968. The end of the reform horizon was not only imposed from outside. It entered everyday decisions, institutional habits, and personal relations. The Academy's later history cannot be understood without this moral sediment. It shaped careers, reputations, silences, and memories long after the immediate purges had ended.

By the early 1970s, the reformist Academy of the 1960s had been transformed. Its institutional shell remained, and many institutes continued to work, but the political meaning of the

institution had changed. The Academy was no longer a central space of cautious liberalisation, reformist expertise, and open-ended methodological renewal. It became a supervised research system in which professional activity had to be reconciled with restored ideological discipline. This transformation did not undo all achievements of the 1960s, but it altered their public meaning. Scientific schools survived, but their autonomy narrowed. International links continued, but under greater control. Publications appeared, but with stronger gatekeeping. Social-scientific work persisted, but its reformist edge was blunted. The Academy's 1960s dynamism was thus not destroyed in one stroke; it was politically reclassified, administratively constrained, and morally fractured. The end of the reform horizon was a process of converting a living reform institution into a managed institution of normalised science.

Thus, the end of the reform horizon after 1968 marked one of the most consequential ruptures in the history of the Czechoslovak Academy of Sciences. The Warsaw Pact invasion and the subsequent normalisation regime did not merely interrupt political liberalisation; they attacked the intellectual and institutional conditions that had made the Academy dynamic in the 1960s. Social-scientific institutes were punished for their role in reform; leading figures such as František Šorm and Otto Wichterle were marginalised; publishing, travel, personnel policy, and international cooperation were subjected to renewed political control; and whole fields of inquiry were redirected away from public critical significance. Yet the reform horizon was not erased completely. It survived in memories, methods, private networks, scientific schools, and later post-1989 rehabilitation. The tragedy of the Academy after 1968 lies in this combination of defeat and persistence. Normalisation closed the public space in which science had briefly imagined itself as a partner of social renewal, but it could not fully extinguish the standards of autonomy, truthfulness, and international openness that the 1960s had created. For this reason, the end of the reform horizon was also the beginning of a long memory: a memory of what the Academy had tried to become, why it was punished, and why its later reconstruction would return so insistently to the unfinished promise of 1968.

References

Astronomical Institute of the CAS. (n.d.). *Magion: The first Czechoslovak/Czech spacecraft*. Astronomical Institute of the Czech Academy of Sciences.

Bideleux, R., & Jeffries, I. (1998). *A history of Eastern Europe: Crisis and change*. London: Routledge.

Bortlová, H. (2012). "It was a call from the revolution": Czechoslovak-Cuban relations in the 1960s. *Oral History Forum d'histoire orale, 32*, 1–25.

Britannica. (2026). *Comecon*. Encyclopaedia Britannica.

Burgess, C., & Vis, B. (2016). *Interkosmos: The Eastern Bloc's early space program*. Cham: Springer. https://doi.org/10.1007/978-3-319-24163-0

Czech Academy of Sciences. (n.d.). *History overview*. CAS.

Encyclopaedia Britannica. (2026). *Prague Spring*. Encyclopaedia Britannica.

Franc, M. (2024). The showcase of Czechoslovak science: The Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Science. In *Organisationsformen der*

Erkenntnisgewinnung [Forms of organisation of knowledge acquisition] (pp. 349–363). Wiesbaden: Springer VS.

Franc, M., Dvořáčková, V., Bahenská, M., Boháček, J., Brádlerová, D., Caccamo, F., et al. (2024). *Dějiny Československé akademie věd II. 1963–1970* [History of the Czechoslovak Academy of Sciences II. 1963–1970]. Praha: Academia; Masarykův ústav a Archiv AV ČR.

Garfield, E. (1992). The restoration of František Šorm: Prolific Czech scientist obeyed his conscience and became a nonperson. *Current Contents, 15*, 51–56.

Ghodsee, K. (2019). The Czechoslovak generational experience of 1968. *East European Politics and Societies and Cultures, 33*(4), 783–805.

Golan, G. (1971). *The Czechoslovak reform movement: Communism in crisis, 1962–1968*. Cambridge University Press.

Hudek, A. (2022). The development of relations between the Slovak and the Czechoslovak Academy of Sciences until 1970. *Práce z dějin Akademie věd* [Studies in the history of the Academy of Sciences], *14*(2).

Illner, M. (2011). Sociology: Czech Republic. In *Sociopedia.isa*. International Sociological Association.

Institute for Sociology of the Slovak Academy of Sciences. (n.d.). *About us*. Institute for Sociology of the Slovak Academy of Sciences.

Institute of History of the CAS. (n.d.). *History of the Institute and specialisation*. Institute of History of the Czech Academy of Sciences.

Institute of Information Theory and Automation. (n.d.). *History*. Institute of Information Theory and Automation of the Czech Academy of Sciences.

Institute of Macromolecular Chemistry. (n.d.). *History of our conferences*. Institute of Macromolecular Chemistry of the Czech Academy of Sciences.

Institute of Molecular Genetics. (n.d.). *History of the Institute*. Institute of Molecular Genetics of the Czech Academy of Sciences.

Institute of Organic Chemistry and Biochemistry. (n.d.). *History*. Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *Brief history of the Institute*. J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences.

Joint Institute for Nuclear Research. (n.d.). *History*. Joint Institute for Nuclear Research.

Jordan, L. (1970). Scientific and technical relations among Eastern European communist countries. *Minerva, 8*, 376–395.

Kaser, M. (1967). *Comecon: Integration problems of the planned economies*. London: Oxford University Press.

Kopeček, M., & Wciślik, P. (Eds.). (2021). *Censorship in Czech and Hungarian academic publishing, 1969–89: Snakes and ladders*. London: Bloomsbury Academic.

Kosta, J. (1989). The Czechoslovak economic reform of the 1960s. In P. Gey, J. Kosta, & W. Quaisser (Eds.), *Crisis and reform in socialist economies* (pp. 181–198). Palgrave Macmillan.

Kybernetika. (2024). Editorial. *Kybernetika, 60*(6), 691–692.

Masaryk Institute and Archives of the CAS. (n.d.). *About the Institute*. Masaryk Institute and Archives of the Czech Academy of Sciences.

Michálek, J. (2022). True story of poly(2-hydroxyethyl methacrylate)-based contact lenses: How did it really happen? *Substantia, 6*(2), 81–93.

National Inventors Hall of Fame. (2026). *Otto Wichterle*. National Inventors Hall of Fame.

Nisonen-Trnka, R. (2008). The Prague Spring of Science: Czechoslovak natural scientists reconsidering the Iron Curtain. *Europe-Asia Studies, 60*(10), 1753–1774.

Nisonen-Trnka, R. (2012). *Science with a human face: The activity of the Czechoslovak scientists František Šorm and Otto Wichterle during the Cold War*. Tampere: Tampere University Press.

Nuclear Physics Institute of the CAS. (n.d.). *History*. Nuclear Physics Institute of the Czech Academy of Sciences.

Optica. (2023). *Otto Wichterle*. Optica biographies.

Payne, P. (1972). Four years of "normalisation": The academic purge in Czechoslovakia. *Index on Censorship, 1*(4), 32–46.

Polish History. (n.d.). *Two Thousand Words*. Polish History.

Richta, R. (1969). *Civilization at the crossroads: Social and human implications of the scientific and technological revolution*. White Plains, NY: International Arts and Sciences Press. Original work published 1966 as *Civilizace na rozcestí* [Civilisation at the crossroads].

Skovajsa, M. (2008). Placing contemporary Czech sociology in a historical perspective. *Polish Sociological Review, 164*(4), 443–466.

Sociologický časopis/Czech Sociological Review. (2018). Remembering Prague Spring 1968: A symposium. *Sociologický časopis/Czech Sociological Review, 54*(3), 402–470.

Sommer, V. (2017). Radovan Richta, theory of revolution and dilemmas of reform communism in Czechoslovakia. *Prague Papers on the History of International Relations, 2017*(2), 101–117.

Vaváková, B. (1983). Sociology in Czechoslovakia. *Current Sociology, 31*(2), 103–126.

Wichterle, O., & Lím, D. (1960). Hydrophilic gels for biological use. *Nature, 185*, 117–118.

Williams, K. (1997). *The Prague Spring and its aftermath: Czechoslovak politics, 1968–1970*. Cambridge University Press.

Williams, K. (1997). *The Prague Spring and its aftermath: Czechoslovak politics, 1968–1970*. Cambridge: Cambridge University Press.

Wright, W. W. (1965). *Notes on the international symposium on macromolecular chemistry, Prague, 30th August–4th September, 1965*. Royal Aircraft Establishment.

Chapter Five

Normalisation and Late Socialism: The Academy under Ideological Control, 1969–1989

The Restoration of Political Control after 1968

1. The Beginning of Normalisation in Academic Science

The beginning of normalisation in academic science was not a single administrative act, nor was it merely the mechanical consequence of the Warsaw Pact invasion of August 1968. It was a process of political restoration, institutional intimidation, symbolic reversal, and gradual administrative capture. In the broader Czechoslovak context, normalisation is usually associated with the period from 1969 to 1989, with April 1969 often taken as a decisive political threshold because it marked the replacement of Alexander Dubček by Gustáv Husák and the transition from post-invasion ambiguity to a more systematic restoration of party control (*Miklová, 2007*; *Stibbe & McDermott, 2022*). For academic science, however, the process began before all formal mechanisms were in place, because the very atmosphere of scientific life changed as soon as reformist language became politically dangerous. The institutes, journals, learned societies, university departments, research councils, and Academy collegia that had participated in the intellectual opening of the 1960s found themselves obliged to reinterpret their own recent history. What had been called renewal, democratisation, public responsibility, or methodological pluralism in the late 1960s was increasingly described by official discourse as ideological deviation, bourgeois liberalism, right-wing opportunism, or anti-socialist confusion. The Academy was therefore drawn into a process in which scientific argument became inseparable from political self-defence. This was the beginning of normalisation in academic science: the moment when the question “what is true?” was again subordinated to the question “what is politically permissible?”

In the scientific milieu, normalisation had a particularly severe meaning because the Academy was not only one institution among many. Since its creation in the early 1950s, the Czechoslovak Academy of Sciences had functioned as a centralised research system, a prestigious learned corporation, and an administrative framework for fundamental research. By the late 1960s, it had acquired considerable authority in the natural sciences, technical disciplines, humanities, and social sciences, and its position had been strengthened by the partial professionalisation and methodological opening described in The Czechoslovak Academy of Sciences in the 1960s: Reform, Internationalisation, and Scientific Dynamism. This meant that any political restoration after 1968 had to pass through the Academy, not simply around it. The party leadership could not fully control the intellectual life of the country while leaving the Academy as a semi-autonomous centre of research, publication, expertise, and international communication. The Academy’s institutes contained not only laboratories and archives, but also intellectual networks capable of interpreting society, law, culture, economics, history, philosophy, and the legitimacy of the political order. Its scientists had access to foreign literature, conferences, professional associations, and forms of prestige that

did not originate entirely in the domestic party hierarchy. For that reason, the normalisation of science was a strategic component of the normalisation of the whole state. The Academy was forced to become again what the regime required it to be: not an autonomous republic of research, but a disciplined component of socialist state power.

The chronology of this transition is important because it shows why normalisation in science cannot be reduced to a simple before-and-after contrast. The invasion of August 1968 produced shock, resistance, and disorientation, but it did not immediately produce a fully consolidated neo-Stalinist order. In the months after the invasion, the reformist leadership still formally existed, public resistance remained visible, and many institutions continued to speak in the language of the Prague Spring. The Moscow Protocol had already indicated the direction of reversal: party control over media was to be restored, reformist institutions and organisations were to be curbed, and "anti-socialist" tendencies were to be removed from positions of influence (*Stibbe & McDermott, 2022*). Yet these demands had to be translated into institutional practice, and that translation took time. Universities, cultural organisations, press organs, scientific institutes, and the Academy did not change overnight, because they contained people, habits, loyalties, documents, and professional norms that could not be instantly rewritten. In this transitional period, academic scientists lived in a suspended condition. They knew that the reformist horizon had been broken, but they did not yet know how far the reprisals would go or which forms of professional compromise might still save research work from destruction.

For many scientists, the first phase of normalisation was therefore experienced as a crisis of language. Official words such as consolidation, stabilisation, restoration of order, defence of socialism, or protection against right-wing opportunism disguised a campaign to reverse the intellectual consequences of the 1960s. The word normalisation itself was deeply ideological because it presented the suppression of reform as the return to normality. Yet the "normal" that was being restored was not a neutral order of institutional efficiency, but the pre-1968 structure of political obedience, censorship, party supervision, and ideological hierarchy. This is why later historiography often treats normalisation not simply as a period but also as a process, a series of acts through which institutions were induced or forced to disown their recent reformist experience (*Miklová, 2007*; *Stibbe & McDermott, 2022*). In academic life, this process had a special violence because it required scholars to repudiate not only political positions but also intellectual methods. A historian had to reinterpret recent history; a sociologist had to narrow the meaning of society; a philosopher had to discipline conceptual language; a legal scholar had to reconcile legality with political command; and even a natural scientist had to recognise that international cooperation, institutional autonomy, and professional evaluation could be politically reclassified. Normalisation thus entered science first through language, then through personnel, and finally through institutional structure. It began as a demand to speak differently, but it soon became a demand to think, publish, appoint, travel, and organise differently.

The Academy's vulnerability in 1969 was connected with the very success of its development during the preceding decade. The 1960s had seen a partial broadening of intellectual life, a renewal of sociology and philosophy, more ambitious historical research, stronger international contacts, and a greater willingness among some scientists to discuss the relation between expertise and public reform. The Prague Spring did not create this transformation from nothing; rather, it gave political visibility to processes that had already been developing inside universities, research institutes, expert commissions, journals, and interdisciplinary circles.

The Academy had become one of the places where these processes were institutionally concentrated. Scholars involved in economics, cybernetics, sociology, law, history, philosophy, literary studies, and area studies participated in debates about social reform, democratisation, planning, technological modernisation, and the place of Czechoslovakia in Europe. Even where scientists did not act as political reformers, their professional practice often presupposed a wider intellectual horizon than the party leadership could tolerate after 1968. The regime therefore viewed the Academy not only as a research institution but also as a reservoir of potentially dangerous memory. Its normalisation had to neutralise the living connection between scholarship and reformist political imagination.

At the centre of the Academy's political exposure stood its leadership. Before the consolidation of Husák's regime, the presidency and Presidium of the Academy still bore traces of the previous reformist period. The Academy had enjoyed a degree of authority and relative institutional self-confidence, and the president of the Academy was a public figure whose role could be compared with that of a minister in political significance (*Payne, 1972*). This made leadership change a crucial step in transforming the Academy from within. When František Šorm, a major chemist and a prominent figure in the Academy, was removed from the Central Committee of the Communist Party in September 1969 and then obliged to resign from the presidency of the Academy in October 1969, the symbolic meaning was unmistakable. The Academy could no longer rely on the prestige of its leading scholars to shield it from political restructuring. The removal of reform-associated or insufficiently compliant figures from leadership positions signalled that scientific authority would not protect institutional autonomy. The issue was no longer whether a scholar had produced internationally respected work, but whether his or her public and institutional position could be reconciled with the new political line. From this point onward, the Academy entered the normalisation period as an object of political engineering.

The appointment of new leadership was not simply a change of personnel; it was a change in the grammar of authority. Under normal academic circumstances, leadership legitimacy derives from scientific standing, institutional trust, administrative competence, and collegial recognition. Under normalisation, these criteria were subordinated to political reliability. The installation of figures acceptable to the party-state apparatus altered the relationship between the Academy's centre and its institutes. The Presidium ceased to be only an organ of scientific coordination and became an instrument through which the party's demands could be transmitted downward. This mattered because the Academy was a highly structured institution, with research centres, collegia, learned societies, committees, and administrative offices connected in a chain of planning and evaluation. Once the central organs were politically captured, the same pressure could move through the system in increasingly concrete forms: revision of research programmes, replacement of institute directors, vetting of staff, restriction of publications, control over international travel, and new rules for employment. The beginning of normalisation in academic science was therefore not merely ideological; it was organisational. It transformed the institutional channels through which science governed itself.

The legal consolidation of this transformation came with the 1970 amendment to the law on the Czechoslovak Academy of Sciences. The statutory measure of March 1970 altered the relationship between the Academy and the government by giving the state far greater influence over membership, leadership, and employment. Members of the Academy were to be appointed by the government, generally on the basis of elections by the General Assembly, but

this formulation made clear that the final authority did not rest with the academic corporation itself. The government also received the power to end membership when a member was deemed to have betrayed science, the state, peace, or socialism. The president of the Academy was to be appointed and dismissed by the president of the republic on the proposal of the government, while the Presidium was made responsible to the government. Scientific workers could be employed on fixed-term contracts of up to four years, with new contracts required for existing staff. This legal mechanism converted political normalisation into a durable administrative framework, because it made employment insecurity a structural condition of academic life (*Zákonné opatření č. 26/1970 Sb., 1970*).

This legal intervention was especially important because it changed the meaning of membership and employment in the Academy. Before normalisation, the Academy's membership could still be imagined as a recognition of scientific achievement, even within the ideological limits of state socialism. After the 1970 amendment, membership became more visibly dependent on political judgement. The possibility of losing membership for failure in relation to the state or socialism introduced an elastic criterion that could be applied to a wide range of conduct. It allowed political authorities to treat disagreement, silence, emigration, public criticism, or insufficient enthusiasm as failures of scholarly duty. The fixed-term contract system also weakened the security of researchers who had previously relied on institutional continuity. A scientist no longer had to be publicly tried or formally accused to become vulnerable; non-renewal, demotion, reassignment, or exclusion from projects could achieve the same result. This was one of the defining features of normalisation: repression was often administrative rather than theatrical. It preferred forms of pressure that looked like personnel management, institutional restructuring, or planning discipline.

The early normalisation of the Academy also relied on ritual acts of retrospective condemnation. Resolutions, statements, declarations, and institutional reports from 1968 and early 1969 were reviewed, withdrawn, or reinterpreted. The Academy's previous support for reformist leadership, opposition to the invasion, or defence of professional autonomy had to be erased from official memory. Such acts were not only symbolic. They forced institutions to participate in their own self-correction and created a written record of loyalty to the new order. In this respect, normalisation was not content with silencing dissent; it demanded the production of new documents that would replace the documents of reform. The archive of the institution was thus politically rewritten. The Academy had to demonstrate that it had understood the alleged errors of the Prague Spring and accepted the restored leading role of the Communist Party. For scientists, this meant that institutional memory became unstable. Yesterday's legitimate position could become today's evidence of deviation.

The effect of this transformation was particularly visible in the relationship between the Academy and the party apparatus. The party did not need to dissolve the Academy in order to control it. It needed to occupy the decisive points at which appointments, research plans, publication permissions, travel authorisations, and institutional evaluations were made. Contemporary accounts of the academic purge emphasised that direct party management tightened through the apparatus responsible for Academy sectors and through mechanisms that reintroduced practices associated with the 1950s (*Payne, 1972*). Such a return did not mean a simple repetition of early Stalinism; the normalisation regime was generally more bureaucratic, more cautious, and more administratively sophisticated. Yet the underlying principle was familiar: science was not to develop as a self-regulating field with its own internal standards, but as a politically supervised sphere whose legitimacy depended on service to

socialism. Scientific planning, ideological loyalty, and institutional discipline were once again brought into close connection. The Academy was expected to concentrate its creative capacities on state priorities, and the meaning of those priorities was defined politically. The party-state thus converted the language of scientific usefulness into a language of political obedience.

It is important not to imagine that this process was entirely uniform or equally destructive in every discipline from the first moment. Normalisation had different rhythms in different fields. In the humanities and social sciences, the ideological stakes were direct, because these disciplines interpreted society, culture, law, history, morality, and political legitimacy. Sociology, philosophy, history, economics, law, literary studies, and political science were therefore highly exposed to disciplinary redefinition. In the natural and technical sciences, the pressure was also real, but it often operated through different channels: travel restrictions, leadership changes, party vetting, research planning, access to equipment, and evaluation of international contacts. A chemist, physicist, biologist, or mathematician might be less likely to face ideological criticism of a formula or experiment, but he or she could still be punished for political conduct, reformist association, foreign ties, or refusal to conform. The beginning of normalisation thus produced a differentiated but comprehensive system of control. It did not abolish science; it reorganised the conditions under which science could be done.

The social sciences offer one of the clearest examples of how academic normalisation began. Czechoslovak sociology had only recently been rehabilitated after the dogmatic years of Stalinism, and in the 1960s it had become one of the intellectually dynamic fields associated with reformist thinking. Its concern with social structure, public opinion, modernisation, bureaucracy, work, inequality, and political participation made it valuable for reform, but dangerous for a regime that wished to restore ideological closure. Emanuel Pecka later described the normalisation period as one of the most tragic chapters in the development of Czechoslovak sociology, noting that leading positions were taken by regime-loyal actors and that personnel, thematic, and structural purges followed (*Pecka, 2011*). The Institute for Philosophy and Sociology of the Academy became one of the sites where this transformation was especially visible. What had been a field of methodological renewal was turned into a field of supervision, narrowed topics, and politically acceptable interpretation. Sociologists who had been connected with the renaissance of the discipline in the 1960s were dismissed, marginalised, silenced, or compelled to adapt. Sociology's fate showed that normalisation attacked not only individuals but also the epistemic possibility of studying society independently.

History was another field in which the beginning of normalisation had immediate consequences. The Prague Spring had opened space for reassessment of Stalinism, party history, national history, the wartime past, and the moral legitimacy of political power. Historical scholarship had begun to move away from schematic class narratives and toward more critical approaches to Czech and Czechoslovak experience. After 1968, however, historical interpretation became one of the crucial battlegrounds of legitimacy. The regime needed a history in which the Prague Spring could be described as a deviation, the invasion as fraternal assistance or unavoidable intervention, and the restoration of party rule as the rescue of socialism. The Academy's historical institutes were therefore particularly vulnerable. The disbanding or reorganisation of institutes, the dismissal of directors, and the replacement of research priorities were not incidental administrative changes; they were part of a struggle over

the meaning of recent history. To control historians was to control the narrative through which society would be taught to remember 1968.

Philosophy and theory were no less exposed. The 1960s had seen renewed interest in Marxist humanism, structuralism, phenomenology, cybernetics, philosophy of science, and interdisciplinary theory. These currents challenged the older dogmatic form of Marxism-Leninism not always by rejecting Marxism, but often by broadening it, historicising it, or connecting it with European philosophical debate. Such intellectual practices became suspect after 1968 because they implied that socialist thought could be plural, critical, and internally self-correcting. Normalisation demanded a narrower philosophical language, one in which Marxism-Leninism was again treated as a doctrine of political certainty rather than a field of open inquiry. The fate of philosophy within the Academy was therefore linked to the fate of reform communism itself. To accept philosophical pluralism would have meant accepting the possibility of political plurality within socialism. The regime could not allow that implication to survive. The beginning of normalisation in philosophy was therefore also the beginning of a campaign against conceptual ambiguity.

Economics occupied a special position because economic reform had been central to the Prague Spring. The debates around planning, markets, enterprise autonomy, productivity, and the relationship between economic rationality and political control had connected expert knowledge with political reform. Ota Šik and other reform economists symbolised a vision in which socialist planning could be transformed by market mechanisms, decentralisation, and more realistic analysis of economic life. After 1968, this connection between expertise and reform became politically dangerous. The normalisation of economic science required the repudiation of reformist economics as revisionist or right-wing. Yet the regime still needed economic expertise, especially as the limits of central planning became increasingly evident in the 1970s and 1980s. This produced a characteristic tension of late socialism: economists were needed as specialists, but feared as interpreters of systemic dysfunction. The beginning of normalisation thus pushed economic thought into a narrower corridor, where technical analysis could continue only if it avoided politically destabilising conclusions.

The natural sciences were not outside this process, even though their intellectual vulnerability was less direct. The Academy's strength in chemistry, physics, mathematics, biology, medicine, and technical research meant that political control had to be balanced against the state's need for scientific productivity. The regime could not simply destroy laboratories without damaging its own claims to modernisation, industrial development, and international scientific prestige. Nevertheless, the early purge reached even apparently non-political disciplines. Contemporary reports named changes affecting chemistry, biochemistry, physics, nuclear research, and macromolecular chemistry, including the loss of posts or leadership positions by prominent scientists (*Payne, 1972*). This showed that normalisation was not merely a campaign against "ideological" disciplines. A scientist's political biography, institutional position, public attitude in 1968, and foreign connections could matter as much as disciplinary content. Even in the natural sciences, professional excellence did not guarantee protection when political trust had been withdrawn.

The early normalisation period also changed the meaning of internationalisation. In the 1960s, international scientific contacts had been a sign of renewal, professional legitimacy, and participation in world science. After 1968, the same contacts could be interpreted as politically ambiguous or risky. Travel abroad, foreign fellowships, cooperation with Western institutions,

and access to foreign journals came under closer scrutiny. Scientists who were abroad at politically sensitive moments, or who chose not to return, could be treated as disloyal. Those who remained at home could find themselves cut off from books, periodicals, conferences, and correspondence. This mattered profoundly because modern science depends on circulation: of people, instruments, articles, data, methods, and criticism. To restrict circulation was to reduce not only political risk but also scientific vitality. The beginning of normalisation therefore imposed a new geography on Czechoslovak science, dividing safe and unsafe contacts, socialist and capitalist channels, official and unofficial communication, permitted cooperation and suspect connection.

The internal atmosphere of the Academy was transformed by uncertainty. Scientists did not always know which words, signatures, meetings, publications, or friendships would later be used against them. This uncertainty was politically useful because it encouraged self-censorship before formal censorship was applied. Researchers learned to read the signs: who had disappeared from a committee, whose name no longer appeared in a journal, which institute had acquired a new director, which topic was no longer advisable, which colleague had stopped receiving visitors, which foreign invitation had been refused. Normalisation thus worked through visible punishment and invisible anticipation. The fear of dismissal, demotion, publication ban, or travel restriction did not need to be constantly repeated; once established, it became part of professional routine. Many scientists began to distinguish between what they could think, what they could say privately, what they could write in a manuscript, and what could safely pass through an editorial or institutional filter. The beginning of normalisation was therefore also the beginning of a divided scholarly consciousness.

At the same time, the process should not be described only as external coercion imposed upon a passive academic body. Recent historiography has emphasised that normalisation was not simply enforced from above by central elites; it was also implemented through lower-level institutions, local authorities, professional bodies, and people who adapted, collaborated, competed, or used the new situation to advance their careers (*Stibbe & McDermott, 2022*). In the Academy this meant that normalisation had internal agents as well as external supervisors. Some individuals became active normalisers, writing denunciations, accepting posts vacated by dismissed colleagues, reshaping research programmes, and translating political expectations into institutional decisions. Others acted more cautiously, trying to preserve their institutes by sacrificing certain names, topics, or forms of autonomy. Still others withdrew into technical work, private scholarship, or silence. This complexity does not soften the coercive nature of the process, but it helps explain how it became effective. A political campaign becomes durable when it is internalised by the routines of the institution it targets.

The beginning of normalisation also redefined the relationship between generations. Senior scholars who had participated in the post-war construction of the Academy, the partial thaw, or the reforms of the 1960s often carried institutional memory that was politically inconvenient. Younger researchers entering academic life after 1969 encountered a different world, where caution was built into career formation from the beginning. The change was not only demographic but moral and epistemic. A younger scholar might learn that survival required avoiding certain questions, using coded language, choosing safer archival materials, or joining official structures. Those who refused such adaptation could find their careers blocked before they had fully begun. Those who accepted the rules could advance within a narrower and more controlled system. In this way, normalisation reproduced itself across generations. It did not

merely punish the reform generation; it educated the next generation into the habits of constraint.

One of the most damaging consequences of early normalisation was the weakening of trust within scientific communities. Science depends on disagreement, but it also depends on a basic confidence that disagreement will not be converted into political accusation. After 1969, this confidence became fragile. A critical comment at a seminar, a reference to Western literature, a refusal to sign a statement, or a cautious defence of a dismissed colleague could have professional consequences. The line between scholarly criticism and political denunciation became blurred. Collegiality was not destroyed everywhere, but it was placed under pressure by fear and ambition. Some networks of solidarity survived, especially in small circles, laboratories, archival communities, or private seminars. Yet the public institutional culture of the Academy changed. The normalisation of academic science was therefore also a normalisation of suspicion.

The role of publications was central from the beginning. Journals, edited volumes, conference proceedings, and monographs were among the main ways in which scientific communities made themselves visible. Control over publishing therefore meant control over intellectual legitimacy. Scholars dismissed from posts could be banned from publishing, and even those who remained employed faced restrictions on topics, terminology, citation, and interpretation (*Payne, 1972*). In the humanities and social sciences, the effect was especially severe because publication is not merely a report of research results but the very medium of scholarly argument. Manuscripts had to pass through institutional, editorial, and ideological filters. Some authors adapted by using Aesopian language, excessive technicality, historical displacement, or formally orthodox introductions that concealed more subtle arguments. Others withdrew from official publication and moved toward samizdat, private circulation, or silence. The beginning of normalisation thus altered not only what could be published but also how scholars wrote.

The administrative restructuring of institutes gave the regime another powerful instrument. An institute could be merged, renamed, divided, subordinated to a new leadership, or dissolved altogether. Such measures had the advantage of appearing organisational rather than punitive, even when their political meaning was obvious. The reorganisation of historical, sociological, philosophical, literary, and political research institutes demonstrated how normalisation could remove people by transforming the institutional container in which they worked. If an institute disappeared, its staff could be dismissed, selectively reappointed, transferred to marginal positions, or forced into unrelated work. This method was efficient because it avoided the need to justify every individual punishment separately. It also allowed the regime to reshape fields by changing their institutional architecture. The beginning of normalisation in the Academy was therefore not only a purge of people; it was a purge of institutional forms. Certain disciplines survived under names, structures, and leaderships that changed their intellectual meaning.

The Academy's learned societies were also affected, although often less dramatically than institutes. These societies represented another layer of professional association, linking specialists across institutions and maintaining disciplinary traditions. Because many of them were attached to the Academy, they formed part of the broader ecosystem of scholarly communication. Normalisation required that such societies remain within acceptable ideological boundaries. Their conferences, lectures, publications, and international contacts

could not be allowed to become alternative spaces of intellectual freedom. In some fields, societies continued to perform useful professional functions, preserving elements of continuity that later became important after 1989. Yet their public role was narrowed. The boundary between professional association and political risk became more carefully policed. The result was a restrained associational culture, in which professional life continued but with diminished autonomy.

It is necessary to recognise that the beginning of normalisation did not immediately eliminate all serious science. Laboratories continued to work, archives remained open to selected researchers, long-term projects continued, and some institutes preserved high standards despite political pressure. The regime needed scientific competence and could not afford to reduce the Academy to pure ideological theatre. This duality is essential for understanding late socialist science. The same system that dismissed, silenced, or marginalised many scholars also financed laboratories, maintained institutes, trained researchers, and produced internationally visible work in certain fields. The contradiction was not accidental; it was built into state socialism's ambition to be both ideologically controlled and scientifically modern. Normalisation therefore created a restricted but not empty scientific world. Its tragedy lay precisely in the fact that genuine research continued under conditions that damaged the moral and intellectual foundations of scholarly life.

The beginning of normalisation also had a spatial dimension. Prague, Brno, Bratislava, and other centres of research experienced the process through different institutional configurations and political networks. The Czech and Slovak parts of the federation had their own academies, universities, party structures, and patterns of professional life, even while the Czechoslovak Academy remained a central institution. Similar changes occurred in Slovakia, but the balance of repression, accommodation, national politics, and institutional opportunity could differ. This matters because normalisation was a Czechoslovak process but not a perfectly homogeneous one. In some settings, the removal of reformist figures opened positions for others who framed loyalty as professional responsibility or national advancement. In others, the impact was experienced more directly as intellectual suffocation. The Academy's normalisation must therefore be read both centrally and locally: as a policy of the party-state and as a series of concrete institutional transformations.

The public meaning of science changed in this context. During the 1960s, scientists could appear as experts contributing to reform, modernisation, and public debate. After 1969, the officially sanctioned scientist was expected to contribute to socialist construction without challenging the political monopoly that defined it. Expertise was welcome when it solved technical problems, improved production, supported planning, or legitimised policy. It became dangerous when it generated independent diagnosis, exposed systemic dysfunction, or created alternative publics. The boundary between useful expertise and political threat was therefore unstable. A research project could be safe in one formulation and risky in another. A statistical analysis, historical interpretation, sociological survey, or legal argument could become politically sensitive if it implied criticism of the system. Normalisation in academic science began by teaching researchers where these invisible boundaries lay.

The moral experience of this moment should not be simplified into a binary opposition between heroes and collaborators. There were courageous acts of refusal, but there were also many forms of partial adaptation, reluctant compromise, defensive silence, and professional survival. Some scholars signed statements they did not believe in order to protect students,

laboratories, families, or unfinished research. Others refused and paid with their careers. Some used official language while preserving fragments of serious scholarship beneath it. Others internalised the new order and became its agents. The beginning of normalisation produced moral situations in which every choice was constrained, but not every choice was equivalent. The historian of the Academy must therefore preserve both ethical clarity and institutional nuance. Normalisation was a system of coercion, but it worked through individual decisions made under unequal pressure.

By the early 1970s, the first stage of academic normalisation had largely established its main mechanisms. Leadership had been changed, legal subordination strengthened, employment made more insecure, reformist documents repudiated, key institutes reorganised, exposed disciplines disciplined, and the language of scientific life narrowed. The Academy did not cease to exist; on the contrary, it remained one of the central institutions of Czechoslovak research. But it entered the 1970s as a transformed institution. Its professional culture still contained memory, competence, and hidden continuity, yet its public autonomy had been broken. Its scientists could still produce knowledge, but the conditions of production were now shaped by political loyalty, administrative vulnerability, and ideological caution. The normalisation of academic science therefore marks one of the most important ruptures in the modern history of the Czech and Czechoslovak research system. It was not the destruction of science as such, but the forced redefinition of science as a politically managed activity.

Thus, the beginning of normalisation in academic science after 1968 was a decisive moment in which the Czechoslovak Academy of Sciences was drawn from the reformist and internationally open atmosphere of the 1960s into a restored system of party supervision, legal dependence, personnel insecurity, and ideological self-correction. The process began with the political defeat of the Prague Spring, but it became effective only when translated into the Academy's leadership, statutes, employment rules, institutes, collegia, publications, and everyday scholarly conduct. Its immediate purpose was to remove reformist influence and prevent the Academy from functioning as an autonomous centre of critical expertise. Its deeper consequence was to reshape the moral and intellectual ecology of science, teaching scholars to separate professional survival from public truth, and sometimes even from their own intellectual convictions. Yet the story is not one of simple collapse. Scientific competence, disciplinary memory, and limited professional continuity survived within the restricted system, and this survival later became one of the preconditions for renewal after 1989. The beginning of normalisation should therefore be understood as a profound institutional rupture, but also as the opening of a long late-socialist contradiction: the Academy remained indispensable to the state's claim to modernity, while the same state deprived it of the autonomy without which modern science could not fully breathe.

2. Purges, Dismissals, Demotions, and Institutional Restructuring

The purges that followed the defeat of the Prague Spring did not enter the Czechoslovak Academy of Sciences as a short episode of political revenge alone. They became an administrative method of remaking the scientific institution from within. The process had several visible layers: the removal of leaders, the dismissal or demotion of researchers, the reorganisation or dissolution of institutes, the introduction of politically conditional employment, and the redirection of research programmes towards officially approved priorities. In this sense, the purge was not merely punitive but constitutional in the practical

sense of the word: it reconstituted the Academy as an institution whose scientific authority had to pass through renewed party-state supervision. The existing scholarly hierarchy was broken precisely because it still carried traces of the 1960s: professional prestige, reformist associations, international contacts, and expectations of relative institutional autonomy. The normalisation authorities did not need to prove that each dismissed scholar had committed a legal offence. It was enough to identify him or her with the "crisis development" of 1968, with "right-wing opportunism", with insufficient loyalty, or with the broader intellectual atmosphere that the regime now wished to erase. The purge therefore functioned through categories that were elastic, political, and deliberately imprecise. A scholar could be vulnerable not because of a specific act but because of a biography, a signature, a publication, a position in an institute, a connection with reform circles, or even an unwillingness to perform ritual self-criticism. This gave the process its particular force: it could strike individuals, but it could also reshape whole disciplines without the need for a transparent judicial procedure. The Academy, as a central site of fundamental research and learned authority, became one of the places where this method was applied with special intensity (*Míšková, Barvíková, & Šmidák, 1998*; *Payne, 1972*).

The political purge of the Academy should be understood in connection with the purge of the Communist Party itself. In a state-socialist system, party membership was not simply a private political identity; it was often a condition of access to leadership, travel, publication, appointment, and institutional trust. When the post-1969 leadership began to screen party members, the effects inevitably moved beyond the party into the whole professional structure of science. Expulsion from the party could mean dismissal from an institute, removal from an editorial board, loss of a directorship, exclusion from teaching, or transfer to a lower and less visible post. Even a milder sanction, such as being struck off the party register, could carry professional consequences. The mechanism was especially effective because it blurred the boundary between political discipline and employment policy. The Academy's personnel files, party assessments, institute reports, and administrative decisions became parts of a single machinery of classification. The question was no longer simply whether a person was a competent physicist, historian, sociologist, chemist, or literary scholar. The question was whether that competence could be politically trusted. In this respect, normalisation did not only remove people from science; it changed the criteria by which a scientist was allowed to remain a scientist in an official institution. The Academy was compelled to adopt a principle that contradicted the inner logic of scholarly life: scientific merit could be overridden by political biography.

The 1970 amendment to the law on the Czechoslovak Academy of Sciences gave this personnel policy a sharper legal and institutional form. It placed membership of the Academy and the Academy's leadership more directly under governmental authority. Members were to be appointed by the government on the basis of election by the General Assembly, while the government could also terminate membership under broadly formulated conditions connected with science, the state, peace, socialism, or failure to fulfil membership duties. The president of the Academy became appointed and recalled by the president of the republic on the proposal of the government, and the Presidium was made responsible to the government. The law also introduced fixed-term employment arrangements for scientific workers, generally for a maximum of four years, and required existing employment relations to be adjusted through new contracts. In practice, this meant that dismissal no longer needed to appear as extraordinary repression. Non-renewal, failure to conclude a new contract, or reassignment could produce the same result under the language of administrative regularisation. The legal

amendment thus changed the Academy's employment culture from relative institutional continuity to conditional tenure under political supervision. The scholar's future became renewable, revocable, and dependent on assessments that mixed professional, ideological, and administrative criteria. This was one of the decisive steps by which the purge ceased to be an emergency measure and became a normalised principle of academic governance (*Zákonné opatření č. 26/1970 Sb., 1970*).

Dismissal was the most visible form of punishment, but it was not the only one and sometimes not even the most revealing. Demotion, transfer, loss of directorial authority, removal from teaching, exclusion from doctoral supervision, denial of travel, and restriction of publication could be equally destructive. The normalisation regime often preferred such graded sanctions because they allowed it to discipline the scientific community without creating too many public martyrs. A dismissed scholar disappeared from the official institution, but a demoted scholar remained inside it as a warning. This was especially true in cases where internationally respected scientists were allowed to continue in subordinate positions after being stripped of leadership. Their presence demonstrated that even high scientific distinction could be humbled by political power. It also allowed the regime to keep some of their expertise while depriving them of influence, students, institutional voice, and public authority. Such a method was particularly damaging because it transformed professional prestige into a politically controlled residue. The scholar could be used as a technician, adviser, or isolated researcher, but not as an independent intellectual figure. In this way, normalisation did not merely remove people from the Academy; it reorganised their visibility, dignity, and capacity to shape the future of their disciplines. The distinction between dismissal and demotion therefore matters because it shows the range of instruments through which the Academy's moral hierarchy was remade.

The restructuring of institutes was one of the most powerful instruments of the purge because it allowed political authorities to act at the level of institutional architecture rather than only at the level of individual cases. If an institute was dissolved, merged, renamed, or placed under new leadership, its staff could be screened again, its research programme rewritten, and its intellectual memory interrupted. A reorganisation could look technical on paper, but its political purpose was often evident to those affected by it. The politically exposed institutes were those that had played a visible role in the intellectual renewal of the 1960s or that dealt with history, society, law, philosophy, literature, international affairs, or political interpretation. These were fields in which the Prague Spring had not been merely a political event but also an epistemic opening. Reorganising such institutes meant changing the institutional conditions under which recent history, social reform, national culture, or Marxist theory could be studied. The purge thus worked through what might be called administrative epistemology: by changing the workplace, it changed the permissible forms of knowledge. It is therefore misleading to imagine institutional restructuring as a neutral response to inefficiency. In the context of normalisation, restructuring was often the institutional form of ideological correction. The Academy's map was redrawn so that dangerous concentrations of reformist thought could be dispersed, subordinated, or erased.

The fate of historical research illustrates this mechanism with particular clarity. The Academy's Institute of History had been vulnerable because historical scholarship was inseparable from the interpretation of 1968, Stalinism, party legitimacy, national tradition, and the meaning of Czechoslovak statehood. The publication of *Seven Days of Prague*, also known as *The Black Book*, became one of the symbolic points of conflict because it documented the days of the

invasion in a manner fundamentally incompatible with the later official narrative. In January 1970, the Institute of History was disbanded, and its director František Macek was dismissed; a new Institute of Czechoslovak and World History was established under different leadership. This was not simply an institutional replacement. It was a judgement on the legitimacy of historical memory. The regime could not allow a central Academy institute to preserve a documentary and interpretative line that contradicted the political reinterpretation of August 1968 as a crisis overcome through "consolidation". To control historical research was to control the vocabulary through which society would understand the invasion, reform, betrayal, loyalty, and sovereignty. The restructuring of historical institutes therefore belongs at the centre of the Academy's normalisation, not at its margins. It showed that scholarly memory itself had become an object of political administration (*Payne, 1972*).

Sociology and philosophy were no less exposed, and in some respects they were even more directly vulnerable. Sociology had only recently been rehabilitated after the dogmatic years in which it had been condemned as a bourgeois pseudo-science, and by the 1960s it had become one of the most dynamic fields of Czechoslovak intellectual life. It studied social structure, public opinion, work, modernisation, bureaucracy, everyday life, and forms of social change, all of which were dangerous themes under a regime that wished to restore ideological certainty. The Institute of Sociology and the Department for the Theory and Methodology of Science were wound up, while the Institute of Philosophy was reorganised into the Institute of Philosophy and Sociology. This restructuring removed institutional bases that had supported methodological renewal and replaced them with a more controllable configuration. Emanuel Pecka later characterised the normalisation of Czech sociology as one of the most tragic chapters in the discipline's history, emphasising the seizure of important positions by regime-loyal actors and the accompanying personnel, thematic, and structural purge (*Pecka, 2011*). This was a disciplinary catastrophe because sociology was not only deprived of people but also of the very possibility of independent social diagnosis. A society that cannot be studied freely cannot understand itself freely. The normalisation of sociology therefore became a precise indicator of the broader normalisation of scientific reason.

Philosophy was targeted because it had become one of the languages through which reform socialism had reflected on itself. During the 1960s, Czechoslovak philosophical life had included Marxist humanism, phenomenological influence, structuralist thought, philosophy of science, and broader European intellectual dialogue. These currents were not necessarily anti-socialist, but they made socialism intellectually plural, historically self-critical, and open to reinterpretation. That was enough to make them politically suspect after 1969. A normalised philosophical institute had to return to a narrower and more doctrinally reliable form of Marxism-Leninism. The purge in philosophy was therefore not merely a matter of removing particular authors or professors. It was a campaign against ambiguity, conceptual autonomy, and the right of theory to examine the ideological foundations of the regime. Philosophical language had to be disciplined because it could otherwise reveal contradictions in political language. The reorganisation of philosophy within the Academy therefore had a double meaning: it removed reformist scholars and reduced the conceptual space in which reformist thought could reappear. In late socialism, the danger of philosophy lay not in its distance from politics, but in its capacity to think politics too seriously.

The literary and cultural institutes also suffered from normalisation's desire to simplify the symbolic life of society. Literature, linguistics, art history, and cultural studies were not "technical" fields in which the regime could tolerate pluralism without danger. They dealt with

national tradition, modernism, memory, identity, dissent, public language, and the moral authority of culture. Payne's contemporary account noted drastic cuts in literary research, including the merging of at least three former institutions into a single Institute of Literature under new leadership (*Payne, 1972*). Such mergers were not merely rationalisations of staffing or budget. They altered the relationship between disciplines, schools, archives, editorial projects, and scholarly communities. They also made it easier to replace directors, control publication, and reduce the number of semi-autonomous intellectual spaces. The humanities were vulnerable precisely because their objects of study carried symbolic power. A regime that wished to define the meaning of socialism could not leave the interpretation of literature, history, philosophy, and culture to scholars who had participated in the intellectual emancipation of the 1960s. Institutional restructuring in cultural fields therefore served a broader ideological function: it narrowed the authorised memory of the nation.

The purge did not spare the natural sciences, even though its forms were sometimes different there. Chemistry, physics, nuclear research, biology, and macromolecular science were indispensable to the state's modernising ambitions, and the regime could not simply destroy their laboratories without harming its own industrial and technological claims. Yet the political vulnerability of natural scientists was real. Prominent figures lost directorial posts or institutional authority, including scientists associated with nuclear research, biological research, macromolecular chemistry, Oriental studies, and law. Payne's account names, among others, František Šorm, Otto Wichterle, Jaroslav Průšek, and Viktor Knapp as figures who lost leading positions or were affected by the purge (*Payne, 1972*). The case of the Institute of Macromolecular Chemistry was especially revealing because it showed that even a field apparently distant from ideological struggle could be subjected to severe party screening. The reported expulsion of a large majority of Communist Party members in that institute demonstrated that the purge was not limited to disciplines whose content was explicitly political. Scientific distinction, international recognition, and technical usefulness could mitigate repression in some cases, but they did not abolish political vulnerability. The natural sciences survived more strongly than many social sciences and humanities, yet they too were forced to accept the restored primacy of political trust over professional autonomy.

The removal of directors was especially important because the director of an Academy institute was not merely a manager. He or she controlled research agendas, appointments, internal evaluations, doctoral training, institutional contacts, publication priorities, and often the informal culture of the workplace. To replace a director was to change the moral climate of an institute. Contemporary estimates cited by Payne suggested that the proportion of new directors in the Academy reached a very high level, with the figure of 80 per cent mentioned in relation to the reorganisation of Academy leadership at the institute level (*Payne, 1972*). Even if such figures must be treated with caution, the scale of leadership change is historically significant. It shows that normalisation sought not only to punish a visible minority but to alter the command structure of scientific life. New directors were expected to guarantee political consolidation, supervise personnel screening, reshape research priorities, and prevent the return of the 1960s atmosphere. Some may have tried to protect their institutes within the limits allowed to them, while others became zealous agents of the purge. In both cases, the office of director became a channel through which party expectations were translated into daily academic administration. The restructuring of leadership was therefore one of the principal mechanisms by which the Academy was normalised from within.

The dismissal of whole staffs or selective reappointment after institutional dissolution had a particularly destructive effect. It allowed the authorities to avoid defending each personnel decision as an individual political case. If an institute disappeared, everyone's status could be made uncertain; only those who passed the new political and administrative filter would be re-employed. This method produced anxiety even among those who were not immediately dismissed. A scholar could not know whether he or she would be retained, transferred, demoted, or quietly excluded. The resulting uncertainty was not an accidental by-product but a technique of governance. Uncertainty encouraged caution, discouraged solidarity, and made many people more willing to distance themselves from compromised colleagues. It also helped to fragment scholarly communities that had formed during the reform period. Once an institute was dissolved and its people scattered, it became harder to preserve collective memory, shared projects, and intellectual courage. The purge therefore attacked not only employment but also the social fabric of research. Science depends on communities, and normalisation understood that communities could be broken administratively.

Demotion deserves separate attention because it expressed the normalisation regime's preference for controlled humiliation. In some cases, prominent scholars were not entirely removed from research but were deprived of posts, students, directorships, editorial influence, or public voice. They might continue as ordinary research workers in institutes they had previously led, or they might be transferred to posts below their qualifications. This produced a symbolic inversion of authority. A scientist whose work had brought international prestige could be made dependent on politically approved administrators with far weaker scholarly credentials. Such demotion had a pedagogical function for the whole institution: it taught younger researchers that professional distinction was not sovereign. It also allowed the regime to preserve useful expertise without allowing the expert to become a public intellectual. In an Academy that depended on highly specialised knowledge, this was a practical compromise for the authorities. They could not always afford to lose the scientist entirely, but they could reduce his or her institutional agency. Demotion therefore became one of the characteristic forms of late-socialist academic repression: less spectacular than imprisonment, but deeply corrosive for the ethos of science.

The purge also affected the reproduction of scientific generations. The restriction of "scientific aspirants", doctoral candidates, and young researchers changed the future composition of disciplines. When senior scholars were removed, their students lost supervisors, dissertation topics, archival guidance, laboratory access, and professional protection. Some research problems disappeared because the people qualified to supervise them were no longer institutionally authorised. In fields such as history, sociology, philosophy, economics, literary studies, and law, this was especially damaging because scholarly continuity depends heavily on schools, seminars, intellectual lineages, and interpretative traditions. A doctoral student entering the Academy after normalisation learned quickly which topics were safe, which names were dangerous, and which forms of language were required. The purge therefore operated not only retrospectively against the reform generation but prospectively against the formation of an independent younger generation. It did not simply remove mature scholars; it prevented certain forms of scholarship from being transmitted. This is one reason why the effects of normalisation lasted beyond the immediate years of 1969–1972. Institutional restructuring can be reversed more quickly than damaged intellectual succession.

The Academy's international contacts were also reorganised as part of the same political operation. The purge made foreign travel, collaboration, conferences, and correspondence

politically sensitive. A scholar who had strong Western connections could be seen as professionally valuable, but also as potentially unreliable. Payne's data indicate a sharp contraction and redirection of international scientific circulation during the consolidation period: visits to and from Western countries decreased, while contacts with socialist countries, especially the Soviet Union and the German Democratic Republic, became relatively more prominent (*Payne, 1972*). These changes mattered because international science is built on circulation of people, methods, instruments, journals, and criticism. Restricting travel did not only punish individuals; it reduced the Academy's capacity to remain integrated into world scholarship. The effect was uneven, because some natural and technical sciences continued to maintain important contacts, and some collaboration within socialist frameworks remained real. Yet the political selection of contacts changed the meaning of internationalisation. Travel abroad became a sign not merely of scientific merit but of political trust. The Academy's foreign relations were thus purified in the ideological sense and impoverished in the scholarly sense.

The personnel purge was closely connected with the redefinition of research planning. Once politically unreliable staff had been removed or subordinated, the next step was to direct the remaining research capacity towards programmes compatible with the regime's priorities. The language of usefulness became increasingly important. Research was to be socially necessary, ideologically sound, connected with national economic tasks, and aligned with the broader objectives of socialist construction. This did not mean that all research became propaganda. Many projects in physics, chemistry, mathematics, biology, medicine, engineering, archaeology, and other fields remained scientifically serious. Yet the conditions under which research agendas were justified changed. The freedom to pursue problems because they were intellectually fruitful narrowed, especially in the humanities and social sciences. Payne's account cites the language of Academy leadership in the early 1970s, where research was expected to serve defined social requirements and selected programmes (*Payne, 1972*). The purge therefore created the personnel precondition for a more directed and politically supervised research system. The removal of people and the reorientation of programmes were two sides of the same process.

It is important to see that institutional restructuring also served as a mechanism of historical erasure. The Academy of the 1960s had accumulated documents, projects, journals, research plans, and personal networks that testified to an unfinished reformist trajectory. Dissolving institutes, replacing directors, merging departments, and rewriting research programmes allowed the regime to interrupt this continuity. The new structures did not merely administer the old work in a new way; they often declared, implicitly or explicitly, that the old work had been misguided. The change of names and institutional boundaries could therefore carry a political message. An institute associated with critical history, independent sociology, reform economics, or theoretical innovation might disappear, while a new body with a safer title and leadership emerged. This created an official break in institutional memory. The Academy was made to appear as though it had corrected itself after a period of deviation. For those who had lived through the 1960s, however, the reorganisation was experienced as a loss of intellectual time. Years of institutional development were compressed into the political category of error.

The purge's effect on everyday working life was profound. Researchers had to navigate not only formal decisions but also rumours, private warnings, corridor conversations, and signals from directors or party organisations. A name removed from a committee could indicate that a field was becoming dangerous. A cancelled conference could mean that a topic was no longer safe.

A manuscript delayed by an editor could suggest that the author's political status had changed. People learned to protect themselves through silence, formulaic language, avoidance of controversial references, and withdrawal into less exposed tasks. In laboratories, this might mean concentrating on technical work and leaving public interpretation to others. In humanities and social sciences, it often meant choosing historical distance, textual detail, or formally orthodox terminology as protective devices. The purge therefore produced a new style of academic conduct. It trained people not only to obey but to anticipate what obedience would require. Such anticipation was one of the most effective forms of control because it moved censorship inside the scholar's own habits.

The social consequences inside institutes were equally severe. Trust became fragile because the purge depended partly on assessments, denunciations, recommendations, and political reports. Colleagues could not always know who had spoken against whom, who had saved whom, or who had accepted a post made vacant by another person's dismissal. The normalisation regime did not need to make every scholar into an informer in order to damage collegial relations. It was enough to create conditions in which professional advancement, institutional survival, and political loyalty became entangled. Some individuals used the purge opportunistically, settling old disputes or accelerating their careers. Others tried to protect colleagues quietly, sometimes by recommending less visible posts or by avoiding harsher formulations in reports. Many simply tried to survive. The result was a complex moral landscape, not a simple division between victims and perpetrators. Yet the broader effect was clear: the Academy's collegial culture was weakened because scientific disagreement could now be transformed into political danger. The normalisation purge inserted suspicion into the everyday sociology of scholarship.

The impact of the purge varied by discipline, but the pattern of vulnerability is clear. The humanities and social sciences were struck most directly because they interpreted the human world and therefore touched the ideological core of the regime. History, philosophy, sociology, law, economics, literary studies, political studies, and international relations were exposed because they could generate alternative accounts of society and power. The natural sciences were more protected by their practical usefulness, but they were not immune. Political screening, leadership replacement, travel restrictions, and party sanctions affected them as well. In some cases, natural scientists could retreat into specialised research more easily than historians or sociologists could retreat into "neutral" scholarship. Yet even this retreat had a cost. It narrowed public responsibility and encouraged the idea that scientific excellence could survive by avoiding moral and political questions. Normalisation therefore produced different forms of damage in different fields: direct ideological discipline in some, depoliticised self-isolation in others, and administrative dependence across almost all.

The purge also changed the relationship between the Academy and universities. Although they were separate institutional spheres, they shared scholars, students, journals, professional societies, conferences, and intellectual lineages. Purges in universities affected the Academy because dismissed lecturers might lose research connections, while purges in Academy institutes affected doctoral training and specialised teaching. The Faculty of Philosophy at Charles University, for example, underwent severe restructuring during the same period, with departments abolished or merged, staff removed from teaching, and the curriculum narrowed, according to contemporary accounts (*Payne, 1972*). This wider academic purge meant that the Academy was not an isolated victim but part of a broader remaking of Czechoslovak intellectual life. The regime sought to prevent alternative centres of scholarly authority from

reinforcing one another. If universities, Academy institutes, journals, and cultural organisations had remained mutually supportive, reformist intellectual life might have survived more strongly. Normalisation therefore attacked the interinstitutional network. The Academy's restructuring must consequently be read alongside the simultaneous transformation of higher education.

The economic and administrative dimensions of the purge should not be overlooked. Budgetary constraints, changes in research capacity, and the redirection of resources helped reinforce personnel discipline. Payne's data suggest that the early consolidation years saw a reduction in Academy expenditure and a restriction of research activity, although the available figures are incomplete and require cautious interpretation (*Payne, 1972*). Budget cuts or reallocations could be justified as planning decisions, but they also strengthened the authorities' ability to close institutes, limit doctoral intake, reduce foreign travel, and privilege politically approved programmes. Material dependence is always a form of institutional vulnerability. Laboratories needed instruments, archives needed staff, journals needed printing approval, and researchers needed travel funds. Political control over resources therefore made ideological control more effective. The purge was not only a matter of police-like exclusion; it was also a reallocation of the means of scientific production. In this respect, late-socialist normalisation operated through the ordinary material conditions of research.

The question of legality was central to the normalisation purge. The regime wished to avoid the appearance of arbitrary violence, especially after the international shock caused by the invasion. Therefore, many measures were translated into decrees, amendments, contracts, institutional decisions, and personnel procedures. This legal-administrative form gave repression a bureaucratic surface. A dismissal could appear as failure to conclude a new employment contract; a purge could appear as institutional restructuring; a political exclusion could appear as an evaluation of suitability. The amendment to the Academy law was especially important because it legally subordinated membership, leadership, and employment to government-defined authority and fixed-term arrangements. The result was a peculiar combination of law and arbitrariness. The procedure could be formal, but the criteria were political. This made resistance difficult because the victim had to challenge not only an individual decision but an entire administrative framework designed to make political control look lawful. Normalisation thus demonstrated how legality can be used not to protect autonomy but to discipline it.

The purge's institutional effects were not exhausted by the early 1970s. Once the Academy had been restructured, the new order produced a lasting culture of caution. Directors appointed under normalisation continued to shape hiring, promotion, doctoral supervision, editorial policy, and international contact for many years. Researchers who entered the Academy after the purge often knew the consequences of 1968 only through absence: absent names, missing books, forbidden topics, discontinued projects, and silent senior colleagues. This absence became part of the hidden curriculum of late-socialist science. The institution taught young scholars what not to ask before it taught them what to research. At the same time, the Academy retained pockets of competence, methodological seriousness, and professional memory. This paradox is essential. The purge damaged autonomy but did not eliminate knowledge. It created a controlled scientific institution in which serious research could still occur, but under conditions that distorted its public meaning and moral foundations. The long-term tragedy of normalisation lay precisely in this coexistence of competence and constraint.

The human cost of the purge extended beyond employment statistics. Dismissed scholars lost not only salaries but also archives, laboratories, colleagues, students, public voice, and professional identity. Some emigrated; others entered manual labour, translation, technical work, private scholarship, or unofficial intellectual circles. Some were able to publish abroad, in samizdat, or under other names; others disappeared almost entirely from official scholarly life. Families were affected as well, because political stigma could influence children's educational opportunities and social prospects. Those who remained inside the Academy also paid a price. They worked in an environment where loyalty was performed, friendships were tested, and intellectual honesty was often negotiated under pressure. The purge therefore cannot be measured only by counting dismissals or reorganised institutes. Its deepest effect was the fragmentation of scholarly lives. It created careers that continued officially but were inwardly broken, and careers that were officially destroyed but intellectually continued outside institutions.

At the same time, the purge did not produce a perfectly obedient Academy. Some scholars preserved standards quietly, protected archives, maintained private reading circles, trained students cautiously, or kept international contacts alive through limited channels. Others used highly specialised research as a refuge from ideological pressure. In some natural and technical sciences, internationally meaningful work continued despite the political climate. In parts of the humanities, hidden continuities survived through memory, private notes, unofficial seminars, and delayed publication. This does not reduce the severity of the purge; rather, it shows that institutions are never completely identical with the regimes that control them. The Academy under normalisation was both disciplined and internally uneven. Its public structures were subordinated, but its intellectual life did not become wholly empty. This tension later mattered after 1989, when some suppressed names, interrupted projects, and marginalised traditions could be recovered. The purge therefore produced loss, but it also created a concealed history of endurance.

The restructuring of the Academy after 1969 should therefore be seen as one of the decisive episodes in the history of Czech and Czechoslovak science. It marked the end of the reformist institutional trajectory opened in the 1960s and the beginning of a late-socialist research order built on conditional autonomy. The Academy was not abolished because the state needed science; it was not left free because the state feared critical expertise. The solution was a controlled Academy: useful, funded, organised, internationally present in selected ways, but politically disciplined. Purges, dismissals, demotions, and restructuring were the means by which this solution was imposed. The normalisation authorities did not merely ask scientists to stop opposing the regime. They changed the institutional conditions under which scientific authority could exist. Leadership, contracts, institutes, research plans, publications, and travel became instruments of political selection. The Academy survived, but it survived in a transformed moral and administrative order.

Thus, the purges, dismissals, demotions, and institutional restructuring of the Czechoslovak Academy of Sciences after 1968 represented far more than a campaign against individual reformist scholars. They were the central mechanism through which the Academy was converted from a partially autonomous and intellectually dynamic institution into a politically supervised component of late-socialist governance. The purge removed or marginalised people, but it also reshaped institutes, disciplines, generational succession, research programmes, international contacts, and everyday habits of scholarly communication. Its greatest force lay in the combination of open punishment and bureaucratic normality:

dismissal could be presented as reorganisation, demotion as personnel adjustment, censorship as editorial responsibility, and political exclusion as legal employment procedure. Yet the Academy was not reduced to a lifeless ideological shell. Scientific competence, disciplinary memory, and some forms of professional solidarity survived beneath the imposed order, especially where scholars found ways to continue research without public autonomy. The normalisation purge therefore created one of the central contradictions of late-socialist Czech science: the state preserved the Academy because it needed knowledge, but it damaged the very autonomy through which knowledge becomes intellectually and morally authoritative.

3. The Limitation of Reformist and Critical Intellectual Currents

The limitation of reformist and critical intellectual currents after 1968 was the most subtle and, in many respects, the most durable consequence of normalisation in academic science. Purges, dismissals, demotions, and institutional restructuring changed the visible personnel map of the Czechoslovak Academy of Sciences, but the restriction of intellectual currents changed the inner horizon of permissible thought. The aim was not only to remove people who had supported the Prague Spring or resisted the invasion. It was also to prevent the return of the intellectual conditions that had made the Prague Spring possible. The authorities understood, correctly, that reformist socialism had not emerged from political declarations alone; it had grown within journals, seminars, research institutes, expert commissions, philosophical circles, sociological surveys, economic debates, historical reinterpretations, and interdisciplinary discussions. Normalisation therefore had to discipline not only persons but also concepts. Words such as reform, democratisation, self-management, humanism, pluralism, autonomy, public opinion, civil society, structural change, and critique became dangerous because they preserved the language of unfinished alternatives. In academic science, the defeat of reform was therefore translated into a narrowing of research questions, theoretical vocabularies, interpretative frameworks, and acceptable historical memory. The Academy was not asked simply to become loyal; it was required to forget, or at least publicly disown, the intellectual energy that had made it one of the major spaces of the 1960s renewal (*Míšková, Barvíková, & Šmidák, 1998*; *Oates-Indruchová, 2008*).

The central ideological instrument of this narrowing was the official reinterpretation of the Prague Spring as a "crisis development" in the party and society. The Communist Party's document *Poučení z krizového vývoje ve straně a společnosti po XIII. sjezdu KSČ* established a dogmatic account of the reform period and the Warsaw Pact intervention, turning the political and intellectual opening of the 1960s into a cautionary tale about revisionism, right-wing opportunism, and loss of party control. The document was approved by the Central Committee in December 1970 and became a canonical statement of normalisation ideology (*Dickins, 2015*; *Fialová, 2014*). For academic science, its significance lay not only in the political judgement it offered, but also in the interpretative discipline it imposed. It defined what could be said about 1968, which errors had to be confessed, which forms of reformist thinking were unacceptable, and which historical meaning should be assigned to the restoration of party authority. Once such a document became the official frame, research in history, sociology, economics, philosophy, political theory, law, literature, and cultural studies could no longer treat the Prague Spring as an open historical problem. It had to be treated as a deviation already explained by the party. The Academy's intellectual life was thus subjected to a pre-written

interpretation of its own recent past. Critical inquiry did not disappear completely, but it could no longer present itself openly as critical inquiry into the foundations of the existing order.

This limitation was particularly severe because the reformist currents of the 1960s had not been marginal curiosities. They had shaped the intellectual atmosphere of several Academy institutes and had influenced the relationship between scholarship, expertise, and public reform. The Czechoslovak Academy of Sciences in the 1960s had become one of the spaces in which Marxism could be reinterpreted, social science could be modernised, history could be written less schematically, economic planning could be questioned, and culture could be discussed with greater methodological openness. The Prague Spring gave political visibility to these currents, but it did not invent them. They had been developing through professional networks, editorial projects, research seminars, foreign contacts, and the slow recovery of disciplines damaged by Stalinism. The normalisation regime therefore faced a problem: if it removed only the most visible reformist figures while leaving the intellectual infrastructure intact, reformist thinking might later reappear. For that reason, limitation had to operate at several levels at once. It had to affect institutions, publications, curricula, conferences, research plans, professional associations, doctoral training, and the unwritten rules of scholarly speech. The result was not always direct prohibition. More often it was a dense system of discouragement, supervision, correction, and anticipation, through which scholars learned which ideas could survive only in coded, delayed, or private forms.

The first field to feel this pressure in a systematic way was sociology. Czechoslovak sociology had been revived in the 1960s after earlier ideological condemnation, and its revival had been inseparable from the broader reform atmosphere. It offered tools for analysing social stratification, public opinion, bureaucracy, labour, modernisation, youth, everyday life, and the relationship between state and society. Such tools could not be ideologically innocent in a system that claimed to know society through party doctrine. The normalisation of sociology therefore meant more than the dismissal of particular sociologists. It meant restricting the possibility of empirically and theoretically examining society as something more complex than official categories allowed. Emanuel Pecka described the normalisation period as one of the most tragic chapters in the development of Czechoslovak sociology, emphasising that the discipline's newly rebuilt institutional structure was seized by regime-loyal cadres and subjected to personnel, thematic, and organisational purge (*Pecka, 2011*). The damage was epistemic as well as institutional. Sociology survived, but its critical capacity was narrowed, its public diagnostic function was curtailed, and its connection with reformist social imagination was broken. It could still collect data, produce analyses, and serve administrative needs, but it could no longer openly ask whether the social order itself required political transformation.

The limitation of sociology also shows how normalisation distinguished between expertise and critique. The regime did not reject social knowledge altogether. On the contrary, late socialism increasingly needed expertise in administration, planning, demography, work organisation, public policy, education, health, environment, and social management. Vítězslav Sommer has shown that social scientific expertise in Czechoslovakia continued to develop within the socialist state from the mid-1950s to the 1980s, and that the relationship between experts and governance remained complex rather than simply repressive (*Sommer, 2016*). Yet this did not mean that critical social science was free. The state welcomed expertise when it helped manage society, but resisted it when it exposed the systemic causes of social contradiction. This distinction became central to the Academy after normalisation. A sociologist could contribute to planning or applied policy, but the same sociologist risked danger if the analysis

implied that official ideology misrepresented reality. The acceptable expert was useful, disciplined, and administratively legible. The unacceptable intellectual was one who turned expertise into critique. Normalisation thus did not abolish social science; it converted it into a supervised form of knowledge production whose critical edge had to be blunted or hidden.

Philosophy was restricted in a different but equally fundamental way. The philosophical renewal of the 1960s had involved Marxist humanism, phenomenology, structuralism, philosophy of science, cybernetics, and broader dialogue with European thought. These approaches challenged the dogmatic certainty of Stalinist Marxism-Leninism, not always by rejecting Marxism, but by making it historically reflexive, anthropologically richer, and methodologically open. Normalisation treated such openness as dangerous because it suggested that socialism might contain unresolved contradictions and that Marxist theory might require internal criticism. The restored ideological order required philosophy to perform a legitimising rather than interrogative function. Philosophy was expected to clarify the correctness of the party line, not to examine the philosophical foundations of political monopoly. This narrowed the permitted relationship between theory and power. Concepts could still be elaborated, but their horizon was constrained by doctrinal loyalty. The result was a field in which serious intellectual work did not vanish entirely, but where conceptual innovation had to be cautious, displaced, or hidden beneath orthodox terminology. In this sense, the limitation of philosophical currents was a campaign against the autonomy of thinking itself.

The restriction of historical research was equally central to normalisation because the regime's legitimacy depended on control over recent memory. The Prague Spring, Stalinism, the Communist takeover of 1948, wartime resistance, national tradition, relations with the Soviet Union, and the meaning of Czechoslovak statehood were all politically charged topics. A historian who studied these questions critically could undermine the official narrative not by direct political agitation, but by reconstructing facts, contexts, continuities, and alternatives. This explains why the Institute of History of the Czechoslovak Academy of Sciences became a major target after publishing *Sedm pražských dnů*, known in English as *Seven Days in Prague* or *The Black Book*. The institute's disbanding in January 1970 and the replacement of its leadership represented not merely an administrative decision but a struggle over the right to document August 1968 (*Payne, 1972*). The Soviet and Czechoslovak authorities could not tolerate a central scholarly institution preserving an account of the invasion that contradicted the emerging normalisation myth. Historical truth was therefore subordinated to political pedagogy. The limitation of historical scholarship meant that the recent past could no longer be treated as a field of open inquiry; it became a field of ideological containment.

The most insidious consequence of this restriction was the production of silence around certain problems. Normalisation did not always require scholars to write falsehoods; sometimes it was enough to prevent them from asking particular questions. In historical studies, this meant avoiding themes such as the moral responsibility of the party leadership, the legality of the invasion, the nature of Soviet domination, the experiences of citizens during August 1968, and the intellectual origins of reform communism. In sociology, it meant avoiding independent analysis of public opinion, political participation, stratification, alienation, bureaucracy, and the informal economy when such analysis exceeded safe administrative limits. In philosophy, it meant avoiding conceptual exploration of freedom, alienation, democracy, subjectivity, and pluralism in ways that might recall the 1960s. In economics, it meant avoiding direct systemic critique of central planning and the political constraints on

reform. In law, it meant limiting discussion of legality where legality conflicted with party command. Such silences accumulated over time. They created not only missing books and absent articles, but also missing generations of argument.

Economics occupied a particularly delicate place within this process because the economic reform debates of the 1960s had been closely tied to the Prague Spring. Reform economists had tried to rethink the relationship between planning, enterprise autonomy, market mechanisms, productivity, and political decision-making. Their work implied that socialist economy required structural reform, not merely better discipline. After 1968, this implication became politically unacceptable. Economic science could continue as technical expertise, statistical analysis, sectoral planning, or administrative consultation, but reform economics as a critical intellectual current had to be suppressed. The regime needed economists, especially as the contradictions of late-socialist economic management became more visible, but it feared economic theory when it suggested that the system's difficulties were rooted in political monopoly and administrative rigidity. This produced a characteristic late-socialist compromise. Economists could describe problems in cautious terms, propose limited improvements, or work on technical instruments, but they could not openly revive the reformist horizon of the 1960s. The limitation of economic thought therefore reflected a broader pattern: expertise was tolerated when it served governance, but critique was restricted when it threatened the legitimacy of governance.

Legal scholarship also had to be brought back within the boundaries of political reliability. The Prague Spring had revived questions about legality, constitutionalism, federation, civic rights, public accountability, and the limits of arbitrary power. These themes were especially dangerous after the invasion because they could expose the contradiction between socialist legality and political coercion. The normalisation order required legal theory to stabilise rather than interrogate the relationship between law and power. Scholars could discuss codification, administration, labour law, civil law, and other technical areas, but the deeper question of whether legality could restrain the party-state became politically unsafe. This had consequences for the Academy because legal research was part of the broader intellectual infrastructure of state socialism. It could either help rationalise power or critically examine it. Normalisation selected the first function and disciplined the second. The result was not the complete disappearance of legal scholarship, but the weakening of its capacity to function as an independent language of public reason.

Literary studies, linguistics, art history, and cultural theory were restricted because culture had been one of the principal languages of reform. The 1960s had produced a vigorous cultural sphere in which literature, theatre, film, criticism, and historical reflection interacted with political debate. Scholars of literature and culture were therefore not merely specialists in texts; they were custodians of symbolic memory and interpreters of national self-understanding. Normalisation narrowed their work by excluding or marginalising authors, themes, journals, interpretative schools, and forms of critical language associated with the reform period. Modernism, existentialism, structuralism, avant-garde traditions, independent criticism, and politically uncomfortable cultural histories could all become suspect depending on context. The humanities were not attacked because they were weak; they were attacked because they shaped the language through which society could imagine itself differently. In this sense, the limitation of cultural scholarship was inseparable from censorship in publishing, theatre, film, and public criticism. Academic interpretation had to be aligned with

the restored cultural hierarchy. The Academy's humanistic disciplines were therefore required to participate in a broader disciplining of national culture.

Academic publishing became one of the most important instruments of this limitation. Research that could not be published officially lost institutional visibility, influence on students, and recognition in professional evaluation. Libora Oates-Indruchová's work on scholarly publishing under state socialism has shown that censorship in academic writing involved not only external bans but also complex systems of permissions, editorial negotiations, institutional filters, and authorial strategies (*Oates-Indruchová, 2020*). The story was partly one of mechanisms designed to keep ideology unchallenged, and partly one of scholars trying to circumvent those mechanisms. This is especially important for understanding the Academy, because academic publishing was one of the main routes through which institutes communicated their results. A censored book or delayed manuscript was not merely a personal misfortune; it was a blockage in the circulation of thought. Editors, reviewers, publishing boards, institute directors, and party authorities could all participate in deciding whether a work was safe. The limitation of reformist currents therefore operated not only before research began, but also at the moment when research tried to become public knowledge.

Self-censorship became a structural feature of scholarly life. It is important to understand that self-censorship was not simply cowardice or intellectual laziness. It was often a rational response to a system in which the consequences of direct expression could include dismissal, publication ban, travel restriction, loss of students, or harm to family members. Scholars learned to write in layers. They used orthodox introductions to protect more nuanced arguments, moved sensitive problems into distant historical periods, adopted technical vocabulary to reduce political exposure, or relied on ambiguity that informed readers could understand. Oates-Indruchová has analysed the role of Aesopian language and self-censorship in scholarly communication under late socialism, showing that authors developed strategies to say more than the official surface allowed (*Oates-Indruchová, 2018*). Such strategies preserved fragments of intellectual life, but they also had a cost. Over time, the habit of indirectness could deform argument, weaken conceptual precision, and train scholars to regard intellectual clarity as dangerous. Normalisation thus entered the style of scholarly writing itself.

The limitation of critical currents was also enforced through research planning. Institutes had to formulate research tasks in ways that corresponded to state priorities, ideological expectations, and acceptable disciplinary boundaries. This was not wholly new, because state-socialist science had always been tied to planning. What changed after 1968 was the political meaning of planning. Research plans became tools for preventing the re-emergence of reformist themes. A project on public opinion could be made safe if it served administration, but dangerous if it implied independent political judgement. A project on economic efficiency could be acceptable if it remained technical, but suspect if it questioned the organisation of power. A historical project could proceed if it confirmed the official narrative, but not if it reopened the history of 1968 as an unresolved problem. In this way, planning did not merely allocate resources. It shaped the epistemic boundaries of the institution. The Academy's intellectual field was narrowed in advance, before censorship or personnel sanctions even had to operate.

The control of conferences, seminars, and professional meetings was another crucial mechanism. Reformist and critical currents often survive through oral discussion even when publication is restricted. The normalisation authorities therefore had to supervise not only books and journals but also meetings, lectures, symposia, and informal scholarly networks. A conference could become dangerous if it brought together scholars who shared a memory of the 1960s or if it introduced foreign theoretical language that reopened prohibited questions. Invitations, programmes, abstracts, and participant lists therefore acquired political importance. International conferences were especially sensitive because they exposed domestic scholars to external standards and allowed foreign observers to see the narrowing of intellectual life. The regulation of such spaces did not always require direct bans. Sometimes a topic was discouraged, a speaker was not invited, a foreign guest was denied a visa, or a seminar was reduced to a technical format. These small interventions mattered because intellectual currents are sustained by repeated contact. To limit contact was to limit the reproduction of thought.

International scholarship was both a lifeline and a threat. During the 1960s, Czechoslovak scholars had expanded contacts with Western Europe, North America, and international professional associations. After 1968, those contacts were reclassified through the lens of political trust. The Academy still needed international recognition, especially in the natural and technical sciences, but the humanities and social sciences faced much tighter scrutiny. Western literature, foreign conferences, visiting fellowships, translations, and correspondence could all become politically sensitive. The result was a selective internationalisation. Contact with socialist countries was encouraged, while Western contact was filtered, delayed, or reserved for politically reliable persons. This did not entirely isolate Czechoslovak science, but it changed the sociology of access. Scholars who retained foreign contacts gained intellectual resources unavailable to others, while those excluded from travel and literature were pushed into provincialisation. The limitation of reformist currents therefore had a geopolitical dimension. It redirected the Academy's intellectual circulation away from plural debate and towards politically managed exchange.

Generational effects were especially important. The scholars who had experienced the 1960s carried intellectual memory that younger researchers could still absorb if normalisation failed to interrupt transmission. For this reason, the restriction of doctoral training, supervision, seminars, and hiring had long-term consequences. A young historian, sociologist, philosopher, economist, or literary scholar entering the Academy in the 1970s encountered a landscape already marked by absence. Certain names were not cited, certain books were difficult to obtain, certain questions were avoided, and certain older scholars were present only as marginal or silenced figures. This created an unwritten curriculum of caution. Young researchers learned not only disciplinary methods but also the political geography of knowledge. They learned which words suggested danger, which careers had been broken, and which forms of ambition required ideological compliance. The limitation of reformist currents therefore operated by shaping the intellectual instincts of a new generation. It did not need to persuade every young scholar that the official doctrine was true; it only needed to make alternative intellectual lineages difficult to inherit.

The limitation of critical currents did not affect all disciplines in the same way. In mathematics, physics, chemistry, certain areas of biology, and technical sciences, research could often continue with less direct ideological interference in content, although personnel, travel, and leadership remained politically controlled. In the humanities and social sciences, by contrast,

the object of research itself often overlapped with the regime's ideological self-image. This distinction created uneven spaces of relative freedom inside the Academy. A chemist might preserve international standards more easily than a sociologist; a mathematician might continue fundamental research more safely than a historian of contemporary politics; a biologist might face ideological pressure less often than a philosopher of society. Yet even these distinctions should not be exaggerated. Natural scientists could also be punished for political biography, while humanists sometimes preserved serious scholarship through archival, philological, or historical specialisation. Normalisation did not create a simple opposition between free natural science and enslaved humanities. It created a differentiated system of constraint, in which each discipline negotiated its own combination of usefulness, exposure, and risk.

The fate of Marxism itself was paradoxical. Before 1968, reformist Marxists had tried to use Marxist categories to criticise bureaucracy, alienation, dogmatism, and the limits of Stalinist socialism. After normalisation, Marxism-Leninism was restored as an instrument of discipline rather than a language of critique. This did not mean that Marxist vocabulary disappeared; on the contrary, it became more obligatory. But its meaning changed. Concepts that had once been used to open debate were now used to close it. Dialectics became a formula of affirmation; class analysis became a ritualised vocabulary; socialist humanism was marginalised; and critique was acceptable only when directed against capitalism, revisionism, or ideological enemies. This produced intellectual exhaustion. A theory that could have functioned as a tool of analysis was transformed into a language of compliance. The limitation of reformist currents therefore included the limitation of Marxism's own critical possibilities. In the Academy, this mattered because many scholars of the 1960s had not rejected socialism; they had tried to think it more honestly.

One of the most important consequences of this process was the separation of professional competence from public intellectual responsibility. Many scholars continued to work seriously within narrow specialisms, and in some cases this was the only way to preserve standards. Yet the broader public role of the scholar was reduced. The scientist was expected to serve the state, not to criticise its foundations; to provide expertise, not to create an independent public; to produce knowledge, not to ask whether knowledge implied political change. This separation was especially damaging for disciplines concerned with society and culture. Their natural vocation includes public interpretation, but normalisation forced them into caution, technicality, or silence. The Academy therefore remained a powerful research institution while losing much of the intellectual publicness that had characterised the reform period. It could still produce books, reports, experiments, and analyses, but it was no longer allowed to be a major centre of open national self-reflection. The restriction of critical currents thus changed not only the content of research but also the social identity of the scholar.

At the same time, the limitation of reformist thought was never completely successful. Ideas do not disappear simply because they are removed from official publication. Some survived in private seminars, correspondence, unpublished manuscripts, samizdat, exile publications, oral memory, and coded academic language. Some scholars maintained contact with forbidden traditions through reading groups or through younger colleagues whom they trusted. Others preserved fragments of methodological openness in specialised research that appeared harmless to censors. The "grey zone" of late-socialist academia later became important precisely because it included negotiated forms of autonomy, professional objectivity, and critical attitudes that were neither openly dissident nor fully loyal. Studies of

expert and environmental communities have shown that certain academic practices could become channels of oppositional or semi-oppositional communication under late socialism (*Burget, Loučová, & Olšáková, 2021*). Such spaces were fragile and morally ambiguous, but they demonstrate that the Academy was not intellectually dead. Normalisation restricted reformist currents, yet it could not wholly extinguish memory, method, or the desire for truthful description.

The existence of these hidden continuities should not lead to romanticisation. Survival under constraint was often partial, compromised, and uneven. A scholar who preserved one critical idea might have to abandon another. A seminar that maintained intellectual seriousness might avoid public topics. A manuscript might survive in a drawer for years, losing its immediate historical force. A coded article might be understood only by a small circle of readers. Exile publications could preserve debate, but they were often inaccessible to scholars inside the country. Samizdat could circulate ideas, but it could not replace the institutional infrastructure of normal academic publishing. The limitation of reformist currents therefore produced a fragmented intellectual landscape. Critical thought survived, but it was deprived of normal forms of development: public criticism, open citation, institutional continuity, teaching, revision, and debate.

The Academy's relationship with dissent was therefore indirect and complex. Some excluded scholars moved towards dissident circles, Charter 77, samizdat, exile networks, or unofficial seminars. Others remained distant from organised dissent but preserved independent intellectual positions privately. Some scholars inside the Academy sympathised quietly with dissent but could not act openly without losing their positions. Others rejected dissent while still preserving high professional standards. It would be inaccurate to treat the Academy as identical with the dissident sphere, but it would be equally inaccurate to treat it as intellectually homogeneous. The limitation of reformist currents produced a spectrum: official loyalism, cautious professionalism, inner emigration, semi-private critique, grey-zone negotiation, and open dissent. Each position carried different risks and possibilities. The institutional history of the Academy under normalisation must therefore be written with attention to these gradations. Intellectual life survived not as a single movement, but as scattered practices of memory, caution, and resistance.

The restriction of critical currents also transformed the Academy's relationship with society. In the 1960s, certain scholars had contributed to public discussions about reform, modernisation, culture, economics, and political responsibility. After normalisation, such public engagement was narrowed. The officially visible Academy spoke through approved statements, planned research outputs, ceremonial occasions, and ideologically safe publications. This created a gap between the institution's public face and the private knowledge of many of its members. Society could no longer look to the Academy as an openly critical authority, even though individual scholars retained expertise and moral judgement. The effect was a weakening of trust in official intellectual institutions. Citizens learned that public language often concealed private knowledge. Scholars learned that their most honest interpretations could not easily enter public discourse. This separation between knowledge and public speech was one of the deepest cultural consequences of normalisation.

The limitation of reformist and critical currents also affected the way the Academy later entered the post-1989 transformation. When the political breakthrough came, the Academy did not begin from zero. It contained surviving research traditions, archives, laboratories, professional

communities, and hidden memories of suppressed debates. Yet it also carried the burdens of normalisation: compromised leadership structures, interrupted disciplines, weakened public authority, damaged generational succession, and habits of caution. The suppression of reformist currents in the 1970s therefore shaped not only the late-socialist Academy but also the difficulties of renewal after 1989. Rehabilitating people was easier than reconstructing two decades of interrupted intellectual development. Restoring free publication was easier than rebuilding trust, methodological confidence, and international integration in damaged fields. The limitation of critical thought had long consequences because intellectual traditions depend on continuity. Where continuity had been broken, recovery required not only political change but also scholarly reconstruction.

For this reason, the limitation of reformist currents should be seen as one of the central mechanisms by which normalisation governed science. It was not enough for the regime to control appointments and budgets. It had to control memory, vocabulary, publication, research planning, and the symbolic boundaries of disciplines. In this sense, normalisation was an epistemic regime. It defined what counted as legitimate knowledge, which problems could be investigated, which methods could be used, which sources could be cited, and which conclusions could be stated openly. It did not eliminate all serious scholarship, and it did not prevent every critical idea from surviving. But it forced critical thought into indirect, private, or fragmented forms. The Academy remained intellectually productive in many areas, yet its ability to serve as a centre of free inquiry was profoundly limited. The damage was therefore not only institutional but civilisational: a society lost part of its capacity to know itself truthfully through its highest scholarly institutions.

Thus, the limitation of reformist and critical intellectual currents after 1968 completed the restoration of political control over the Czechoslovak Academy of Sciences by moving normalisation from the level of personnel and institutions into the deeper level of thought itself. The authorities sought to prevent the return of the 1960s intellectual atmosphere by narrowing the meanings of socialism, history, society, culture, law, economics, and philosophy. Sociology, philosophy, history, economics, legal studies, literary scholarship, and cultural theory were especially affected because they could produce independent interpretations of the social order and its recent crisis. The limitation operated through official ideology, research planning, censorship, publishing controls, travel restrictions, supervision of seminars, generational interruption, and the internalisation of self-censorship. Yet this restriction did not wholly destroy intellectual life. Critical memory survived in private scholarship, coded language, grey-zone expertise, samizdat, exile networks, and the professional ethics of scholars who continued to value truth under constraint. The late-socialist Academy therefore became a contradictory institution: publicly disciplined and ideologically narrowed, but still internally marked by fragments of autonomy, competence, and suppressed reformist memory that would later become important for post-1989 renewal.

Research under Ideological Constraint

1. Party Supervision and Scientific Administration

Party supervision and scientific administration formed the everyday machinery of normalised academic science. If the first stage of normalisation had been marked by dismissals, demotions, legal amendments, and institutional restructuring, the next stage consisted in making control routine. The Academy did not remain under constant visible attack after the first wave of restoration; rather, it was inserted into a system in which political supervision was built into appointment, planning, reporting, publication, travel, promotion, and evaluation. This was the more stable face of late-socialist rule. The party did not need to intervene spectacularly every day, because its priorities were already embedded in the administrative architecture of research. Institute directors, collegia, personnel departments, party cells, editorial boards, planning commissions, and state organs all became parts of a layered mechanism of supervision. The Czechoslovak Academy of Sciences therefore continued to work as a research institution, but it did so within a political grammar that limited the meaning of scientific autonomy. The difference between science as a profession and science as an administratively managed sector became increasingly difficult to maintain. In official language, supervision was presented as coordination, planning, socialist responsibility, or service to society. In practical terms, however, it meant that the Academy's scientific life was permanently exposed to political assessment (*Míšková, Barvíková, & Šmidák, 1998*; *Payne, 1972*). Payne's contemporary account is especially valuable here because it describes how, after the Academy's leadership changes, direct party management was tightened through party apparatus staff responsible for Academy sectors and through an executive committee inside the Presidium appointed by the party.

The formal subordination of the Academy was strengthened by the legal transformation that followed the collapse of the Prague Spring. The 1970 amendment to the law on the Czechoslovak Academy of Sciences made the institution more directly dependent on governmental authority. The president of the Academy was no longer simply the representative of a learned corporation but became a figure appointed and recalled through state authority, while the Presidium was made responsible to the government. Membership of the Academy was also brought under governmental power, and the government could terminate membership according to broadly formulated political and moral criteria. Scientific workers were subjected to fixed-term employment contracts, a device that changed the internal sociology of research work by making continuation dependent on periodic approval. This legal structure mattered because it converted political supervision into administrative normality. Control did not have to appear as exceptional repression; it could appear as appointment, reappointment, contract renewal, or institutional evaluation. Such mechanisms were particularly effective because they connected the scholar's intellectual life with everyday professional security. The Academy's old prestige as a learned society survived ceremonially, but its institutional self-government was substantially weakened. The legal measure of 1970 was formally approved on 19 March 1970 and came into force on 26 March 1970, amending the earlier 1963 law on the Czechoslovak Academy of Sciences.

The relationship between the party and the Academy was not identical with the relationship between the government and the Academy. In a Communist system, government institutions were themselves subordinated to the political monopoly of the ruling party. This meant that

scientific administration had a dual structure: it appeared in state-legal form, but its decisive orientation came from the Communist Party of Czechoslovakia. The party defined the ideological boundaries, selected reliable cadres, controlled sensitive appointments, approved important institutional decisions, and interpreted science in relation to socialist construction. The state could issue decrees, approve budgets, and appoint officials, but the party provided the hierarchy of political meaning. This duality is essential for understanding late-socialist scientific governance. The Academy was not merely a state-funded research organisation; it was a research organisation embedded in a party-state order. Its administrative organs therefore had to answer not only to scientific necessity or state planning but also to ideological correctness. The result was a system in which the language of administration often concealed political command. A research programme might be described as socially necessary, but the definition of necessity had already been politically framed.

The Academy's Presidium became one of the principal channels through which this logic was transmitted. Before normalisation, the Presidium could still be imagined as the leading academic organ of a prestigious research institution, even if never fully autonomous in a Western liberal sense. After normalisation, it increasingly functioned as a political-administrative centre. Its task was not only to coordinate institutes, allocate resources, and represent science, but also to ensure the compatibility of scientific life with the restored party line. This changed the meaning of scientific leadership. Leadership no longer consisted primarily in defending the conditions of inquiry before the political authorities; it consisted increasingly in transmitting political priorities to the research community. The Presidium had to supervise directors, collegia, research plans, personnel policy, and external relations. Its authority was therefore both downward and upward: downward towards institutes and researchers, upward towards the government and party apparatus. The transformation of the Presidium was crucial because the Academy was too large and complex to be controlled only from outside. Political power had to be internalised within the Academy's own governing bodies.

The collegia of the Academy were another key instrument of scientific administration. These bodies coordinated and directed basic research across major fields, connecting the Academy with universities and other research sites. In principle, such collegia could have served as organs of professional coordination, bringing together disciplinary expertise and long-term scientific planning. Under normalisation, however, their composition and function were transformed by political screening. Payne reported that the Academy had 20 collegia of roughly fifteen members each, and that estimates suggested the replacement of around 80 per cent of their members after the beginning of normalisation. He also noted that all members of the collegia for history and for philosophy and sociology were withdrawn in February 1970 (*Payne, 1972*). Even if one treats contemporary figures cautiously, the direction is clear: collegia became instruments through which politically reliable scientific coordination could be established. Their role was especially important because they influenced research priorities, appointments, evaluation, and relations with universities. Once they were normalised, the boundaries of acceptable research could be shaped not only by censorship but by the allocation of professional legitimacy itself. The reported scale of replacements in the collegia shows how political supervision penetrated the technical organs of research coordination.

Institute directors occupied an especially sensitive position in this system. They stood between the central organs of the Academy and the everyday life of laboratories, archives, libraries, seminars, and research departments. A director could protect an institute to a certain degree,

but could also become the most immediate agent of control. Directors influenced hiring, contracts, travel recommendations, publication permissions, internal evaluations, doctoral supervision, and the tone of institutional life. Normalisation therefore paid close attention to directorships. Replacing a director did not merely replace one administrator with another; it changed the moral and political climate of a workplace. A director loyal to the party line could identify unreliable staff, redirect research, discourage sensitive topics, and ensure that institute reports were written in the correct language. Conversely, a director who retained professional loyalty to dismissed or marginalised colleagues could sometimes preserve fragments of continuity. The regime understood this and made directorships part of its cadre policy. Scientific administration thus became personal as well as structural: the everyday experience of control depended heavily on who occupied the director's office.

Cadre policy, or *kádrová politika*, was one of the deepest instruments of supervision. It classified people not only by qualification but by political reliability, social origin, party membership, conduct in 1968–1969, family connections, foreign contacts, and willingness to accept the official interpretation of recent events. In such a system, a personnel file could carry as much weight as a publication record. This did not mean that scientific achievement became irrelevant; the state needed competent researchers. But achievement had to be politically interpretable. A brilliant scientist with an unacceptable political biography could be demoted, isolated, denied travel, or excluded from leadership. A mediocre but reliable administrator could acquire influence. This inversion did not occur everywhere or in exactly the same way, but it affected the whole culture of evaluation. The scholar was no longer assessed only as a contributor to knowledge. He or she was assessed as a politically situated person whose research could be trusted, limited, or blocked. In late-socialist scientific administration, the personnel file was therefore a hidden institutional text, shaping careers behind the visible language of science.

Party organisations inside institutes were central to this process. Communist Party cells were not ornamental political clubs; they helped monitor attitudes, organise ideological work, evaluate staff, report on institutional moods, and influence appointments. Their authority varied from institute to institute, but their presence reminded researchers that scientific life was politically observed. Party meetings could discuss not only explicitly political questions but also the direction of research, the reliability of colleagues, responses to official campaigns, and the interpretation of public events. Non-party researchers were not necessarily excluded from all meaningful work, especially in technical and natural sciences, but their career prospects could be limited. Party membership itself was not always a guarantee of safety, because many party members were expelled after 1968. Yet belonging to the party after the purges increasingly signalled conformity with the restored line. The party cell therefore operated as an intermediate organ between state ideology and the working collective. It translated large political decisions into local pressure, sometimes harshly, sometimes cautiously, but always with institutional consequences.

The system of scientific administration also relied on research planning. Planning had existed before normalisation and was not in itself a sign of repression; all modern research systems require coordination, budgeting, long-term projects, and priority setting. Under state socialism, however, research planning was inseparable from the political economy of central planning and from the ideological claim that science should serve socialist development. After 1968, this connection became more restrictive. Research plans had to demonstrate usefulness to the national economy, compatibility with socialist priorities, and ideological

reliability in sensitive areas. Fundamental research could still be justified, especially in fields with recognised international prestige or long-term technological relevance, but even fundamental research was expected to be placed within approved institutional programmes. In the social sciences and humanities, the planning framework was especially constraining because it shaped the very questions that could be asked. A project could be rejected or reformulated before it reached the stage of censorship. Scientific administration thus worked prospectively: it prevented undesirable knowledge by controlling the agenda of inquiry. This was a quieter but highly effective form of party supervision.

The party's conceptual documents on education, science, and research during the normalisation period reveal the persistent tension between technocratic modernisation and ideological control. Recent research by Jan Slavíček, based on internal materials of Central Committee commissions dealing with science, technology, ideology, and the economy, shows that party bodies repeatedly tried to combine a technocratic awareness of educational and scientific inefficiencies with rigid ideological criteria. These documents recognised problems in the development of education and research, but repeatedly returned to class selection, political loyalty, and the leading role of the party (*Slavíček, 2025*). This tension helps explain the contradictions of Academy administration. The party wanted science to modernise the economy, raise technical competence, and strengthen the state's international position. At the same time, it feared the social consequences of autonomous expertise, especially when expertise implied criticism of the political system. Therefore, scientific administration was asked to produce innovation without intellectual independence, international standing without uncontrolled internationalisation, and expertise without public critique. This contradiction did not paralyse all research, but it shaped the boundaries within which research could function. Slavíček's study is useful precisely because it shows that the problem was not simple anti-intellectualism, but an unstable mixture of technocratic ambition and ideological rigidity.

Reporting procedures were one of the ordinary forms through which this contradiction was managed. Institutes had to report on research outputs, fulfilment of plans, personnel conditions, cooperation with industry or state organs, publication activity, ideological work, and international contacts. Such reports did more than inform higher authorities. They trained institutes to describe themselves in politically acceptable categories. A research result had to be framed as useful, progressive, socially relevant, methodologically sound, and compatible with socialist priorities. Problems could be acknowledged, but normally in a language that did not question the structure of power. This encouraged a double register of institutional communication. Internally, scientists might know that a project had theoretical importance, practical failure, or politically inconvenient implications. Externally, the same project had to be translated into administrative language. The report became an artefact of negotiated truth. It did not necessarily lie completely, but it rarely spoke in the language of free scholarly judgement. Through such documents, scientific administration disciplined not only conduct but also institutional self-description.

Publication control was another essential component of party supervision. The Academy's institutes depended on journals, monographs, proceedings, edited volumes, and publishing houses to make their work visible. Control over publication therefore meant control over professional existence. A scholar who could not publish could not fully participate in academic life, train students, enter international debates, or accumulate recognised achievement. Payne noted that dismissed scholars were banned from publishing, even translations, and that many were cut off from foreign books and periodicals, which hampered even those still able to work

(*Payne, 1972*). In the social sciences and humanities, Libora Oates-Indruchová has shown that the regulatory framework of late-socialist Czechoslovakia created a complex system of constraints over scholarly writing, involving editorial procedures, institutional filters, ideological boundaries, and authorial self-censorship (*Oates-Indruchová, 2008*). The result was not merely a list of banned topics. It was a whole environment in which authors, editors, reviewers, and institute directors learned to anticipate the limits of the permissible. Scientific administration entered the sentence, the footnote, the title, and the conclusion. Control over publication was therefore one of the most intimate forms of control over thought. Payne's account explicitly connects dismissal with publication bans and the loss of access to foreign literature.

International contacts were administered with comparable care. The Academy needed foreign relations, especially in disciplines where international recognition was essential to scientific credibility. Yet travel, conferences, fellowships, correspondence, visiting scholars, and subscriptions also created channels of intellectual autonomy. The normalisation system therefore filtered internationalisation through political trust. Permission to travel abroad was not only a professional matter but a political privilege. Invitations from Western institutions could be delayed, refused, or redirected. Contacts with socialist countries were generally safer and often encouraged, while contacts with Western Europe and North America required more careful approval. Scientists who travelled had to be reliable not only as specialists but as representatives of the socialist state. Reports after travel, restrictions on private contacts, and suspicion towards émigré networks all formed part of the administrative regime. This did not eliminate all Western contact, and some fields retained meaningful international connections. But it changed the sociology of access to the world. International scientific circulation became stratified by political reliability.

Scientific degrees and career advancement were also touched by party supervision. Promotion, habilitation-like procedures, doctoral training, scientific ranks, and leadership appointments were shaped by political evaluation. In the most sensitive fields, party approval could become decisive. František Turnovec's account of Czech economics under Communism notes that social sciences were treated as ideologically sensitive and placed under direct party supervision, that scientific and pedagogical degrees could be subject to approval by party committees, and that academic careers were often difficult without Communist Party affiliation (*Turnovec, 2011*). Economics was not identical with all Academy disciplines, but it illustrates a broader pattern. The route from young researcher to recognised scholar passed through filters that were not purely scholarly. Dissertation topics, supervisors, publication opportunities, and access to foreign literature could all be politically conditioned. This was especially damaging because it shaped the formation of new generations. A researcher did not simply learn methods; he or she learned the political economy of academic survival. Turnovec's account also notes blacklisting of reform economists and restrictions on mobility and publication, while pointing to the Academy's Institute of Economics as one of the few places where some modern economic approaches survived.

The administration of doctoral candidates, or scientific aspirants, deserves particular attention. The Academy was not only a workplace for established scientists but also a training ground for future research cadres. By controlling admission to aspirantura, supervisors, dissertation topics, and later placements, the party-state could shape the future of disciplines. Payne observed that the number of young researchers accepted to work for higher degrees was restricted during the purge and reorganisation of Academy institutes (*Payne, 1972*). Such

restrictions had long-term consequences. If a field lost its senior scholars and also lost the ability to train younger ones freely, its continuity was broken twice. The immediate effect was professional uncertainty; the longer effect was intellectual thinning. Sensitive research traditions could fail to reproduce themselves because the students who might have carried them forward were redirected, discouraged, or excluded. In disciplines such as sociology, philosophy, history, economics, and law, this mattered profoundly. Generational control was one of the most efficient forms of ideological administration because it shaped not only what was said in the present but what would be possible in the future. Payne links the restriction of scientific aspirants directly to the new employment and reorganisation regime in the Academy.

The natural sciences experienced party supervision differently, but not outside the system. Laboratories required expensive instruments, stable teams, technical staff, international journals, and long-term funding. These needs made them dependent on administrative decisions, even when their research content was less ideologically exposed. A physicist or chemist might not face daily criticism of a theoretical concept as “bourgeois”, but he or she still depended on institutional trust for equipment, conference travel, leadership, and project approval. Directors in natural science institutes had to negotiate between scientific necessity and political expectation. Some fields, especially those connected with industry, medicine, military technology, energy, or production, could justify resources through economic or strategic usefulness. This sometimes gave them greater room to preserve professional standards. Yet the same usefulness also made them subject to planning demands and state priorities. The party did not ignore natural science; it administered it through usefulness, cadre reliability, and selective internationalisation. The result was a more technocratic form of supervision than in the humanities, but supervision nevertheless.

The humanities and social sciences, by contrast, were administered through both usefulness and ideological danger. Their research objects—society, culture, history, law, language, politics, and consciousness—overlapped directly with the regime’s claim to interpret reality. This made their institutes more exposed to ideological review, publication control, personnel screening, and thematic restriction. Oates-Indruchová’s analysis of the regulatory framework of social sciences and humanities in Czechoslovakia shows that these fields were especially constrained because their subject matter could challenge official interpretations of society and history (*Oates-Indruchová, 2008*). In such fields, even methodological choices could become politically significant. Empirical sociology could reveal social attitudes not contained in official language. Historical research could reopen questions about 1948, Stalinism, or 1968. Philosophy could question the conceptual foundations of Marxism-Leninism. Literary criticism could recover suppressed cultural memory. Scientific administration therefore treated these disciplines as zones of heightened risk. Their supervision was more explicitly ideological because their knowledge could easily become public critique.

The role of ideological education within scientific institutions should not be underestimated. Researchers were expected to participate in political meetings, study official documents, accept the conclusions of party congresses, and align their work with the declared needs of socialist society. Such rituals could become formal and empty, but their emptiness did not make them harmless. They consumed time, marked loyalty, identified reluctance, and maintained the presence of party language within scientific environments. Ideological training also created a standard vocabulary for institute reports, public speeches, introductions to books, and grant-like justifications. Many scholars learned to separate this vocabulary from the real substance of their work. Yet the repeated performance of ideological language altered

the atmosphere of scholarly life. It made public sincerity difficult. It also created advantages for those who mastered the language of loyalty and disadvantages for those who resisted or could not convincingly perform it. In this sense, ideological education was part of scientific administration, not an external ornament attached to it.

The security apparatus formed another layer of control, though it did not administer science in the same way as the party or the Academy Presidium. State security monitored politically suspect intellectuals, foreign contacts, samizdat circulation, dissident links, and sensitive conversations. Its presence was often indirect, but researchers knew that certain contacts or statements could be reported. This knowledge reinforced self-censorship inside institutes. It also made international communication more cautious. A scholar writing to a colleague abroad, meeting a visiting researcher, or discussing a sensitive topic at a seminar could not assume privacy. The security dimension did not need to be visible every day in order to be effective. It worked through uncertainty, memory of arrests, examples of punished colleagues, and the possibility that ordinary scholarly contact might be interpreted politically. Party supervision and security monitoring were therefore distinct but mutually reinforcing. Scientific administration created official constraints; the security apparatus gave those constraints a background of fear.

The bureaucratic vocabulary of late-socialist science often concealed this coercive structure behind apparently rational categories. Terms such as plan fulfilment, social demand, ideological maturity, cadre reserve, complex research task, coordination, efficiency, socialist internationalism, and practical application appeared in administrative documents. Some of these terms corresponded to real problems. The Academy did need coordination; the country did need technical modernisation; research did need funding priorities; scientific work did need social relevance. The problem was that these rational categories were subordinated to a political monopoly. Efficiency could mean obedience; coordination could mean control; social demand could mean party demand; ideological maturity could mean silence about contradictions. This ambiguity made normalised scientific administration difficult to resist. It was never only false. It contained real administrative tasks, but arranged them within a structure that denied scientific autonomy. The strength of the system lay precisely in this mixture of rational management and political command.

The administration of scientific societies attached to the Academy also mattered. Learned societies provided spaces for disciplinary communication, lectures, meetings, publications, and professional identity beyond individual institutes. Because many such societies were connected with the Academy, their autonomy had to be contained. They could continue to function as professional bodies, but their activities had to remain within approved boundaries. Programmes, speakers, foreign guests, and publications could all be watched. In less politically sensitive fields, societies could preserve genuine professional continuity. In more exposed disciplines, they were less able to serve as independent spaces of intellectual exchange. The late-socialist state did not necessarily need to abolish such societies; it needed to ensure that they did not become alternative publics. This pattern was typical of normalisation. Institutions were preserved, but their public meaning was narrowed. Scientific administration therefore extended beyond institutes into the associational life of scholarship.

Budgetary administration was another channel of control. Research requires material resources, and the allocation of resources shapes intellectual possibility. Institutes depended on funding for salaries, equipment, libraries, fieldwork, travel, publication, and technical

support. A politically favoured programme could receive stability; a suspect one could be starved, merged, or redefined. In natural and technical sciences, access to instruments and imported materials could determine whether research remained internationally competitive. In the humanities and social sciences, library acquisitions, archival travel, editorial support, and printing possibilities were equally important. Budget decisions could be justified in the language of planning, efficiency, or national need, even when their effects were ideological. This made financial dependence a quiet form of supervision. A scholar may think freely in private, but without resources, assistants, publication routes, and institutional backing, research cannot become a public scientific contribution. Scientific administration therefore controlled not only ideas but the material conditions under which ideas could acquire scholarly form.

The relationship between the Academy and the wider state economy further complicated scientific administration. Late socialism claimed that science was a productive force and that research should contribute to economic development, technological innovation, and the improvement of socialist society. This claim was not entirely rhetorical. Many scientists worked on problems with genuine industrial, medical, environmental, agricultural, or technological relevance. However, the planning system often struggled to translate research into effective innovation. Bureaucratic priorities could distort long-term inquiry, while ideological reporting could conceal practical failure. The Academy was expected to supply expertise to a system that did not always allow expertise to question its own organisational assumptions. This produced frustration among researchers who understood technical or economic problems more clearly than administrators were willing to admit. Science was called upon to modernise the system, but not to diagnose the political causes of its stagnation. Party supervision therefore imposed a ceiling on expertise. It allowed science to solve problems only up to the point at which the solution threatened to become systemic critique.

The contradiction between technocratic ambition and ideological rigidity became more visible in the 1980s. Economic stagnation, technological lag, environmental problems, and the growing gap between Czechoslovakia and advanced industrial countries increased the need for expert knowledge. Yet the habits of normalisation made open diagnosis difficult. Researchers could collect data, produce internal reports, and propose technical remedies, but the political consequences of their findings remained constrained. Some analyses were classified for internal use, especially when they revealed negative tendencies. Turnovec's discussion of economics notes that even factual studies containing figures illuminating negative economic trends could be withheld from publication or classified as secret or internal (*Turnovec, 2011*). This pattern was not unique to economics; it reflected a broader late-socialist logic. The system wanted knowledge, but it feared publicity. Scientific administration therefore separated internal expertise from public truth. This separation weakened both science and governance because problems known privately could not be debated openly.

The Academy's internal culture adapted to these conditions in varied ways. Some researchers became loyal administrators and accepted the party's supervisory role as normal. Others remained professionally serious but politically cautious, trying to protect research from ideological intrusion by avoiding sensitive language. Some withdrew into narrow specialisation, treating the laboratory, archive, or mathematical model as a refuge. Others cultivated private intellectual networks, unofficial seminars, or coded forms of critique. The same institute could contain all these types simultaneously. Scientific administration therefore did not produce uniform consciousness. It produced a structured field of adaptation.

The rules were common, but individual responses differed according to discipline, generation, biography, moral temperament, and institutional position. This complexity is important because it prevents both romanticisation and blanket condemnation. The Academy under party supervision was neither simply a heroic community of resistance nor merely an obedient bureaucratic machine. It was a controlled institution inhabited by people making unequal choices under sustained pressure.

The effect on scholarly language was profound. Administrative language encouraged formulaic references to Marxism-Leninism, the leading role of the Communist Party, the needs of socialist society, and the contribution of science to national economic tasks. In some texts, such language functioned as protective frame around serious research. In others, it became the substance of intellectually empty production. The boundary between protective rhetoric and genuine ideological conformity was often difficult to determine. Readers learned to distinguish between ritual phrases and meaningful argument. Authors learned to use approved terminology without necessarily surrendering all intellectual substance. Yet this double language damaged clarity and trust. It trained scholars to write for two audiences: the censorial-administrative audience and the informed professional audience. Such writing could be clever, but it was also exhausting. Party supervision entered not only institutional charts but the very texture of academic prose.

The administrative supervision of science also shaped relations between Czech and Slovak academic structures. The Czechoslovak Academy of Sciences, the Slovak Academy of Sciences, universities, ministries, and republican institutions operated within a federalised state after 1968, but the party's leading role remained the overarching principle. Similar normalising mechanisms appeared in both Czech and Slovak contexts, although institutional circumstances and political balances differed. The central party apparatus, republican organs, and academy structures had to coordinate personnel, planning, and ideological supervision. This created a layered administrative geography. Some scientific decisions were local to an institute; others depended on Academy bodies; still others were shaped by republican or federal party-state priorities. Researchers experienced this hierarchy through appointments, reporting, travel approvals, and project coordination rather than abstract constitutional categories. The result was a complex but recognisable system of controlled decentralisation. Science could be organised across multiple institutional levels, but none of those levels was outside the political monopoly of the party.

One should not overlook the continued existence of professional standards within this supervised system. Many researchers remained committed to good science, careful documentation, laboratory precision, archival discipline, mathematical rigour, philological accuracy, or technical problem-solving. The party-state could supervise institutions, but it could not directly produce scientific quality. It therefore depended on the very professional ethos that it also constrained. This dependence created room for limited autonomy in practice. A laboratory could insist on experimental standards; an archive-based historian could preserve factual accuracy in narrowly defined areas; a mathematician could pursue problems beyond ideological comprehension; an economist could use formal modelling to maintain contact with international methods. Such spaces were never guaranteed, and they varied greatly by field. Nevertheless, they explain why the Academy remained scientifically productive despite political supervision. The normalised Academy was constrained, not empty; damaged, not intellectually dead.

This dual reality makes the history of party supervision difficult to write. If one emphasises only repression, one misses the scientific work that continued and the professional strategies by which scholars preserved competence. If one emphasises only productivity, one risks minimising the moral and intellectual cost of the system. The most accurate interpretation must hold both facts together. The Academy was controlled by party and state mechanisms that limited autonomy, shaped careers, filtered publication, and disciplined thought. At the same time, it remained a major research institution with laboratories, institutes, societies, archives, projects, and scholars capable of serious work. This contradiction was not accidental; it was the defining structure of late-socialist science. The party wanted a modern scientific institution without the freedoms that modern science normally requires. Scientific administration therefore became a permanent act of balancing: enough control to prevent political danger, enough professional space to keep science useful.

Thus, party supervision and scientific administration after 1968 transformed the Czechoslovak Academy of Sciences into a politically managed but still scientifically active institution. The party-state did not abolish the Academy, because it needed research, expertise, international prestige, and technical competence; instead, it inserted supervision into the Academy's governing bodies, personnel files, contracts, collegia, directorships, research plans, publication procedures, travel permissions, ideological education, and reporting routines. This system was more durable than the initial purge because it normalised control as everyday administration. Its logic was contradictory: it demanded innovation while restricting autonomy, required expertise while fearing critique, and preserved professional institutions while subordinating them to political loyalty. The natural sciences often retained more room for technical and international work, whereas the humanities and social sciences were more tightly supervised because their objects of study touched ideology, legitimacy, and public memory. Yet no discipline was fully outside the administrative reach of the party-state. The late-socialist Academy therefore stood between competence and constraint, usefulness and obedience, professional continuity and moral deformation. Its history in the 1970s and 1980s can only be understood by recognising this dual structure: science continued to breathe, but through an institutional apparatus that constantly regulated the air available to it.

2. Differences between Natural Sciences and Humanities

The difference between the natural sciences and the humanities under normalisation should not be understood as a simple opposition between freedom and oppression. Both spheres were supervised, both were affected by cadre policy, both depended on travel permits, publishing channels, institutional leadership, and access to resources, and both had to accept the restored primacy of the Communist Party over scientific life. Yet the form, intensity, and everyday meaning of control differed profoundly. The natural sciences were more easily defended as economically useful, technologically necessary, and internationally competitive, while the humanities and social sciences dealt directly with history, society, culture, law, ideology, language, and legitimacy. This meant that a chemist, physicist, biologist, or mathematician could sometimes present research as politically neutral even when the researcher's personal biography remained politically exposed. A historian, sociologist, philosopher, economist, legal scholar, or literary critic could rarely make the same claim, because the object of inquiry itself was already ideologically charged. The normalised state needed both kinds of knowledge, but it feared them differently. It feared natural science when

scientists became autonomous public figures, maintained uncontrolled Western contacts, or used professional authority in reformist politics. It feared the humanities and social sciences more continuously because they could reinterpret the very world that official ideology claimed to have already explained. The distinction was therefore not between political and apolitical science, but between disciplines whose political danger was usually mediated through persons, institutions, and international circulation, and disciplines whose political danger was located in the content of knowledge itself (*Míšková, Barvíková, & Šmidák, 1998*; *Nisonen-Trnka, 2008*; *Oates-Indruchová, 2008*). Nisonen-Trnka's study of Czechoslovak natural scientists explicitly stresses that natural scientists were comparatively better able than social scientists and humanists to demonstrate the value of their work to the state, especially because their fields were tied to economic demands and international scientific networks.

This difference had deep roots in the socialist understanding of science as a productive force. In the language of the Scientific and Technological Revolution, science was not only a cultural achievement but also an instrument of industrial modernisation, economic competition, military-technological capacity, public health, and state prestige. The natural and technical sciences could therefore be incorporated into the regime's self-image as a modernising power. Laboratories, patents, instruments, materials research, medicine, nuclear physics, cybernetics, macromolecular chemistry, and engineering could all be described as contributions to socialist construction. This did not free them from ideological supervision, but it gave them a language of practical indispensability. A laboratory that produced useful results could be protected more easily than a seminar that produced politically ambiguous interpretations of society. The humanities and social sciences also claimed usefulness, but their usefulness was more dangerous because it involved explanation, diagnosis, memory, and meaning. A sociologist's analysis of stratification, a historian's account of 1968, or a philosopher's discussion of freedom could not be separated from the legitimacy of the political order. The natural scientist could often say: this experiment works or does not work. The humanist was more likely to be asked: what does your interpretation imply for socialism? This asymmetry became one of the defining features of the Academy under normalisation.

The natural sciences nevertheless suffered from the same political rupture that transformed the whole Academy after 1968. The removal of leading figures, the replacement of institute directors, travel restrictions, party screening, and fixed-term employment contracts reached even fields that were not ideologically interpretative in their ordinary research content. František Šorm and Otto Wichterle are especially important examples because they show that scientific eminence did not remove political vulnerability. Šorm's presidency of the Academy and his position as a leading chemist had symbolised the authority of scientific expertise during the reform period, while Wichterle's work in macromolecular chemistry and soft contact lenses demonstrated the international significance of Czechoslovak research. Yet both men were affected by the political reversal, and their cases reveal that natural science could be privileged as a field while individual natural scientists remained exposed as public actors. The regime wanted their competence, reputation, and inventions, but it did not want their autonomy. This contradiction was typical of normalisation. The state could not afford to destroy its strongest laboratories, but it could replace leadership, narrow public roles, restrict travel, and humiliate scientists who had become too independent. The natural sciences therefore enjoyed relative disciplinary protection but not personal immunity. Their room for manoeuvre depended on usefulness, political caution, and the ability to keep scientific work separate from visible public reformism (*Nisonen-Trnka, 2012*; *Payne, 1972*).

In comparison, the humanities and social sciences were targeted not only because of individual biographies but because of their disciplinary functions. History, sociology, philosophy, economics, legal studies, literary scholarship, and cultural theory had all contributed to the intellectual climate of the 1960s. They had supplied concepts, evidence, public arguments, and reformist vocabularies. Sociology had re-emerged as a modern empirical and theoretical discipline; philosophy had opened itself to Marxist humanism, phenomenology, structuralism, and philosophy of science; history had begun to reassess Stalinism, party history, national memory, and political legitimacy. Literary and cultural criticism had participated in the broader emancipation of Czech public language. Economics had explored the possibility of reforming central planning through decentralisation, market mechanisms, and enterprise autonomy. Law had raised questions of legality, rights, constitutionalism, and public accountability. After 1968, these very achievements became dangerous. The normalisation regime did not merely remove selected scholars from these fields. It narrowed the disciplines themselves, because their methods and questions could reopen the reformist horizon that the regime was determined to close (*Oates-Indruchová, 2008*; *Pecka, 2011*; *Turnovec, 2011*). Oates-Indruchová's article is specifically concerned with the regulatory framework imposed on social sciences and humanities in Czechoslovakia between 1968 and 1989, while her later monograph develops the same problem through academic publishing and censorship.

The difference was especially visible in the status of empirical evidence. In the natural sciences, empirical evidence could often be treated as external to ideological doctrine, at least within the limited domain of experiment. A chemical reaction, a mathematical proof, an astronomical observation, a biological measurement, or an engineering test did not directly challenge the party's account of 1968 or its claim to political leadership. Of course, interpretation of scientific organisation, international cooperation, or technological transfer could become political, but the immediate evidence of the experiment usually had some protection. In the social sciences and humanities, evidence itself was politically unstable. A survey of public opinion could reveal dissatisfaction; a demographic study could expose social inequalities; an archival document could contradict official history; a literary analysis could restore a banned author to cultural memory; an economic model could imply systemic inefficiency. The state therefore had to supervise not only conclusions but also sources, methods, questions, and the conditions under which evidence became public. The natural scientist's problem was often to obtain equipment, permission, and institutional trust. The historian's or sociologist's problem was that the evidence might be politically dangerous even before interpretation began. This made the humanities and social sciences less able to separate professional truth from political consequence.

Publication regimes also differed sharply. Natural scientists could sometimes publish technical articles in specialised journals, including foreign journals, because their work contributed to international prestige and technological credibility. Such publication still required permissions, and travel or correspondence could be restricted, but the state had an interest in allowing selected natural science results to circulate internationally. The humanities and social sciences faced a more intimate form of censorship because their arguments were usually expressed in discursive prose, historical narrative, conceptual analysis, or cultural interpretation. The censorial risk was not limited to one sentence or one conclusion; it could permeate the structure of the whole text. A monograph in history or philosophy could be dangerous because of its vocabulary, references, periodisation, omissions, emphasis, or

implicit comparison. Oates-Indruchová's study of academic publishing shows that censorship in scholarly work under state socialism was not only a matter of crude prohibition; it involved editorial boards, institutional filters, self-censorship, negotiation, and authorial strategies of circumvention (*Oates-Indruchová, 2020*). Natural scientists also encountered publication controls, but the humanities and social sciences were more exposed to censorship at the level of meaning. Their texts had to be read ideologically because their subjects were already political. This made publication in these fields one of the key sites where normalisation shaped knowledge itself.

International circulation created another distinction. Natural science depends heavily on international standards, conferences, instruments, citations, patents, and technical exchange. The regime understood this and, despite suspicion towards the West, could not entirely close natural scientists off from global communication. Nisonen-Trnka shows that Czechoslovak natural scientists had strong international networks and that international recognition mattered for both personal careers and state prestige (*Nisonen-Trnka, 2008*; *Nisonen-Trnka, 2012*). This did not mean free movement. Travel permits, delegation status, reports after journeys, restrictions on informal meetings, and political vetting remained central. Yet a physicist or chemist could argue that contact with Western laboratories was necessary for the country's technological competitiveness. A philosopher, historian, or sociologist citing Western theory, by contrast, could be accused of ideological contamination more easily. Western scientific equipment might be desirable, while Western social theory might be suspicious. Western patents might be useful, while Western historiography might be dangerous. This distinction shaped the geography of knowledge: natural scientists often had more defensible reasons to cross borders, whereas humanists and social scientists encountered stronger ideological suspicion when they tried to do the same.

The laboratory itself functioned as a kind of partial refuge. In many natural science fields, work could be organised around instruments, experiments, calculations, specimens, materials, and long-term technical programmes. These objects did not remove political supervision, but they gave scientists a professional space in which the immediate logic of research was not identical with ideological language. Nisonen-Trnka's conclusion suggests that after the purges and political replacement of scientific elites, work itself could be understood by some scientists as a way to remain aloof from politics and ideology, by doing something rewarding and apparently "apolitical" (*Nisonen-Trnka, 2012*). This refuge was never complete. Laboratories still needed directors, budgets, permits, party evaluations, foreign contacts, and access to journals. A politically unreliable scientist could still be removed from leadership, denied travel, or blocked from promotion. Nevertheless, the laboratory allowed a form of practical continuity that many humanistic fields lacked. A historian could not as easily retreat into an archive without confronting the political meaning of historical interpretation. A sociologist could not as easily conduct surveys without asking what kind of society the data described. The natural science laboratory therefore became one of the spaces where professional identity could be preserved under political constraint, even if public autonomy was curtailed.

Archives, libraries, and textual corpora did not provide the same kind of protection for the humanities. They were also material spaces, and they were also governed by professional methods, but their contents were semantically charged. An archive could contain documents about 1948, Stalinist repression, August 1968, party conflicts, national minorities, religious life, exile, or intellectual opposition. A literary archive could preserve authors who had been banned from publication. A philosophical library could contain texts considered ideologically suspect.

A sociological data set could reveal realities that official language preferred not to name. Access to sources, permission to cite them, and the interpretation of their meaning were therefore politically delicate. Humanistic scholarship could not hide behind the neutrality of materials, because its materials were already part of national and political memory. Even philology, art history, archaeology, and linguistics could become sensitive when they touched questions of identity, tradition, religion, modernism, or relations with Europe. The humanities thus faced a more pervasive form of ideological exposure. Their professional objects were not merely studied under the regime; they were part of the regime's struggle over cultural meaning.

Sociology demonstrates this difference with particular clarity. After its recovery in the 1960s, Czech and Czechoslovak sociology had become a field capable of analysing modernisation, social structure, public opinion, work, bureaucracy, and social change. Under normalisation, this capacity was politically dangerous because it could describe society independently of official ideological categories. Pecka's account of the normalisation of Czech sociology emphasises the personnel, thematic, and institutional purge that followed the defeat of the Prague Spring (*Pecka, 2011*). Sociology was not abolished completely, because the state still required social expertise for planning, administration, demography, education, and labour policy. Yet its public critical function was sharply curtailed. It could serve governance, but it could not freely diagnose the political foundations of social problems. This placed sociology in a different position from most natural science disciplines. A chemist could often argue that the value of work lay in the substance, process, or technology. A sociologist's value lay precisely in describing society, and this description could not be politically neutral in a system that claimed to possess the correct theory of society in advance. Sociology therefore became one of the clearest indicators of the boundary between useful expertise and forbidden critique.

History faced an even more direct confrontation with official memory. The regime's legitimacy after 1968 required a controlled interpretation of the Prague Spring, the invasion, Stalinism, the Communist Party, and the development of Czechoslovak socialism. Historical scholarship could not be allowed to treat these questions as open problems, because open historical inquiry might reveal contingency, conflict, coercion, and alternative possibilities. The disbanding of the Academy's Institute of History after the publication of *Seven Days in Prague* symbolised this danger. Historical institutes were not merely workplaces; they were organs of national memory. Their archives, publications, editions, and interpretations shaped how society understood itself. A laboratory error might damage an experiment, but a historical interpretation could damage a regime's moral narrative. That is why history under normalisation had to be supervised so carefully. The historian's craft—source criticism, chronology, contextualisation, comparison, and documentary reconstruction—was itself politically risky when applied to recent events. In this respect, history was much closer to public life than many natural sciences, even when written in scholarly language.

Philosophy occupied a different but equally exposed position. It was dangerous not because it necessarily produced empirical facts, but because it defined the concepts through which facts, power, society, freedom, alienation, subjectivity, truth, and morality could be understood. The philosophical currents of the 1960s had made Marxism more plural, more European, and more self-critical. After normalisation, this openness was narrowed by the restoration of doctrinal Marxism-Leninism as a legitimising rather than interrogative framework. Natural scientists could sometimes avoid philosophical debates by focusing on experiment or calculation, although this avoidance was itself a political strategy. Philosophers had no such refuge, because their discipline concerned the very language in which ideological

legitimacy was articulated. A philosophical text could become suspect through a concept, a reference, or even a tone of questioning. The regime did not need philosophy to discover uncomfortable truths; it needed philosophy to confirm official ones. This changed the discipline's institutional role. Philosophy could continue as commentary, doctrine, history of approved ideas, or carefully coded analysis, but its reformist function as critical reflection on socialism was restricted. The contrast with natural science was therefore stark: the natural sciences were politically supervised from outside their core procedures, while philosophy was supervised inside its conceptual substance.

Economics stood between the natural sciences and the humanities in a particularly revealing way. It used quantitative methods, models, statistics, planning instruments, and technical language, which sometimes gave it an appearance of administrative neutrality. Yet its subject was the organisation of production, planning, incentives, markets, labour, efficiency, and decision-making, all of which touched the political foundations of state socialism. Reform economics in the 1960s had become one of the intellectual engines of the Prague Spring, and this made it especially suspect after 1968. Turnovec notes that social sciences under Communism were ideologically sensitive, that academic careers and degrees could be affected by party approval, and that reform economists were blacklisted or pushed out of official positions (*Turnovec, 2011*). At the same time, some modern economic methods survived in limited institutional niches, including the Academy's Institute of Economics. This duality resembled the natural sciences insofar as the regime needed technical expertise, but resembled the humanities insofar as economic conclusions could become systemic criticism. Economics therefore shows that the natural-science/humanities distinction was not absolute. Disciplines were positioned along a spectrum according to their usefulness, ideological exposure, methodological opacity, and proximity to political decision-making.

Legal studies shared this intermediate but highly sensitive position. Law had technical aspects that could be administered as professional expertise: civil law, labour law, administrative regulations, codification, institutional procedures, and legal terminology. Yet legal scholarship also raised questions of legality, constitutional order, rights, federation, sovereignty, and the relation between party power and state institutions. After the invasion, these questions were especially dangerous. A legal scholar could not freely ask whether the occupation was lawful, whether socialist legality could constrain party authority, or whether citizens had meaningful rights against the state. The natural sciences had no equivalent problem in their ordinary technical core. A physicist did not normally have to validate the constitutional basis of an experiment. A legal scholar, however, worked in the very domain where political coercion sought legal form. Normalisation therefore required legal studies to stabilise authority rather than expose contradiction. Legal expertise could continue, but its critical and constitutional dimensions were curtailed. This made law closer to history and philosophy than to chemistry or mathematics in its political vulnerability.

Literary scholarship and cultural studies were also deeply exposed because culture had been one of the main public languages of the Prague Spring. Literature, film, theatre, criticism, and historical memory had shaped the atmosphere of reform more visibly than many formal political institutions. The Academy's literary and cultural institutes therefore dealt with more than aesthetic interpretation. They preserved canons, authors, textual editions, linguistic memory, and narratives of national culture. Normalisation narrowed this work by excluding or marginalising writers, interpretative schools, and forms of criticism associated with the reform period. A study of modernism, avant-garde literature, exile writing, religious culture,

existentialism, structuralism, or civic moral responsibility could be politically sensitive. Unlike a natural science article, a literary interpretation could easily become a coded discussion of freedom, repression, memory, and truth. The humanities therefore bore a symbolic burden that the natural sciences usually did not. They were expected not only to produce scholarship but to participate in the regulation of cultural memory. Their danger lay in the fact that a society can recognise itself through literature and criticism, sometimes more powerfully than through political theory.

The natural sciences, however, should not be romanticised as free zones. Their relative protection could produce its own moral and intellectual compromises. Some scientists withdrew into laboratory work and avoided public questions, which preserved research but weakened the public responsibility of scientific authority. Others accepted leadership roles under normalisation and helped implement cadre discipline in technically successful institutes. Still others benefited from positions vacated by politically removed colleagues. The state's preference for useful science could protect laboratories while isolating or humiliating individual scientists. This produced a distinctive ethical tension. Natural scientists could continue producing valuable knowledge while the broader academic community was being censored, purged, or silenced. Their survival was often understandable, and sometimes it preserved crucial competence for the future. Yet it also contributed to the segmentation of the Academy, where some fields could continue relatively effectively while others were intellectually suffocated. The difference between natural sciences and humanities therefore had moral consequences as well as administrative ones.

The humanities and social sciences, conversely, should not be treated as completely paralysed. Serious scholarship continued under constraint, especially in fields or subfields that could find safer forms of inquiry. Medieval studies, classical philology, archaeology, linguistics, certain branches of art history, demography, and technical areas of economics or law could sometimes preserve high standards. Scholars used chronological distance, narrow specialisation, textual precision, archival patience, and coded language to continue meaningful work. Oates-Indruchová's research on censorship emphasises not only mechanisms of control but also authorial strategies for circumventing them (*Oates-Indruchová, 2020*). The social sciences also produced expertise that later became important for post-1989 transformations. Nevertheless, their public critical function was damaged. The problem was not that every humanistic text became propaganda, but that the normal conditions of scholarly debate were broken. Citation, disagreement, publication, teaching, and theoretical innovation could not operate freely. The humanities therefore survived, but in a more interrupted and internally divided form than many natural science fields.

The difference between disciplines was also visible in their relation to time. Natural science projects often had long-term continuity through laboratory programmes, instruments, technical teams, and cumulative experimentation. A research group could continue work on materials, compounds, biological processes, mathematical problems, or engineering designs even when the political environment worsened. Interruptions were real, especially when leaders were removed or international access was restricted, but the object of research could sometimes remain stable. Humanistic and social-scientific projects were more directly affected by changes in the authorised interpretation of time itself. The past had to be rewritten; the present had to be described cautiously; the future had to remain within socialist teleology. A historical periodisation, a sociological trend, or a philosophical concept of modernity could become politically charged. This gave the humanities a different temporal vulnerability. They

could not simply continue along the same line if the meaning of the recent past had been officially redefined. Normalisation therefore interrupted not only institutions but historical consciousness.

Material conditions further widened the distinction. Natural sciences required expensive equipment, laboratories, chemicals, instruments, computing capacity, and technical infrastructure. This dependence made them vulnerable to state allocation, but it also made the state aware that destruction of capacity would be costly. Once an institute had specialised equipment and trained teams, it was rational for the regime to preserve it, even under stricter political leadership. The humanities required less expensive equipment, but they depended on libraries, archives, publication, travel, and intellectual freedom. Because their infrastructure was less visibly industrial, it could be reorganised or constrained with fewer immediate economic consequences. A closed archive, banned author, dismissed supervisor, or unpublished monograph might not appear in production statistics. Yet such restrictions could damage a discipline for decades. The state therefore had stronger material incentives to protect certain natural science capacities than to protect the autonomy of humanistic interpretation. This asymmetry shaped the fate of Academy institutes throughout the normalisation period.

The difference was also reflected in the way the regime understood international prestige. A successful chemical invention, medical technology, mathematical result, or physical discovery could demonstrate that socialist Czechoslovakia remained scientifically advanced. Such achievements could be celebrated without inviting public debate about political legitimacy. By contrast, internationally recognised humanistic or social-scientific work often required engagement with theoretical pluralism, critical historiography, Western sociology, comparative law, or cultural modernism. These engagements were harder to domesticate ideologically. A natural science article abroad could be framed as national achievement. A sociological article abroad might be suspected of exposing domestic conditions to hostile interpretation. A historical essay abroad might challenge the official memory of 1968. A literary study abroad might reconnect Czech culture with banned authors or émigré networks. The regime therefore approached international recognition differently across fields. It wanted prestige without ideological contamination, and this was easier to imagine in natural sciences than in the humanities.

At the level of daily working life, this produced different strategies of adaptation. Natural scientists often adapted by narrowing their public role, emphasising technical usefulness, cultivating permitted international contacts, and preserving laboratory standards. Humanists and social scientists adapted by choosing safer topics, using indirect language, relocating sensitive questions into earlier periods, producing internal reports rather than public texts, or maintaining private scholarly networks. Both forms of adaptation involved self-censorship, but the content differed. The natural scientist often censored public behaviour, travel contacts, or political expression. The humanist often censored the argument itself. This does not mean that natural science was intellectually untouched; isolation, resource limits, and political appointments affected quality. Nor does it mean that humanists had no intellectual agency; many preserved serious scholarship under difficult conditions. Yet the pressure entered the disciplines at different points. In natural sciences, control often surrounded research; in humanities and social sciences, control penetrated more deeply into research questions, language, interpretation, and publication.

The relation to dissent also differed. Dismissed historians, philosophers, sociologists, economists, legal scholars, and literary critics often became more visible in unofficial intellectual life because their fields could directly feed samizdat, Charter 77 debates, exile publishing, and independent seminars. Natural scientists also participated in dissent, and some became morally important figures, but their disciplinary work did not always translate as directly into oppositional discourse. The humanistic disciplines offered languages of rights, memory, morality, culture, law, and public responsibility that were essential to dissident thought. This made their official restriction more severe, but it also gave excluded scholars an alternative intellectual role outside the Academy. Natural scientists who were removed from official positions often faced a different dilemma: their research might require laboratories and instruments that could not be reproduced in private life. A historian could write unofficially with access to notes and memory; a chemist could not easily continue advanced experimental work in a kitchen, despite famous improvised moments in Wichterle's career. The materiality of disciplines therefore shaped the possibilities of unofficial continuation. Exclusion from the Academy meant different things depending on whether scholarship required a laboratory, an archive, a library, or primarily intellectual community.

The distinction also shaped the post-1989 inheritance. In natural sciences, the Academy often possessed surviving laboratories, trained teams, research traditions, and some international connections, although equipment, funding, and institutional structures required major reform. The damage was real, but there was often a tangible base from which renewal could proceed. In the humanities and social sciences, the problem was not only material but epistemic and generational. Banned topics had to be reopened, suppressed authors restored, archives reinterpreted, theoretical vocabularies rebuilt, and international conversations re-entered after two decades of restriction. Some scholars returned from exile or marginalisation, while others had to reassess careers formed under normalisation. The disciplines had to reconstruct trust as well as knowledge. This difference explains why the post-socialist transformation of the Academy was uneven. It was not simply a matter of replacing political structures with free ones. Fields damaged at the level of language, memory, and intellectual succession required a different kind of reconstruction from fields damaged mainly by isolation, resources, or administrative control.

The natural sciences and humanities therefore occupied different positions within the same late-socialist contradiction. The regime wanted modern science but feared autonomous thought. It wanted technological achievement but distrusted independent international networks. It wanted social expertise but not social critique. It wanted historical legitimacy but not historical inquiry. It wanted philosophy as doctrine but not philosophy as questioning. It wanted literature as national culture but not literature as moral opposition. These tensions did not divide neatly between natural sciences and humanities, but the division helps reveal the structure of control. Natural sciences were more protected by usefulness and international technical standards, but exposed when scientists became politically independent or when foreign cooperation crossed permitted boundaries. Humanities and social sciences were more directly constrained because their truth claims competed with official ideology. Both suffered, but they suffered differently. This difference must remain central to any serious history of the Academy under normalisation.

It is also important to avoid a triumphalist account in which natural sciences appear simply as successful and humanities as victimised. Natural science success under normalisation often depended on compromises with administrative power, selective privilege, restricted

circulation, and uneven access to resources. Humanities and social sciences, despite severe constraint, sometimes preserved forms of intellectual courage, methodological seriousness, and private continuity that later proved indispensable. A field's public condition did not always correspond to the moral quality of individual scholars within it. There were loyal functionaries in laboratories and brave scholars in censored disciplines; there were also careful professionals in technical fields and opportunists in humanistic ones. The structural difference between fields therefore should not be converted into moral stereotypes. It should instead be read as a difference in the regime's techniques of governance. Different knowledge forms required different modes of control. The Academy's history under normalisation is most intelligible when these modes are compared rather than homogenised.

The practical result was an Academy with uneven zones of intellectual oxygen. Some laboratories retained enough air to breathe, though not always freely. Some humanities institutes survived in thin air, where every concept had to be rationed and every publication negotiated. Some social-scientific centres were repurposed as administrative expertise, while some natural-scientific teams were preserved because the state needed their results. The same building could contain serious research, ritual ideology, quiet fear, technical brilliance, and moral compromise. The difference between natural sciences and humanities therefore helps explain why the Academy could be simultaneously productive and damaged. It was productive because certain fields retained institutional capacity and because many scholars continued to work with discipline and skill. It was damaged because the unity of scientific autonomy was broken, and because some forms of knowledge were permitted only when deprived of their critical meaning. Normalisation did not reduce all disciplines to the same level of silence. It distributed silence unevenly.

Thus, the differences between the natural sciences and the humanities under normalisation were not differences between untouched science and persecuted thought, but differences in the form and depth of political vulnerability. The natural sciences were constrained by cadre policy, leadership changes, travel control, funding dependence, and ideological supervision, yet their economic usefulness, laboratory infrastructure, international standards, and technological promise often gave them more room to preserve professional continuity. The humanities and social sciences were more directly restricted because their objects of study—history, society, culture, law, language, philosophy, literature, and economic organisation—overlapped with the regime's own claims to truth and legitimacy. Natural scientists could sometimes retreat into experiment, technical work, or internationally recognised specialised research, whereas humanists and social scientists often found that the very act of interpretation had become politically charged. The result was an uneven Academy: not free in any field, but not equally constrained in all fields; not intellectually dead, but deeply divided in its conditions of knowledge production. This unevenness became one of the central characteristics of late-socialist Czechoslovak science. It allowed laboratories, technical programmes, and selected international achievements to continue, while critical social reflection, historical memory, philosophical openness, and cultural interpretation were narrowed, delayed, coded, or forced into unofficial spaces. The Academy survived as a major institution of research, but its disciplines did not survive normalisation in the same way.

3. Strategies of Adaptation, Silence, Compromise, and Professional Survival

The experience of academic science under normalisation cannot be adequately described only through the categories of repression and obedience. These categories are necessary, but they are too broad to capture the daily reality of scholars who had to continue working inside a politically supervised institution. After the first wave of purges, dismissals, demotions, and restructuring, the Czechoslovak Academy of Sciences entered a long period in which most researchers were not confronted every day with spectacular acts of coercion. Instead, they lived within an administrative and moral order that required constant calculation. A scholar had to decide what to publish, what to leave unpublished, whom to cite, which invitations to accept, which meetings to attend, which official documents to sign, which formulations to use, and when silence was safer than truth. These decisions did not always divide people neatly into dissidents and collaborators. Many scientists inhabited a zone of adaptation, partial compromise, professional discipline, private disagreement, and tactical caution. Some protected their research by avoiding politics; others protected colleagues by accepting public formulas they privately disliked. Some withdrew into laboratories, archives, narrow specialisations, or technical language; others moved towards unofficial seminars, samizdat, exile communication, or quiet forms of intellectual solidarity. The history of the Academy under normalisation therefore requires attention to the sociology of survival, not only to the politics of control. It was in these everyday strategies that late-socialist science continued, but also where its moral and intellectual costs accumulated (*Oates-Indruchová, 2008*; *Sommer, 2016*).

Adaptation was often the first and most common strategy, because most scholars could not simply leave their institutions without losing their profession, income, library access, laboratory facilities, students, colleagues, and identity as researchers. In the Academy, employment was not just a job in the ordinary sense. It gave access to instruments, archives, foreign journals, publication channels, doctoral training, disciplinary communities, and the symbolic authority of scientific work. To be dismissed from the Academy was therefore to be removed from the normal infrastructure of scholarship. This was particularly severe in experimental sciences, where research depended on laboratories, equipment, technicians, and institutional funding. It was also severe in the humanities, where archives, publishing opportunities, seminar networks, and official recognition mattered deeply. Adaptation often meant accepting the vocabulary of normalisation while trying to preserve the substance of professional work beneath it. A researcher might write an ideologically safe introduction, attend required political meetings, avoid compromised names, and frame a project as socially useful in order to continue the actual research. Such behaviour was not heroic, but it was not always identical with conviction. The late-socialist Academy contained many people who neither believed fully in the official ideology nor opposed it openly. Their lives were shaped by the uneasy attempt to continue doing science in a system that made free speech professionally dangerous (*Míšková, Barvíková, & Šmidák, 1998*; *Payne, 1972*).

Silence was another central strategy, and it had many forms. There was public silence about August 1968, about purged colleagues, about the falsification of institutional memory, about banned authors, about exile, and about the gap between official language and professional knowledge. There was also disciplinary silence: certain research questions were simply not asked, certain archives were not opened, certain interpretations were not developed, and certain conclusions were not written down. Silence could be imposed from above, but it was often internalised as self-protection. A historian might know which documents would undermine official narratives and choose not to cite them. A sociologist might understand that

public opinion could not be studied honestly in politically sensitive contexts and therefore move to safer applied topics. A philosopher might avoid concepts such as pluralism, alienation, subjectivity, or civil freedom unless they could be placed safely inside approved Marxist language. An economist might describe inefficiencies technically while avoiding the political logic that produced them. Silence could also be an act of solidarity, as when colleagues avoided denouncing one another or refused to repeat official accusations more loudly than necessary. Yet silence had a corrosive effect. Over time, it created gaps in scholarship, interrupted debate, and trained younger researchers to treat absence as normal.

Compromise was more complex than silence because it involved action, not merely omission. Some compromises were small and routine: writing a formulaic paragraph about socialist development, attending ideological training, using official terminology, or submitting a travel report after a conference. Other compromises were more serious: signing statements of loyalty, accepting a position made vacant by a dismissed colleague, participating in personnel evaluations, or helping to implement research restrictions. The moral weight of compromise depended on context, intention, pressure, and consequence. A scholar who signed a harmless administrative statement to preserve a laboratory was not in the same position as a scholar who actively denounced colleagues for career advantage. Nevertheless, normalisation blurred such distinctions because it made compromise cumulative. One small concession made the next one easier; one accepted formula prepared the ground for another. Institutions also learned compromise collectively. An institute might sacrifice a sensitive topic in order to preserve a research team, or accept a politically acceptable director in order to keep its laboratories functioning. This was one of the regime's strengths. It did not require everyone to become an ideological believer; it required enough people to accept enough compromises for the system to reproduce itself.

Professional survival often depended on narrowing one's intellectual horizon. For many researchers, especially in the natural and technical sciences, the safest path was to concentrate on narrowly defined problems that could be defended as technical, experimental, or economically useful. A chemist could work on polymers, a physicist on materials or instrumentation, a mathematician on abstract structures, a biologist on laboratory processes, and an engineer on applied tasks. These fields were not free from political supervision, but their internal problems often allowed scholars to preserve professional seriousness while avoiding direct ideological confrontation. Nisonen-Trnka's study of Czechoslovak natural scientists shows how work itself could become a refuge from political pressure, especially after the purges had removed or marginalised prominent reform-associated figures (*Nisonen-Trnka, 2012*). This strategy protected scientific competence, but it also narrowed the public role of science. The scholar survived as a specialist but often ceased to appear as a public intellectual. In a morally damaged institution, professional excellence could become both a form of resistance and a form of withdrawal. It preserved standards, but it could also leave broader questions unanswered.

The humanities and social sciences developed different techniques of professional survival because they could not so easily separate research content from political meaning. Historians, sociologists, philosophers, economists, legal scholars, literary critics, and cultural researchers often relied on chronological distance, philological detail, technical language, coded interpretation, or displacement of contemporary questions into safer historical periods. A historian might study the early modern period rather than contemporary political history. A literary scholar might concentrate on textual scholarship while avoiding modern authors

associated with dissent or exile. A philosopher might work on the history of philosophy rather than on concepts of political freedom. A sociologist might shift towards demography, labour organisation, education, or applied administrative research. These choices allowed scholarship to continue, and in some cases they produced work of lasting value. Yet they also changed the structure of disciplines. Certain problems became overrepresented because they were safe; others disappeared because they were dangerous. This imbalance was not simply a matter of individual preference. It was produced by the political ecology of research under normalisation (*Oates-Indruchová, 2008*; *Pecka, 2011*).

Aesopian language became one of the most recognisable strategies of scholarly communication in the humanities and social sciences. It allowed authors to say more than could be openly stated by using indirection, historical analogy, terminological ambiguity, coded references, or carefully chosen omissions. Such language had deep roots in censored cultures, but under late socialism it acquired specific academic forms. A scholar might discuss an earlier historical crisis in a way that informed readers could connect to 1968, or analyse a literary text as a meditation on responsibility without naming contemporary politics. Oates-Indruchová's work on censorship and scholarly writing has shown that self-censorship and indirect expression were not marginal phenomena but part of the regulatory framework of academic publishing under state socialism (*Oates-Indruchová, 2018*; *Oates-Indruchová, 2020*). This strategy preserved fragments of intellectual vitality. It created a community of readers able to detect hidden meanings and to distinguish genuine thought from ritual ideology. But it also damaged clarity. The need to hide meaning made scholarship less direct, less cumulative, and less accessible to younger readers who did not always know the code.

Self-censorship was perhaps the most pervasive strategy because it moved supervision inside the author's own mind. It began before the manuscript reached an editor, before a director read the research plan, and before a censor or party official could intervene. A scholar anticipated possible objections, removed unsafe references, softened conclusions, avoided certain names, and translated sharper arguments into acceptable phrases. This process was often rational, because the consequences of open expression could be severe. Yet self-censorship was also intellectually dangerous because it became habitual. Scholars learned not only to avoid punishment but to avoid the anxiety of approaching forbidden questions. Over time, the boundary between tactical caution and internalised limitation could become blurred. A researcher might no longer know whether a topic had been abandoned because it was unsafe, uninteresting, or simply forgotten. The deepest effect of normalisation was not only the banning of particular texts; it was the creation of scholars who pre-emptively narrowed their own thought. The Academy's official controls were visible, but its internalised controls were often more durable.

Some scholars adopted the strategy of formal loyalty combined with private distance. They attended official meetings, used required phrases, accepted the existence of party supervision, and avoided open conflict, while privately maintaining scepticism towards the system. This form of adaptation was widespread in late-socialist society, and it also appeared inside the Academy. It resembled what Václav Havel famously analysed as the ritualised life of post-totalitarian ideology, where public gestures of conformity often mattered more than genuine belief (*Havel, 1985*). In academic life, the ritual could take the form of ideological introductions, ceremonial declarations, public condemnations of "right-wing opportunism", or formulaic references to the leading role of the party. Many people performed such rituals without enthusiasm, but their performance helped sustain the institution's public obedience.

Private disbelief did not automatically cancel public compliance. This was one of the moral traps of normalisation. The system could survive not because everyone believed it, but because many people behaved as if they accepted it.

Other scholars chose inner emigration, a strategy of psychological and intellectual withdrawal from public institutional life. They remained employed, sometimes even productive, but no longer expected the official academic world to be a space of truth. Inner emigration could mean concentrating on private reading, maintaining a small circle of trusted colleagues, writing for the future, or treating official publication as secondary to intellectual conscience. In the Academy, this strategy was easier for some disciplines than for others. A philologist, historian, or philosopher could sometimes continue private work in notebooks, unpublished manuscripts, or informal seminars. A laboratory scientist could not fully reproduce experimental research outside institutional structures, but could still preserve an inner distance from official ideology. Inner emigration allowed people to avoid total moral surrender, but it also contributed to public silence. It protected integrity at the price of withdrawal. For a research institution, widespread inner emigration meant that much intelligence remained present but socially muted.

Unofficial networks became essential where official institutions could not sustain open debate. Some dismissed scholars, marginalised researchers, and trusted colleagues maintained intellectual exchange through private seminars, samizdat, correspondence, and personal meetings. These networks did not replace the Academy, but they preserved lines of thought that official institutions could not host publicly. In some cases, Academy employees quietly participated in such circles while maintaining official positions. In other cases, excluded scholars continued to influence younger researchers outside formal supervision. Burget, Loučová, and Olšáková have shown that expert communities and environmental agendas could become channels of grey-zone communication between official scholarship, dissent, and semi-official critique (*Burget, Loučová, & Olšáková, 2021*). Such networks were not always openly oppositional. They often operated in ambiguous spaces where professional concern, moral responsibility, and political caution overlapped. Their significance lies precisely in this ambiguity. They show that intellectual life under normalisation did not divide neatly between official institutions and dissident opposition.

The grey zone was one of the most important social spaces of late-socialist science. It included people who were not open dissidents but were not genuine loyalists either. They might work inside official institutions while maintaining private contacts with excluded scholars, reading forbidden literature, sharing information, or protecting small spaces of intellectual autonomy. The grey zone was morally complex because it involved compromise as well as solidarity. A grey-zone scholar might write an orthodox report in the morning and discuss forbidden texts in the evening. He might avoid public protest but help a dismissed colleague obtain translations, books, or informal work. She might remain inside an institute in order to preserve access for students or to protect an archive from ideological destruction. These actions rarely produced heroic public narratives, but they mattered for the survival of scientific culture. The Academy's hidden history under normalisation cannot be understood without this intermediate space between collaboration and resistance.

Professional survival also depended on directors and senior figures who practised protective adaptation. Some institute leaders implemented normalisation harshly, whether out of conviction, fear, ambition, or obedience. Others tried to shield their staff by satisfying formal

political demands while reducing practical damage. A director might write ideologically acceptable reports, attend party meetings, and use correct vocabulary, while quietly allowing researchers to continue serious work. He might discourage risky publications but preserve employment for vulnerable scholars. She might accept limited compromise at the top in order to keep a laboratory, archive, or editorial project alive. Such protective behaviour was not always visible, and it could easily be misread from outside as loyalty. At the same time, it carried moral risks, because protection sometimes required sacrificing other people, topics, or public truth. The protective administrator was therefore a typical figure of the grey zone. Such figures helped preserve parts of the Academy, but they also participated in the normalised system that made protection necessary.

The strategy of retreat into technical expertise was especially important in economics, sociology, demography, and policy-related research. The state still needed expert knowledge about labour, population, education, production, planning, health, housing, and social management. Sommer's work on expert governance in socialist Czechoslovakia demonstrates that social scientific expertise did not disappear after the political defeat of reformism; rather, it continued within state structures, often in forms compatible with administrative needs (*Sommer, 2016*). This created a path for survival. A sociologist or economist could continue working if research was framed as technical expertise rather than systemic critique. Surveys, models, internal reports, and policy analyses could be useful to the state, especially when their conclusions remained within controlled channels. However, this strategy had a double edge. It preserved methods and data, but it also separated expertise from public accountability. Experts could know more than society was allowed to discuss. Their knowledge became useful to administration but less available as a democratic or civic resource.

In economics, this tension was especially evident. Reform economics had been strongly associated with the Prague Spring, and its public horizon was therefore suppressed after 1968. Yet the system still needed economic analysis, especially as stagnation, inefficiency, and technological lag became increasingly evident. Turnovec notes that modern economic approaches survived in limited institutional spaces, including the Academy's Institute of Economics, even though reform economists were blacklisted, degrees and appointments were subject to political control, and inconvenient analyses could be treated as internal or classified material (*Turnovec, 2011*). This produced a strategy of methodological survival without open reformist politics. Economists could work on modelling, planning techniques, mathematical methods, or internal analysis, but they had to avoid reviving the full political implications of the 1960s reform debate. Such work preserved a degree of professional continuity that became important later. Yet it also illustrates the cost of expertise under normalisation: analysis could exist, but its public consequences were blocked. Economic knowledge became partially separated from economic truth as a matter of public discussion.

For historians, survival strategies often involved distance, archival caution, and thematic displacement. Contemporary history was dangerous, especially the history of the Communist Party, Stalinism, 1948, and 1968. Some historians moved towards earlier periods, regional studies, medieval and early modern topics, or narrowly empirical archival work. This did not necessarily produce poor scholarship. On the contrary, some fields benefited from meticulous source work and from the discipline of avoiding grand ideological claims. Yet the broader consequence was an artificial deformation of historical research. The recent past, precisely because it was socially urgent, became the least free. Historians also had to decide how to handle names of excluded colleagues, forbidden publications, exile works, and sources that

contradicted official narratives. The result was a divided historical culture: official history, careful professional history, private memory, samizdat history, and exile historiography developed in uneasy relation to one another. The Academy's historical scholarship survived, but the public unity of the discipline was broken.

For philosophers, survival often meant moving into the history of philosophy, logic, methodology, aesthetics, or carefully bounded theoretical problems. Direct reflection on political freedom, democracy, humanism, alienation, civil society, and the moral crisis of socialism was dangerous. Philosophical work could continue if it was framed within acceptable Marxist-Leninist doctrine or within historical and technical subfields. Some scholars used the history of ideas to preserve contact with broader European thought, while others relied on conceptual nuance to keep questions alive beneath official vocabulary. This was a difficult strategy because philosophy is especially vulnerable to the corruption of language. If concepts must constantly pretend to mean one thing while suggesting another, philosophical clarity suffers. At the same time, philosophy's abstractness sometimes gave room for coded survival. A discussion of truth, subjectivity, responsibility, or alienation could carry meanings beyond its official surface. The survival of philosophy under normalisation therefore depended on a fragile balance between doctrinal conformity, historical scholarship, technical precision, and hidden critique.

Literary scholars and cultural historians also developed sophisticated strategies of indirection. They could use textual scholarship, editing, genre history, linguistics, or distant literary periods to continue professional work. They could preserve suppressed authors through private reading, archival notes, or careful allusion, even when those authors could not be fully restored to public culture. The canon itself became a field of negotiation. Some names disappeared from textbooks and journals; others remained but were interpreted in safer ways. Modernism, structuralism, existential themes, religious motifs, and civic moral language had to be handled with caution. Literary scholarship was particularly well suited to Aesopian communication because interpretation could operate through metaphor, analogy, and close reading. Yet this strength also reflected constraint. A society in which literary criticism must carry hidden meanings is a society in which direct public thought has been damaged.

In the natural sciences, survival was closely tied to maintaining laboratory standards despite political interference. Researchers tried to preserve experimental continuity, secure equipment, maintain technical teams, and keep some channels of international communication open. The best strategy was often to demonstrate practical value while avoiding public controversy. A successful laboratory could be defended as useful to industry, medicine, agriculture, or technological modernisation. This gave natural scientists more room than many humanists, but it also made them dependent on state priorities. Research could be steered towards applied goals even when fundamental inquiry required longer horizons. International journals and conferences were vital, yet travel was politically filtered. Scientists had to learn how to present cooperation with Western colleagues as professionally necessary and politically safe. Their survival strategy was therefore a form of disciplined professionalism: do the work well, avoid unnecessary ideological exposure, and protect the research group from administrative disruption.

International contact itself became a strategy of survival, but also a source of risk. Scholars who maintained access to foreign literature, conferences, correspondence, and professional networks could preserve standards that would otherwise have been eroded by isolation. For

natural scientists, such contact was often justified by the universal character of scientific research and the need to remain technically current. For humanists and social scientists, foreign contact was more ideologically sensitive, especially when it involved Western theory, émigré scholars, or topics related to Czechoslovak politics. Some researchers used official trips to acquire books, exchange manuscripts, or maintain discreet professional ties. Others relied on colleagues abroad to send literature or information. Yet every contact had to be weighed against possible suspicion. Foreignness was both resource and danger. Normalisation therefore transformed international communication from an ordinary scholarly practice into a carefully managed survival technique.

Another strategy was the cultivation of institutional memory. Even when certain names could not be cited publicly, senior scholars could remember them privately, tell younger colleagues about them, preserve offprints, keep correspondence, or maintain bibliographic knowledge. This mattered because normalisation tried to interrupt intellectual succession. If a discipline loses its memory, it becomes easier to govern through official narratives. Private memory therefore had scholarly significance. A younger researcher might learn from an older colleague which books mattered, which arguments had been suppressed, which foreign debates were relevant, and which institutional absences were politically produced. Such transmission was vulnerable because it depended on trust. It could not always enter formal teaching, publication, or doctoral supervision. Yet it helped prevent the complete erasure of the reformist and pre-normalisation intellectual world. The Academy's survival as a scholarly institution depended partly on these quiet acts of remembrance.

Students and younger researchers developed their own survival strategies. Those entering the Academy in the 1970s and 1980s had not necessarily experienced the Prague Spring as mature scholars, but they inherited its consequences through silence, fear, absence, and restricted opportunity. They learned which supervisors were politically safe, which topics were promising, which archives were sensitive, and which forms of language were expected. Some chose conformity and career advancement. Others developed private scepticism while outwardly adapting. Some sought mentors who could teach them more than the official curriculum allowed. In natural sciences, younger researchers often concentrated on technical excellence and international standards; in humanities and social sciences, they often had to learn coded reading and cautious formulation. Their survival was shaped by the fact that they began their careers inside an already normalised world. For them, adaptation was not an interruption of a previous freedom but the initial condition of professional life.

The family and social dimension of survival should not be ignored. A researcher's choices affected spouses, children, parents, and household security. Dismissal could mean not only loss of professional status but also economic insecurity, restricted educational opportunities for children, surveillance, and social stigma. This pressure made compromise more understandable, though not always morally justifiable. Many scholars had to decide whether open refusal was worth the cost to those around them. The regime benefited from this because it rarely had to threaten families explicitly; the social consequences of political unreliability were widely understood. Professional survival was therefore also domestic survival. A cautious article, a signed statement, or a refusal to defend a colleague could be connected to fear for one's family. This human context complicates retrospective judgement. It does not remove responsibility, but it reminds us that normalisation operated through the whole fabric of life, not only through official institutions.

The distinction between professional survival and opportunism was often difficult to draw. Some people adapted in order to protect research, students, or colleagues. Others adapted because normalisation opened career opportunities that would not otherwise have been available. The removal of respected scholars created vacancies, and politically reliable candidates could advance quickly. In some cases, mediocre researchers became powerful administrators because loyalty mattered more than scholarly distinction. This changed the moral economy of the Academy. Those who suffered for integrity often watched less qualified colleagues gain authority. Those who accepted new positions could claim that they were preserving institutions, but such claims were not always convincing. Normalisation therefore produced resentment, mistrust, and long memories. After 1989, questions of who had merely survived, who had protected others, who had collaborated, and who had profited became difficult to resolve precisely because the grey zone had been so extensive.

Dissent represented the most explicit rejection of normalisation, but it was not the dominant strategy within the Academy. Some scholars joined or supported dissenting circles, signed Charter 77, contributed to samizdat, or maintained close relations with unofficial intellectual networks. Others sympathised privately but did not act publicly. Still others avoided dissent because they feared losing the ability to conduct research or protect their families. Havel's language of "living in truth" became morally powerful precisely because ordinary late-socialist life was filled with rituals of public untruth (*Havel, 1985*). Yet the Academy's situation was institutionally specific. To live in truth as a scientist could mean open protest, but it could also mean preserving evidence, refusing to falsify data, maintaining scholarly standards, or silently protecting intellectual memory. These forms were not equivalent, but all belonged to the moral spectrum of survival. The Academy was not a dissident institution, but it contained individuals and micro-communities whose relationship to truth exceeded the limits of official loyalty.

Professional ethics could survive in modest but important forms. A laboratory scientist could refuse to manipulate results. A historian could maintain source accuracy even when avoiding dangerous interpretation. A sociologist could preserve methodological rigour in applied research. An economist could keep formal standards alive despite political constraints. An editor could soften ideological attacks in a manuscript review. A director could write a protective evaluation of a vulnerable researcher. These small ethical acts did not overthrow normalisation, but they prevented total degradation. They also created the basis for later renewal. Institutions recover more easily when some habits of accuracy, responsibility, and professional honour have survived inside them. The Academy's post-1989 transformation would have been far harder if normalisation had completely destroyed such habits. The survival of professional ethics was therefore one of the hidden achievements of those who worked under constraint.

At the same time, survival strategies had long-term costs. Self-censorship weakened intellectual courage. Narrow specialisation reduced public responsibility. Technical expertise separated knowledge from civic debate. Aesopian language damaged clarity. Private memory could not replace public scholarship. Protective compromise could slide into collaboration. Silence about dismissed colleagues could become moral injury. Generational caution could outlast the conditions that produced it. These costs accumulated slowly and were not always visible in publication lists or institutional reports. The Academy might continue producing research, but the moral atmosphere of research had changed. Normalisation therefore damaged science not only by removing people but by altering the habits through which

knowledge was produced and communicated. Its deepest legacy was the deformation of scholarly subjectivity.

The strategies of adaptation, silence, compromise, and professional survival also explain why the Academy remained contradictory throughout late socialism. It was neither simply a victim nor simply an instrument of the regime. It was a controlled institution in which individuals and groups pursued different strategies under unequal pressure. Some careers were destroyed, some were preserved, some were compromised, and some were advanced through loyalty. Some disciplines retained international standards; others were narrowed by censorship and ideological control. Some scholars remained inwardly free while outwardly conforming; others adopted the official line sincerely or opportunistically. This complexity should not dilute the judgement that normalisation was coercive. Rather, it helps explain how coercion became durable. A system lasts when it creates enough space for survival to prevent collapse, but not enough freedom for open transformation.

By the late 1980s, these strategies had produced an Academy marked by both continuity and fatigue. Laboratories, archives, institutes, journals, research programmes, and professional communities still existed. Some work remained serious, and some international achievements continued. Yet the institution also carried the weight of two decades of caution, interrupted debates, damaged trust, and unresolved moral accounts. The strategies that had made survival possible also made renewal difficult. Scholars had learned to avoid certain questions, to speak indirectly, to separate private knowledge from public language, and to distinguish professional competence from civic responsibility. When political change approached, these habits did not disappear immediately. The post-1989 Academy inherited not only scientific capital but also the psychological and moral sediment of normalisation. Understanding survival strategies is therefore essential for understanding both late socialism and the later transformation of Czech science.

Thus, the strategies of adaptation, silence, compromise, and professional survival under normalisation reveal the Czechoslovak Academy of Sciences as a deeply constrained but internally diverse institution. Scholars did not respond to ideological control in one uniform way. Some conformed, some resisted, some withdrew, some protected others, some profited, and many occupied ambiguous positions between public loyalty and private scepticism. Natural scientists often survived by retreating into technical professionalism, laboratory continuity, and demonstrable usefulness, while humanists and social scientists relied more heavily on coded language, thematic displacement, private memory, and unofficial networks. These strategies preserved important elements of scientific competence, disciplinary continuity, and professional ethics, but they also carried significant costs: self-censorship, narrowed inquiry, weakened public responsibility, damaged trust, and moral ambiguity. The Academy's late-socialist history must therefore be read not only as a story of external control, but also as a story of everyday negotiation within that control. Survival was real, but it was never innocent. It allowed science to continue, yet often under conditions that forced scholars to separate knowledge from speech, conscience from career, and truth from institutional security.

Scientific Productivity in a Restricted System

1. Strong disciplines and internationally visible research

Scientific productivity under normalisation was one of the most paradoxical features of the Czechoslovak Academy of Sciences. The Academy was politically disciplined, administratively supervised, and morally damaged by purges, dismissals, censorship, and ideological pressure, yet it did not cease to be a significant research institution. In several disciplines, especially in the natural, mathematical, chemical, biomedical, physical, and technical sciences, work of international value continued throughout the 1970s and 1980s. This did not mean that these fields were free, nor that their achievements can be separated from the political conditions under which they were produced. Rather, it means that the late-socialist Academy must be understood as a contradictory institution: constrained in autonomy, but not emptied of competence. Its strongest institutes preserved laboratories, research schools, experimental facilities, mathematical traditions, technical teams, and foreign scientific contacts, even when many of their leading figures were politically weakened or removed from positions of authority. The state needed this productivity because scientific achievement supported economic modernisation, technological prestige, military-industrial capacity, medicine, education, and the international image of socialist Czechoslovakia. For that reason, the regime could not treat the whole Academy as it treated the most politically exposed sectors of the humanities and social sciences. It sought to control science while also using it, to discipline scientists while also depending on their knowledge, and to limit internationalisation while also needing international recognition. This contradiction explains why some of the Academy's strongest disciplines remained visible beyond Czechoslovakia even in a restricted political system (*Nisonen-Trnka, 2008*; *Nisonen-Trnka, 2012*; *Payne, 1972*).

The survival of strong disciplines after 1969 was possible because the Academy inherited considerable intellectual and infrastructural capital from the preceding decades. The creation of the Czechoslovak Academy of Sciences in the early 1950s had concentrated basic research in a centralised institutional framework, and the 1960s had brought methodological renewal, expanding international contacts, and a more confident research culture. By the time normalisation began, the Academy already possessed institutes with specialised equipment, trained personnel, research libraries, accumulated experimental programmes, and disciplinary reputations that could not be replaced quickly. The state could remove directors or impose ideological supervision, but it could not easily recreate a polymer chemistry school, a physical chemistry laboratory, a mathematical tradition, or a plasma physics facility from nothing. This is one of the reasons why the natural and technical sciences often retained more continuity than the most exposed humanities and social sciences. Their strength did not depend only on political favour; it also depended on accumulated professional competence. The regime therefore inherited a system that it both distrusted and needed. In some cases, normalisation damaged leadership and public autonomy without destroying the internal research capacity of institutes. In other cases, it narrowed international contact but did not fully sever scientific communication. The Academy's productivity in the 1970s and 1980s thus rested on a pre-normalisation foundation that the regime could exploit but not wholly author. The late-socialist state claimed science as part of socialist progress, but many of the strongest achievements had roots in intellectual developments that preceded the restoration of rigid control.

Chemistry was one of the clearest examples of a discipline that retained international significance under restriction. The Institute of Organic Chemistry and Biochemistry, the Institute of Macromolecular Chemistry, and the J. Heyrovský Institute of Physical Chemistry and Electrochemistry represented different but mutually reinforcing lines of Czech and Czechoslovak chemical strength. These institutes combined fundamental research with applications in medicine, polymer science, materials, electrochemistry, molecular structure, and physical chemistry. Chemistry was politically safer than sociology or contemporary history because its objects of inquiry were not directly concerned with the legitimacy of the party-state. At the same time, it was economically and technologically valuable, which gave its institutes stronger arguments for resources, international contact, and long-term programmes. The regime could punish or demote individual chemists, as the cases of František Šorm and Otto Wichterle demonstrate, but it could not afford to abandon the chemical research system as a whole. The history of these institutes shows how excellence could survive inside a politically constrained order, though often under conditions of personal injustice and institutional dependency. The strong chemical disciplines also benefited from an older Czech tradition of industrial chemistry, pharmaceutical research, and technical education, which linked Academy science with universities and applied sectors. This connection with practice was important, because it allowed research to be justified in the language of national utility. Yet the best chemistry was not merely applied service to industry; it preserved a serious basic-science core. That balance between fundamental knowledge and practical possibility became one of the sources of international visibility.

The Institute of Organic Chemistry and Biochemistry is particularly important because it demonstrates how an Academy institute could continue producing results with long-term global consequences. Its origins lay in the post-war and early Academy period, and it developed into one of the most successful research centres within the Czechoslovak Academy of Sciences. Martin Franc has described it as one of the most successful institutes of the Academy, noting its privileged position, its strong research culture, and its links between basic science, patents, and application (*Franc, 2024*). The institute's later international fame is inseparable from the work of Antonín Holý, whose research in modified nucleosides and nucleotides created the basis for antiviral compounds that became globally important after the Cold War. Holý's collaboration with Erik De Clercq began in 1976, and the discovery of acyclic nucleoside phosphonates in the early 1980s became one of the most consequential achievements of Czech biomedical chemistry (*De Clercq, 2013*; *Institute of Organic Chemistry and Biochemistry, n.d.*). These compounds later led to clinically used drugs against viral diseases, including HIV and hepatitis B, although the full pharmaceutical impact became visible only after the normalisation period. This example is crucial because it shows that late-socialist science could generate discoveries whose significance exceeded the political system that constrained them. It also shows that international cooperation, even under Cold War restrictions, remained essential for scientific success. Holý's work did not emerge from ideological loyalty, but from sustained chemical creativity, institutional competence, and professional contact across political borders. The IOCB case therefore reveals the difference between the political narrowness of the system and the intellectual scale of the science that could still be produced inside it.

Macromolecular chemistry formed another pillar of internationally visible Czech science. Otto Wichterle's invention of soft contact lenses had already shown before normalisation how polymer chemistry could produce discoveries of global importance. The Institute of

Macromolecular Chemistry, founded under Wichterle's leadership, gave this field a strong institutional base in the Academy system. Its official history emphasises that from the beginning the institute maintained a balance between polymer chemistry and polymer physics, and between theoretical, basic, and applied research (*Institute of Macromolecular Chemistry, n.d.*). This balance was important because it prevented the institute from becoming merely an industrial service facility. It cultivated a scientific culture in which fundamental understanding of polymers could lead to practical applications, while applications in turn justified the institute's social value. Yet Wichterle's personal fate also reveals the limits of disciplinary strength under normalisation. Because of his public stance in 1968 and his broader independence, he was punished by the normalisation regime and removed from positions of institutional authority. The field remained valuable, but the scientist who had given it international visibility was politically marginalised. This contradiction is central to the history of strong disciplines under late socialism. A discipline could flourish institutionally while some of its most creative figures were denied the leadership and public recognition that their work deserved.

Physical chemistry and electrochemistry also preserved a visible position, partly because of the long shadow of Jaroslav Heyrovský and the Czech tradition of polarography. The J. Heyrovský Institute of Physical Chemistry and Electrochemistry, established in 1972 by merging the Institute of Physical Chemistry and the Institute of Polarography, carried forward research lines associated with electrochemical methods, molecular processes, spectroscopy, and theoretical approaches. Its official history notes that the merger occurred after a difficult post-1968 situation in which several leading figures had emigrated to the West, and that the institute was formed under new leadership in the early 1970s (*J. Heyrovský Institute of Physical Chemistry, n.d.*). This institutional history is revealing because it combines loss and continuity. Emigration and political disruption weakened the field, but the institutional framework preserved enough capacity for physical chemistry to continue as a serious research area. Rudolf Zahradník's work in quantum chemistry and molecular spectroscopy also belongs to this broader context of Czech theoretical and physical chemistry. His later role as president of the Academy of Sciences of the Czech Republic after 1993 should not obscure the fact that he had built his scientific standing within the earlier Academy environment. The survival of theoretical chemistry under normalisation depended on the relative abstraction of the field, its international language, and its connection with physical and molecular science. Such research was not politically harmless in every respect, but it was less directly exposed than social theory or contemporary history. The discipline could maintain international standards because its conceptual problems were shared by scientific communities beyond ideological borders.

Physics was another strong domain, though its internal map was diverse. The Academy's physical institutes worked in areas connected with solid-state physics, optics, plasma physics, radio engineering, electronics, semiconductor research, materials, instrumentation, and later laser technologies. These fields mattered to the state because they supported industrial modernisation, defence-related capacities, energy research, communications, and technological prestige. They also required international awareness, since physics was among the most globally standardised scientific fields of the 20th century. Research could not be conducted seriously if it was isolated from developments in instrumentation, theory, and experiment abroad. Normalisation therefore placed physics in a difficult but comparatively protected position. The political authorities wished to supervise foreign contact and cadre reliability, but they also needed physicists to maintain scientific and technological

competence. This did not mean that physicists were free from purges or ideological constraints. It meant that the content of much physical research could be defended as technical, fundamental, or strategic. As a result, some physical institutes continued to develop long-term programmes whose significance extended beyond the immediate political atmosphere. Their survival helped preserve a technical and theoretical base that would later become important for post-1989 integration into European research structures.

The Institute of Plasma Physics illustrates how a specialised field could continue within the Academy despite the broader climate of control. Its origins went back to the late 1950s, when research connected with vacuum electronics and accelerators gave rise to a specialised institute that became the Institute of Plasma Physics in 1963. The field was internationally important because plasma physics was connected with controlled thermonuclear fusion, high-temperature plasma, space physics, surface processes, and advanced technologies. The CASTOR tokamak, operated at the Institute of Plasma Physics from 1977 to 2006, shows that even during late socialism the Academy was involved in internationally recognisable research infrastructure. The device had been built in Moscow in the early 1960s and later operated in Prague, becoming part of the Czech and Czechoslovak plasma physics tradition (*Institute of Plasma Physics, n.d.*). Such infrastructure did not make the field independent from politics, but it created a research environment in which technical continuity mattered. Plasma physics also benefited from its connection with the Soviet scientific bloc, where fusion and tokamak research had strategic importance. This eastern orientation could restrict Western contact, but it also supplied a framework for participation in a major scientific-technological field. The example demonstrates that late-socialist international visibility was not always Western-centred; some forms of visibility operated through socialist scientific networks. Yet the existence of facilities like CASTOR also preserved competence that later allowed Czech plasma physics to enter wider European cooperation.

Optics, electronics, and photonics formed another technologically significant domain. The Institute of Radio Engineering and Electronics, later the Institute of Photonics and Electronics, developed from the post-war restructuring of research institutes into the Academy system. Its institutional history records an important shift in the 1960s towards materials for infrared optics, ferroelectric single crystals, semiconductor technology, optical communications, and quantum electronics, with prototype production and practical orientation playing a notable role (*Institute of Photonics and Electronics, n.d.*). These research lines continued into the normalisation period because they were directly connected with technological modernisation. In the 1970s and 1980s, semiconductor technology, digital signal processing, speech analysis, optical communications, and laser-related work belonged to fields in which Czechoslovakia could not afford intellectual isolation. The institute's later history also indicates that teams working on speech coding received a Czechoslovak Academy of Sciences prize in 1987, showing that even within the late-socialist system recognised technical achievements continued. This is important because it complicates any simple narrative of stagnation. The system was politically restrictive, but it still rewarded certain forms of technical productivity. At the same time, the reward structure favoured areas that could be framed as useful, modern, and ideologically neutral. Thus, electronics and photonics reveal how scientific strength could persist where disciplinary aims aligned with the state's technocratic ambitions.

Laser research also demonstrates the continuity between pre-normalisation scientific dynamism and late-socialist technical development. The first Czechoslovak lasers were built in the early 1960s, and Academy institutions played a major role in the emergence of laser

physics. Later, in the 1980s, the Institute of Physics of the Czechoslovak Academy of Sciences received an iodine laser system developed at the Lebedev Institute in Moscow, rebuilt it, changed its concept, and put it into operation in 1985 under the name PERUN; a more powerful PERUN II system followed in 1992 (*ELI Beamlines, n.d.*). This trajectory shows both dependence and creativity. The initial system came from the Soviet scientific environment, but Czech scientists adapted, rebuilt, and developed it into a significant local research infrastructure. Laser science under normalisation therefore cannot be reduced either to isolation or to passive imitation. It involved transfer, modification, technical learning, and the preservation of experimental skill. It also illustrates how socialist-bloc scientific cooperation could create real research capacity, even when political conditions limited broader intellectual freedom. The later connection between Czech laser traditions and post-socialist large-scale facilities should not be projected back too simplistically, but the continuity of competence is historically meaningful. Strong disciplines often survived because researchers transformed constrained opportunities into durable expertise.

Mathematics occupied a special place because its relative abstraction gave it a different relationship to ideological control. Mathematical research could be supervised through personnel policy, appointments, travel, and institutional administration, but its core problems were often less vulnerable to direct ideological interpretation. The Mathematical Institute of the Academy had roots in the post-war reconstruction of Czech mathematical life and became part of the Czechoslovak Academy after its foundation. A brief institutional history notes that branches such as functional analysis, topology, and mathematical logic developed in the 1960s, that a Brno institute was established in 1969 under Otakar Borůvka, and that after a 1972 reorganisation it became the Brno branch of the Prague Mathematical Institute (*Segeth, 2002*). In the 1970s, the institute-maintained departments in ordinary and partial differential equations, constructive methods, numerical methods, graph theory and mathematical logic, functional analysis, probability theory and mathematical statistics, basic mathematical structures, and modernisation of mathematical education. Such a structure indicates a broad and serious mathematical culture. Mathematics could also support physics, engineering, computing, and cybernetics, which gave it practical justification within the socialist research system. Yet its strongest protection lay in its international formal language and the difficulty of translating mathematical content into immediate ideological danger. This did not make mathematicians politically immune, but it helped preserve continuity in research traditions. Mathematics therefore represents one of the fields in which the Academy could maintain intellectual seriousness despite political conditions that damaged more discursive disciplines.

Computing, cybernetics, numerical methods, and information theory also retained importance, though their institutional and ideological trajectory had been complicated. Earlier Stalinist suspicion towards cybernetics had gradually given way to recognition of its technological and administrative value, and by the 1960s and 1970s computing-related disciplines had become indispensable for planning, automation, modelling, and scientific calculation. The Academy's General Computing Centre, founded in 1975 after a group left the Institute of Radio Engineering and Electronics, later became part of the lineage of the Institute of Computer Science of the Czech Academy of Sciences (*Institute of Photonics and Electronics, n.d.*). This development shows how new scientific-technological fields could emerge even under normalisation. Computing was politically useful because it promised administrative rationalisation, industrial efficiency, mathematical modelling, and technical modernity. It was also potentially sensitive because information, modelling, and systems

thinking could generate forms of analysis that exceeded ideological simplification. Nevertheless, the regime increasingly needed computing capacity and could not ignore the global direction of technological change. Academy institutes therefore contributed to preserving a computational and mathematical infrastructure that later became important after 1989. The field's development was constrained by resource shortages, import restrictions, and political filtering of international contacts, but it remained one of the domains where professional competence continued. The existence of such fields demonstrates that late socialism was not technologically motionless; its problem was that innovation operated inside a system often unable to use it flexibly.

Biological and biomedical sciences also formed part of the Academy's productive core, although their situation varied by subfield. Experimental botany, microbiology, physiology, biochemistry, parasitology, and related disciplines benefited from laboratory infrastructures that had developed in earlier decades. The Institute of Experimental Botany, for example, was founded on 1 January 1962 from departments of the former Institute of Biology and included facilities in Prague, Brno, Olomouc, and field research bases (*Institute of Experimental Botany, n.d.*). This origin in the 1960s matters because it shows that some late-socialist research capacity rested on institutions created during the more dynamic pre-normalisation decade. Plant physiology, phytopathology, developmental biology, and agriculturally relevant research could be justified as socially useful. Biomedical and biological research also connected with public health, agriculture, food production, and environmental questions, all of which gave these fields practical legitimacy. Yet biology was not entirely free from ideological or political pressures, especially where genetics, environmental degradation, or international cooperation became sensitive. Still, many biological fields could preserve serious empirical work because their immediate research objects were less directly tied to political legitimacy than sociology or history. Their productivity illustrates again the unevenness of the normalised Academy. Some research suffered from isolation and resources, but laboratory traditions could continue and sometimes produce lasting results.

Instrumentation and scientific apparatus represented a further area of strength because they linked research with engineering skill and industrial application. Czechoslovakia had important traditions in electron microscopy, optics, precision instruments, and measurement technologies. The Institute of Scientific Instruments in Brno belonged to this wider research-industrial environment, and the history of electron optics in Czech lands was shaped by figures whose work connected Academy research with technical production. Armin Delong and colleagues had built the first Czechoslovak tabletop electron microscope in the early 1950s, and electron microscopy became an important field in which Czechoslovak industry and research achieved broader visibility. A recent institutional commemoration notes that TESLA made electron microscope manufacturing one of its key activities and that it became a global leader in the field for two decades thanks to Delong's ideas (*Faculty of Electrical Engineering and Communication, Brno University of Technology, 2025*). This history matters for the Academy because scientific productivity was not only measured in articles and theories. It also included instruments, prototypes, technical competence, and the ability to create apparatus that enabled further research. Instrumentation was politically valuable because it supported many other scientific fields and reduced dependence on imports. Yet it also required openness to technical standards and international comparison. The strength of instrumentation therefore reveals another channel through which Czechoslovak science remained internationally relevant despite political limits.

Materials science and metallurgy similarly occupied a productive position within late-socialist research. The Institute of Physical Metallurgy, later the Institute of Physics of Materials, developed from the Laboratory for the Study of the Properties of Metals founded in 1955 and became an institute under this name in 1969 (*Institute of Physics of Materials, n.d.*). The timing is significant: just as political normalisation was beginning, a field connected with industrial materials, metals, mechanical properties, and physical metallurgy acquired a clearer institutional form. Such research was useful to engineering, manufacturing, transport, energy, and defence-related sectors. It could be framed as part of the state's technological development, and therefore it had a stronger claim to resources than disciplines whose primary output was social or historical interpretation. Materials research also depended on long-term experimental programmes, technical equipment, and specialised expertise. This continuity protected it from the kind of abrupt ideological redefinition that affected sociology or contemporary history. Yet its productivity should not be mistaken for institutional freedom. The institute still operated within the same Academy hierarchy, planning system, and cadre framework. Its relative strength came from the fact that the political system could easily understand its usefulness, even if it could not always provide optimal conditions for its development.

The social sciences and humanities were more restricted, but even there productivity did not entirely disappear. It is important not to write the history of the normalised Academy as though all serious work was confined to natural science. Certain areas of linguistics, archaeology, medieval studies, classical scholarship, art history, demography, textual editing, ethnography, and applied social research continued to produce meaningful scholarship. Their survival often depended on chronological distance, technical specialisation, philological discipline, or usefulness to administration. The problem was that fields connected with recent history, political sociology, reform economics, contemporary philosophy, legal theory, and modern cultural criticism were much more constrained. The humanities therefore survived in an uneven form: some subfields preserved scholarly rigour, while others were ideologically narrowed or interrupted. This uneven survival is crucial for understanding the Academy's overall productivity. It prevents a simplistic contrast between productive natural sciences and dead humanities. The real contrast lay between fields that could find safe forms of research and fields whose truth claims threatened official narratives. Even in the humanities, professional seriousness could continue when scholars found ways to protect it through method, distance, or coded language. However, the price of such survival was often the loss of public critical force (*Oates-Indruchová, 2008*; *Oates-Indruchová, 2020*).

The international visibility of strong disciplines depended not only on research quality but also on the selective permeability of the Iron Curtain. Even in the 1970s and 1980s, Czechoslovak scientists were not entirely isolated from the world. They published abroad, attended selected conferences, corresponded with foreign colleagues, received visitors, and participated in socialist-bloc and sometimes Western networks. Natural scientists had stronger arguments for such contacts because their work was embedded in universal experimental and technical standards. Nisonen-Trnka's work on Czechoslovak natural scientists emphasises that international contacts were central to their identity and that figures such as Šorm and Wichterle understood science as a domain that should cross political boundaries (*Nisonen-Trnka, 2008*; *Nisonen-Trnka, 2012*). Under normalisation, those contacts became more controlled, but they did not vanish. This selective internationalisation allowed some institutes to remain scientifically current, although the privilege of travel and correspondence was

politically stratified. Access to the world depended not only on scientific merit but also on trustworthiness, institutional position, and the perceived sensitivity of the field. The result was a distorted internationalism: enough openness to sustain certain disciplines, not enough openness to restore full scientific autonomy. The Academy's visible research achievements therefore emerged through channels that were narrow, monitored, and unequal.

The strongest disciplines also benefited from the persistence of research schools. A research school is more than a department or institute; it is a community of methods, habits, questions, instruments, mentorship, and intellectual memory. Chemistry, mathematics, physical chemistry, polymer science, plasma physics, electronics, and some biological fields had such schools. They could survive leadership changes because their knowledge was distributed among teams, technicians, younger researchers, and laboratory practices. Political intervention could damage them, but it did not always destroy their accumulated competence. This was less true in fields where research depended heavily on open public debate, theoretical pluralism, and free interpretation of recent history. A mathematical school could continue through problems and proofs; a polymer laboratory could continue through experiments and materials; a philosophy school devoted to reform Marxism or phenomenology could be broken more easily by censorship and personnel exclusion. The uneven resilience of research schools therefore shaped the Academy's late-socialist productivity. Strong disciplines survived not simply because the regime permitted them, but because they possessed internal structures capable of enduring unfavourable conditions. Their continuity was a historical resource that the regime did not create, even when it used it.

Another factor was the relationship between basic and applied research. The Academy's strongest institutes often succeeded when they maintained a genuine connection between fundamental inquiry and practical application. Polymer chemistry, antiviral chemistry, physical chemistry, electronics, plasma physics, materials science, and instrumentation all illustrate this pattern. The state favoured application, but the most valuable applications usually emerged from deeper basic research rather than from short-term administrative tasks. Holý's antiviral chemistry, Wichterle's polymer work, and developments in lasers or instrumentation show that international significance often came from research cultures able to move between theory, experiment, and use. This created a tension with the planning system. Planners wanted useful results, but genuine discovery could not always be scheduled according to administrative expectations. Strong institutes survived partly because their leaders and teams learned to translate basic research into the language of usefulness without wholly sacrificing scientific depth. In this sense, professional survival required rhetorical skill as well as scientific skill. Researchers had to justify long-term inquiry in a system that preferred measurable outputs and ideological service. The best disciplines did this without losing all intellectual seriousness.

Scientific productivity also depended on tacit professional ethics. Even under party supervision, a chemist still had to respect experimental results, a mathematician had to prove the theorem, a physicist had to calibrate the instrument, and a biologist had to observe carefully. Political loyalty could not make a failed experiment succeed. This gave the natural and mathematical sciences a certain inner resistance to ideological falsification. The regime could distort appointments, funding, travel, or public recognition, but it could not replace the internal standards of a working laboratory or mathematical community without damaging the outputs it wanted. Many scientists therefore preserved professional standards as a form of quiet integrity. This was not necessarily political resistance, but it was a barrier against total

intellectual degradation. In the humanities and social sciences, similar ethics existed through source criticism, philology, statistical discipline, archival accuracy, and careful interpretation, though these fields faced stronger pressure at the level of meaning. The Academy's scientific productivity under normalisation depended on the survival of these professional norms. Without them, the institution would have become mere bureaucratic theatre. The fact that it did not become only that is one of the central reasons why its later renewal was possible.

The achievements of strong disciplines should not obscure the losses that accompanied them. Internationally visible research often coexisted with damaged careers, restricted travel, censorship, and exclusion of colleagues. The success of a laboratory could depend on the silence of those who knew that its founder or former director had been politically humiliated. The continuity of a research programme could be purchased through compromise with administrators. The publication of technical results could occur while critical social knowledge remained suppressed. This coexistence created a morally uneven institution. It is therefore not enough to say that science continued; one must also ask under what conditions, for whom, and at what cost. The normalised Academy produced knowledge, but it did not produce it in a normal scientific public sphere. Its strongest disciplines enjoyed relative space because they served state priorities and because their content was less ideologically threatening. Yet the broader institutional environment limited the freedoms that make scientific communities fully self-correcting. Productivity under constraint was real, but it was never innocent.

The 1980s intensified the contradiction between visible competence and systemic stagnation. On the one hand, some disciplines continued to produce valuable research, maintain international contacts, and develop technical capacities. On the other hand, the political and economic system increasingly struggled to use scientific knowledge effectively. Technological lag, limited access to Western equipment, bureaucratic inertia, environmental degradation, and the rigidity of central planning became more apparent. The Academy could identify problems, develop expertise, and in some cases propose solutions, but the political system restricted open systemic diagnosis. This meant that scientific productivity did not automatically translate into social or economic modernisation. Strong disciplines could produce excellent results, but the wider institutional environment often weakened implementation. The gap between knowledge and decision-making widened. In this respect, the Academy's productivity revealed both the strength of its scientists and the limits of the late-socialist order. The regime needed science, but it could not fully accept the autonomy and openness through which science could transform society.

The internationally visible research of the normalisation period therefore has to be interpreted in a double perspective. From one angle, it testifies to the resilience of Czech and Czechoslovak scientific traditions, the seriousness of Academy institutes, and the dedication of researchers who continued working under difficult conditions. From another angle, it exposes the irrationality of a political system that punished some of its most creative scientists, restricted critical disciplines, and filtered international cooperation through ideological loyalty. The same period that saw the continuation of strong chemical, physical, mathematical, biological, and technical research also saw the marginalisation of many scholars whose intellectual independence was politically inconvenient. This duality should be central to the chapter's narrative. The Academy under normalisation was not a ruin, but neither was it a healthy scientific republic. It was a constrained institution in which islands of excellence survived inside a sea of administrative caution. The existence of those islands does

not justify the sea. Yet without them, the history of Czech science after 1989 would be impossible to explain.

Thus, strong disciplines and internationally visible research under normalisation reveal the central contradiction of the late-socialist Academy: science remained capable of significant achievement even when scientific autonomy was politically restricted. Chemistry, macromolecular science, antiviral and bioorganic chemistry, physical chemistry, mathematics, plasma physics, electronics, photonics, laser research, instrumentation, materials science, and several biological fields preserved research cultures that could still communicate with international science and produce durable results. Their strength rested on accumulated pre-normalisation capital, laboratory infrastructure, professional standards, research schools, practical usefulness, and the state's need for technological legitimacy. Yet this productivity was uneven and morally complex. The same system that supported laboratories also punished independent scientists; the same state that needed innovation also feared critical expertise; the same Academy that produced internationally meaningful research also contained silenced disciplines, censored arguments, and broken careers. The late-socialist Academy therefore cannot be described either as scientifically sterile or as normally productive. It was productive under constraint, internationally visible in selected fields, and intellectually damaged in its broader ecology. Its strongest disciplines preserved capacities that later helped Czech science re-enter European and global research systems, but they did so within an institutional order that constantly limited the freedom, openness, and moral authority of scientific life.

2. Laboratories, Instruments, and Long-Term Research Programmes

The scientific productivity of the Czechoslovak Academy of Sciences during normalisation depended not only on individual talent, disciplinary traditions, or the survival of research schools. It also depended on laboratories, instruments, buildings, technical workshops, experimental devices, computing facilities, libraries, field stations, and long-term programmes that could not be destroyed or recreated overnight. In this respect, the Academy was a material institution as much as an intellectual one. Political supervision could remove directors, censor publications, restrict travel, or narrow research agendas, but it could not easily abolish the physical infrastructure of research without damaging the state's technological ambitions. Laboratories embodied accumulated investments, trained technicians, specialised apparatus, experimental routines, and forms of collective memory that were more durable than official ideological campaigns. Instruments were not politically neutral in the broad sense, because their acquisition, use, and international circulation were administratively controlled. Yet they created spaces in which scientific practice could continue according to standards that were not reducible to ideological language. A spectrometer, tokamak, electron microscope, laser system, polarographic apparatus, polymer laboratory, or computing centre forced researchers and administrators alike to reckon with technical reality. It had to work, produce data, be maintained, and be improved. The long-term programmes built around such instruments helped preserve scientific competence within the restricted system of late socialism (*Nisonen-Trnka, 2012*; *Oates-Indruchová, 2008*; *Payne, 1972*).

The importance of laboratories under normalisation becomes clearer when contrasted with the fragility of purely discursive intellectual spaces. A seminar in sociology, philosophy, contemporary history, or legal theory could be dissolved, renamed, censored, or politically

redirected with relative administrative ease. A laboratory for macromolecular chemistry, physical chemistry, plasma physics, radio electronics, or materials science was more difficult to dismantle without wasting costly equipment and specialised staff. The state-socialist system understood science as a productive force and repeatedly linked research to economic development, technological capacity, industrial modernisation, public health, and state prestige. This gave material research infrastructures a certain defensive value. They could be justified not only as sites of scholarly inquiry but as necessary components of socialist development. That justification did not make them free, but it gave them bargaining power. Directors and research teams could argue that continuity was necessary because instruments had to be operated, long experiments had to be completed, and technical skills had to be retained. In this way, laboratories became islands of relative continuity inside a politically unstable academic world. Their survival showed that the Academy's institutional history cannot be written only through decrees and purges; it must also be written through equipment, buildings, experimental systems, and the practical stubbornness of scientific work.

The centralised structure of the Academy made such infrastructures especially important. Since the early 1950s, non-university research had been concentrated in Academy institutes, many of which developed specialised capacities unavailable elsewhere in the country. This model was ideologically shaped by the Soviet-style academy system, but it also had practical consequences that outlasted the ideological moment of its creation. By the 1970s, several Academy institutes had accumulated resources that made them national centres in their fields. Their laboratories served not only internal research teams but also doctoral candidates, university collaborators, industrial partners, and sometimes international visitors. The state could therefore not treat them as expendable, even when political distrust towards parts of the scientific community remained high. Instruments and laboratories created institutional inertia. They tied together people, plans, supplies, budgets, and expectations over many years. Normalisation could impose political leadership over these structures, but it could not fully substitute political loyalty for technical expertise. This practical dependence on specialised competence became one of the conditions under which serious research continued.

Long-term research programmes also provided a defence against immediate ideological volatility. A programme in polymer chemistry, plasma confinement, electrochemical methods, semiconductor technology, biological processes, instrumentation, or mathematical modelling could not be completed within one administrative season. It required continuity of personnel, repeated experiments, gradual refinement of equipment, training of younger researchers, and accumulation of results. Such programmes did not eliminate political vulnerability, but they made scientific time longer than political time. The normalisation regime wanted rapid restoration of obedience after 1968, yet many research programmes had already been launched in the 1950s and 1960s and could not be simply reset without loss. This temporal depth mattered. It allowed some fields to preserve trajectories that had begun before the ideological closure of the 1970s. It also allowed scientists to translate continuity into a politically acceptable language: the programme was not reformist or oppositional, but nationally useful, technically demanding, and already invested in. The discipline of long-term research thus became one of the Academy's mechanisms of survival. Where intellectual life could be interrupted by censorship, experimental continuity could sometimes protect knowledge by making interruption costly.

Chemistry provides one of the strongest examples of this material continuity. The Czechoslovak Academy inherited and developed a powerful chemical infrastructure that

linked organic chemistry, biochemistry, macromolecular science, physical chemistry, electrochemistry, catalysis, spectroscopy, and pharmaceutical research. These fields depended on laboratories, reagents, instruments, technicians, and international literature, but they were also easier to justify politically than critical sociology or contemporary history. Chemical research could be presented as useful to medicine, industry, agriculture, materials, and national economic development. The Institute of Organic Chemistry and Biochemistry became one of the major examples of how a laboratory culture could survive political constraint and later produce globally significant results. Antonín Holý's work on acyclic nucleoside phosphonates emerged within such a long-term biochemical and organic-chemical environment. His collaboration with Erik De Clercq began in 1976, and in the early 1980s a new class of compounds, acyclic nucleoside phosphonates, was discovered with the aim of developing metabolically stable nucleotide analogues (*De Clercq, 2013*; *Institute of Organic Chemistry and Biochemistry, n.d.*). This was not a short-term administrative success. It was the result of accumulated chemical knowledge, laboratory discipline, international collaboration, and institutional continuity. The later pharmaceutical importance of this research shows how scientific value could mature beyond the political system in which the first discoveries were made.

The case of Holý also shows why long-term programmes often depended on international scientific circulation even when political borders were tightly managed. The collaboration between Prague and Leuven was scientifically indispensable because antiviral chemistry required not only synthesis but biological testing, pharmacological interpretation, and contact with international biomedical research. The political system could restrict travel and correspondence, but it could not make modern drug discovery entirely national. In this sense, the laboratory was both domestic and transnational. It was located inside the Czechoslovak Academy, financed and administered through socialist institutions, but its scientific logic moved through international networks of testing, comparison, and recognition. This was true of many strong Academy fields. Chemistry, physics, mathematics, electronics, and biological research all depended on forms of communication that exceeded the national research plan. The regime's desire to control such communication created friction, delay, and inequality, yet it did not fully close the channels. Long-term programmes survived partly because scientists maintained enough connection with external standards to know what counted as a real result. Without those standards, laboratories risked becoming technically busy but intellectually provincial.

Macromolecular chemistry represents another crucial example of laboratory-based continuity. Otto Wichterle's work on hydrogels and soft contact lenses had already demonstrated the creative force of Czech polymer science before normalisation. The Institute of Macromolecular Chemistry, founded as a specialised Academy institute, embodied the long-term institutionalisation of this field. Its official historical account emphasises the balance between polymer chemistry and polymer physics, as well as between theoretical, basic, and applied research (*Institute of Macromolecular Chemistry, n.d.*). That balance was scientifically important because polymer research required both conceptual understanding of macromolecular systems and practical experimentation with materials, processes, and applications. It was also administratively useful because it allowed the institute to justify its existence in terms of both fundamental knowledge and practical outputs. Wichterle's political marginalisation after 1968 did not erase the field he had helped build, although it distorted its leadership and public memory. The institute's laboratories continued because the state

needed polymer science and because the accumulated infrastructure could not be replaced easily. The normalisation regime could remove a founder from authority, but it could not abolish the scientific value of the instruments, techniques, and research teams associated with the field. This contradiction was one of the defining features of late-socialist science: the person could be punished while the programme was preserved.

Physical chemistry and electrochemistry show how institutional reorganisation under normalisation could combine political disruption with material continuity. The J. Heyrovský Institute of Physical Chemistry and Electrochemistry was established in 1972 through the merger of the Institute of Physical Chemistry and the Institute of Polarography, both belonging to the Czechoslovak Academy of Sciences. Its institutional history notes that after the Warsaw Pact invasion many members, including several leading personalities, emigrated to the West, and that after a transition period the merged institute was created under the name J. Heyrovský Institute of Physical Chemistry and Electrochemistry (*J. Heyrovský Institute of Physical Chemistry, n.d.*). This merger occurred in a difficult political atmosphere, but it also preserved research lines in polarography, electroanalysis, quantum chemistry, spectroscopy, catalysis, mass spectrometry, thermodynamics, kinetics, and molecular processes. The institute's history therefore cannot be reduced either to repression or continuity alone. It was a product of normalisation's administrative reordering, yet it inherited laboratories and methods from earlier scientific traditions. The Nobel legacy of Jaroslav Heyrovský and the technical culture of polarographic instrumentation gave the institute a strong symbolic and practical foundation. The later move to a new building in 1988 radically improved working conditions and became important for subsequent development, showing that even at the end of the socialist period material investment in scientific infrastructure continued.

The importance of the 1988 building for the Heyrovský Institute also points to a broader feature of late-socialist science: infrastructure could be modernised even when institutional autonomy remained restricted. A new building did not automatically mean free research, open international exchange, or post-normalisation reform. Yet improved laboratories, equipment space, and working conditions mattered enormously for experimental science. Buildings are often treated as passive backdrops in institutional history, but in laboratory science they shape what can be done. Ventilation, vibration control, chemical safety, instrument rooms, computing access, storage, workshops, and proximity of research groups all influence scientific practice. The construction or relocation of an institute can therefore alter the trajectory of research as much as a new law or director. Under normalisation, such material improvements coexisted with political stagnation. This coexistence is analytically important. It shows that the late-socialist state did not simply neglect science; rather, it invested selectively in infrastructures that it considered useful or prestigious, while denying the institutional freedoms that would have allowed those infrastructures to function at their full intellectual capacity. The result was modernisation without full autonomy.

Plasma physics provides a particularly vivid example of how a major instrument could organise a long-term research programme. The CASTOR tokamak, originally named TM-1-MH in the period 1977–1984, was operated at the Institute of Plasma Physics of the Academy from 1977 to 2006. It had been built in Moscow in the early 1960s under the name TM-1 and was among the early working tokamaks; in Prague it became a central device for plasma research (*Institute of Plasma Physics, n.d.*). The tokamak was more than equipment. It was a programme in itself, requiring specialists in plasma diagnostics, vacuum systems, magnetic confinement, electrical engineering, control systems, data interpretation, and collaboration with other

research centres. Its operation linked the Academy to the Soviet and broader socialist scientific world, where fusion and tokamak research had high strategic importance. The device also trained generations of Czech plasma physicists and preserved a research culture that later entered wider European fusion cooperation. CASTOR's long operational life demonstrates how a single instrument could carry scientific continuity across political epochs. It began as part of a socialist-bloc research infrastructure, survived the end of normalisation, and later became part of the historical foundation for Czech participation in contemporary plasma physics.

The history of CASTOR also illustrates the ambivalent role of Soviet scientific connections. In political terms, normalisation was inseparable from the restored dominance of Moscow after 1968. In scientific terms, however, cooperation with Soviet institutes could provide access to instruments, methods, and research areas that were internationally significant. The transfer of a tokamak from the Kurchatov Institute to Prague was part of this scientific geography. It did not erase the political asymmetry of the relationship, but it complicates the assumption that all valuable international contact had to be Western. Plasma physics was one of the fields in which Soviet science was genuinely strong, and Czechoslovak researchers could gain competence through collaboration inside the socialist bloc. At the same time, dependence on bloc channels could narrow broader international exposure and delay integration into Western European structures. The long-term research programme around CASTOR therefore reveals both the possibilities and limits of socialist scientific internationalism. It supplied material opportunity, but within a politically controlled framework. It preserved competence, but not full freedom of circulation. It contributed to the Academy's strength, but also reflected the geopolitical constraints of the period.

Electronics, radio engineering, photonics, and quantum electronics formed another cluster of laboratories and long-term programmes. The Institute of Radio Engineering and Electronics, later the Institute of Photonics and Electronics, had been founded in the 1950s, but its research profile evolved significantly in the 1960s and continued under normalisation. Its institutional history records that the move to a new building in Prague-Kobylisy created conditions for experimental facilities, including a deep temperature-stabilised shaft for precise time and frequency measurements. It also notes the launch of a maser in 1963, early work on ruby and gas lasers, the first laser eye surgery in the country in 1964, and later concentration on semiconductor technology, optical communications, optoelectronics, quantum electronics, signal processing, and prototype production (*Institute of Photonics and Electronics, n.d.*). These details are historically important because they show how laboratories generated long-term trajectories rather than isolated discoveries. Work on time standards, lasers, semiconductors, displays, speech coding, optical communication, and electronic devices required sustained teams and infrastructure. The institute's research was especially defensible politically because it connected fundamental physics and electronics with national technological development. Yet it also depended on world scientific progress, which meant that isolation would have been self-defeating. The institute's history thus shows how strong technical disciplines survived by linking experimental modernity with practical usefulness.

Prototype production was particularly significant in such institutes. In the Academy's official ideology, the relation between research and practice was constantly emphasised, but in reality the transition from scientific result to technological application was often difficult. Institutes with prototype workshops, instrument-making capacity, and links to industry could partly bridge this gap. The Institute of Radio Engineering and Electronics developed such practical

capacities, including printed circuit board production, assembly of electronic equipment, work on semiconductor radiation sources, and devices connected with optoelectronics and communications (*Institute of Photonics and Electronics, n.d.*). This mattered because it made research visible to planners and ministries as more than abstract experimentation. It also allowed scientists to test ideas materially rather than leaving them as reports. However, prototype production also reveals one of the limits of late socialism. Successful prototypes did not always translate into flexible industrial innovation, because the centrally planned economy often lacked mechanisms for rapid diffusion, market feedback, and entrepreneurial adaptation. The Academy could create knowledge and devices, but the wider economic system did not always absorb them effectively. Laboratories could therefore be modern inside an economy whose institutional logic slowed the use of modernity. This gap between scientific capability and systemic implementation became more visible in the 1980s.

Laser research in the Academy likewise demonstrates the importance of instruments, buildings, and long horizons. The development of Czechoslovak laser science began in the early 1960s, but it continued into the normalisation period through work in Academy institutes and socialist-bloc exchange. In the 1980s, the Institute of Physics of the Czechoslovak Academy of Sciences received an iodine laser system developed at the Lebedev Institute in Moscow, rebuilt it, changed its concept, and put it into operation in 1985 under the name PERUN; a more powerful PERUN II system followed in 1992 (*ELI Beamlines, n.d.*). This history is important because it shows research infrastructure as a process of adaptation, not merely acquisition. The system was transferred, but Czech scientists modified and reinterpreted it. The long-term value lay in the competence gained through rebuilding, operating, and improving complex laser systems. Such competence later contributed to the country's ability to participate in large-scale laser infrastructures after 1989. The PERUN case also shows how socialist-bloc scientific transfer could become a basis for local creativity. Even under political dependency, laboratories could transform imported apparatus into national research capacity.

The Institute of Physics more broadly embodied the importance of sustained research infrastructure in solid-state physics, condensed matter physics, optics, and related areas. Although direct access to some present institutional histories is uneven, the Institute of Physics is consistently described as originating in the Czechoslovak Academy system in the 1950s and later developing several major research directions. Its work in solid-state physics, optics, plasma physics, laser physics, and materials-related fields connected fundamental inquiry with technical modernisation (*Institute of Physics, n.d.*). Under normalisation, such fields were valuable because they supported electronics, materials, instrumentation, energy-related work, and industrial applications. They also maintained contact with international scientific standards through publications, conferences, and specialised equipment. Physics required expensive infrastructure, and that requirement created both dependence and protection. The institute depended on state decisions for funding and equipment, but the state depended on physicists for technical competence. This mutual dependence gave physics a different position from many discursive disciplines. It remained supervised, but its laboratories could preserve serious research programmes when political conditions allowed sufficient resources and leadership stability.

Scientific instruments themselves deserve special attention because they were both tools and achievements. Czechoslovak science had a strong tradition in instrument-making, and this tradition linked Academy research to universities, industry, and international technical

prestige. Electron microscopy in Brno is one of the clearest cases. Armin Delong and his collaborators built the first Czechoslovak tabletop electron microscope in 1951, and later joined the newly established Institute of Instrumentation Technology of the Czechoslovak Academy of Sciences in Brno. Czech sources note that TESLA made electron microscope manufacturing one of its key activities and became a global leader in the field for two decades thanks to Delong's ideas (*Brno University of Technology, 2025*). This history matters because instrument-making creates a recursive form of scientific capacity: instruments enable research, and research enables better instruments. Electron microscopy served biology, materials science, metallurgy, physics, medicine, and industrial quality control. It also created a field in which technical ingenuity could have international significance even under political constraint. The Academy's role in such instrumentation traditions demonstrates that science under normalisation was not only the production of papers. It was also the production of tools through which other knowledge could be produced.

The Institute of Scientific Instruments in Brno represents a broader pattern of specialised technical infrastructure outside Prague. The Academy was often associated with the capital, but important research capacities were distributed across other centres, especially Brno. This geographic distribution mattered because it linked Academy science to regional technical traditions, universities, industrial enterprises, and local engineering cultures. Instrument-making required highly skilled technicians as well as scientists. It depended on workshops, precision manufacturing, glassblowing, electronics, vacuum technology, optics, and mechanical design. Such skills were difficult to politicise directly, though they were certainly affected by the political economy of supplies, imports, salaries, and institutional management. The durability of these skills helped preserve research capacity during the restricted years. Even when theoretical debate was narrowed, a technician who knew how to align an electron microscope, maintain vacuum systems, produce precise components, or repair complex electronics remained indispensable. The history of laboratories therefore must include non-academic labour. Scientific productivity was collective, and many forms of expertise were embedded in workshops as much as in scholarly publications.

Materials science and metallurgy provide another example of the long-term relation between laboratories and national economic needs. The Institute of Physical Metallurgy, later the Institute of Physics of Materials, emerged from the Laboratory for the Study of Metal Properties and developed within the Academy framework. Materials research was important for engineering, transport, energy, construction, defence-related industries, and manufacturing. It required testing equipment, microscopy, mechanical analysis, heat treatment facilities, and long experimental series. Such research could be defended as highly practical, but it also had fundamental aspects in the physics of metals, defects, microstructures, fatigue, fracture, and mechanical properties. The political system valued this kind of work because it promised industrial improvement without immediately threatening ideological legitimacy. Yet the same system often struggled to supply the best equipment or to translate research into industrial renewal efficiently. Materials science therefore occupied a characteristic late-socialist position. It had strong reasons for institutional support, but its development was constrained by the broader limitations of the planned economy. The laboratory could be scientifically serious even when the economic system around it was increasingly rigid.

Biological and agricultural research similarly depended on long-term laboratories and field stations. Institutes such as the Institute of Experimental Botany had been created during the earlier expansion of the Academy and developed facilities in several cities and research bases.

The Institute of Experimental Botany was founded on 1 January 1962 from departments of the former Institute of Biology, with activities distributed in Prague, Brno, Olomouc, and experimental stations (*Institute of Experimental Botany, n.d.*). This structure mattered because biological research often requires long cycles: plant growth, breeding, environmental observation, disease processes, developmental biology, physiology, and field experimentation. Such work cannot be accelerated simply by administrative command. It requires seasons, samples, accumulated data, and continuity of technique. Under normalisation, biological research could be justified through agriculture, food production, environmental knowledge, and public health. Yet it also faced constraints through limited equipment, international isolation, and political filtering of ecological or genetic questions when they touched sensitive areas. Long-term biological programmes therefore illustrate the mixed nature of Academy research: scientifically meaningful, practically relevant, and politically managed.

Environmental and earth sciences also deserve mention because they reveal a transition from technical research to socially sensitive knowledge. Geophysics, geology, atmospheric physics, hydrology, and related fields relied on instruments, field stations, observatories, long data series, and regional monitoring. In many respects, they were treated as natural sciences and could justify themselves through resource management, construction, agriculture, weather, seismic observation, and industrial planning. Yet environmental knowledge could become politically sensitive when it exposed pollution, ecological degradation, health risks, or the consequences of industrial policy. By the 1970s and 1980s, environmental problems in Czechoslovakia had become increasingly serious, and expert knowledge sometimes entered grey-zone communication between official institutions and critical publics (*Burget, Loučová, & Olšáková, 2021*). This shows that the boundary between technical science and social critique was not fixed. A monitoring station or laboratory could produce data that were scientifically technical but politically inconvenient. Long-term data series could reveal damage that ideological optimism could not easily absorb. Environmental research therefore demonstrates how instruments could create truth pressures inside a controlled system. The more accurate the measurement, the harder it became to pretend that industrial modernity was unproblematic.

Computing facilities and information-processing programmes formed another important infrastructure of late-socialist science. The development of computer science, numerical methods, automation, and data processing was tied to state planning, technical research, and scientific calculation. The General Computing Centre of the Czechoslovak Academy of Sciences was founded in 1975 after a group left the Institute of Radio Engineering and Electronics; it later became part of the institutional lineage of the Institute of Computer Science (*Institute of Photonics and Electronics, n.d.*). This development shows that the Academy was not merely preserving older scientific fields; it was also creating infrastructures for emerging technological domains. Computing had a double character. It was attractive to the regime because it promised planning efficiency, automation, modelling, and modernisation. At the same time, it required openness to global developments in hardware, software, algorithms, and systems theory, areas in which isolation could quickly produce backwardness. Computing also altered research practices across disciplines by supporting modelling, statistics, numerical simulation, signal processing, and data analysis. Its institutional development within the Academy therefore represented a long-term programme

with consequences beyond a single institute. It helped define the technical horizon of late-socialist scientific modernity.

The role of libraries, subscriptions, and access to literature should not be underestimated in this discussion of laboratories and instruments. Experimental science depends on apparatus, but it also depends on information. A laboratory without current journals becomes technically provincial; an instrument without knowledge of international methods becomes underused; a research programme without access to foreign literature risks repeating work already done elsewhere. Under normalisation, access to Western literature was politically and economically constrained, but strong disciplines often fought to preserve subscriptions, exchange agreements, and personal channels of information. Natural scientists sometimes had stronger arguments for this access because they could say that without it the country's technical competitiveness would suffer. Humanists and social scientists faced tighter ideological suspicion, but even in technical fields literature access was unequal and often mediated by institutional status. The materiality of science therefore included paper, books, journals, databases, preprints, photocopies, and translations. The laboratory bench and the library shelf belonged to the same infrastructure of knowledge. Scientific continuity required both.

Long-term research programmes also depended on the training of young researchers. Instruments do not preserve science by themselves; they require people who know how to use them, repair them, interpret them, and improve them. Under normalisation, doctoral training and early-career recruitment were filtered by political reliability, but strong laboratories often tried to maintain professional standards in the selection and formation of younger staff. A graduate entering a chemical, physical, mathematical, biological, or instrumentation institute learned not only theory but the tacit practices of research: how to prepare samples, calibrate equipment, design experiments, write reports, read foreign literature, and survive institutional politics. This apprenticeship was one of the hidden continuities of the Academy. Even when public autonomy was damaged, practical scientific knowledge could be transmitted from senior to junior researchers. However, this transmission was uneven. Political exclusion removed some of the best mentors from leadership or from the institution entirely. The training that survived was therefore both precious and incomplete. Long-term programmes preserved competence, but the normalisation regime damaged the human chains through which competence was ideally transmitted.

The maintenance of instruments was itself a political-economic problem. Under conditions of import restrictions, currency shortages, planned procurement, and delayed access to Western technology, laboratories often had to repair, modify, or improvise equipment. This could generate genuine technical creativity. Scientists and technicians learned to adapt devices, build components locally, extend the life of ageing apparatus, and create workable solutions under scarcity. Such improvisation became part of the culture of research. Yet it also consumed time and energy that could have been used for scientific discovery under better conditions. The same shortage that stimulated ingenuity also limited ambition. A laboratory might produce excellent work despite inadequate equipment, but it often did so by compensating for systemic inefficiency. Late-socialist scientific productivity therefore should not be romanticised as heroic improvisation alone. Improvisation was admirable, but it was also evidence of structural constraint. Laboratories survived because people were resourceful, not because the system consistently provided optimal conditions.

The relationship between Academy laboratories and industry was similarly ambivalent. On paper, socialist science was supposed to serve production, and many Academy institutes were expected to contribute to technological innovation, applied research, and national economic tasks. In practice, the transfer of knowledge from laboratory to industry was often uneven. Some fields, such as instrumentation, electronics, polymers, chemical processes, materials, and biomedical chemistry, created outputs with clear applied potential. Yet implementation could be slowed by bureaucratic separation, weak incentives, production constraints, or the absence of flexible industrial partners. Wichterle's soft contact lens work had already shown how an invention of global importance could be entangled in difficult institutional and economic conditions. Holý's later antiviral chemistry similarly required international pharmaceutical development to reach full clinical impact. These examples reveal a recurring pattern: Academy laboratories could create high-value knowledge, but the socialist economy did not always possess the mechanisms to exploit it effectively. This gap between discovery and application was one of the hidden failures of late-socialist scientific administration. The state supported science as a productive force, but it did not always know how to let science become productive.

Large instruments also changed the social organisation of science. A tokamak, laser system, electron microscope, mass spectrometer, or computing facility cannot be used by a solitary scholar in the same way as a book or archive. It requires teams, schedules, maintenance hierarchies, technical staff, safety procedures, and often collaborative access. Such instruments therefore created collective research cultures. They also made the director's role more important, because access to equipment could shape careers and projects. Under normalisation, this collective dependence could be protective or coercive. It protected research because an instrument-based team had to be maintained if the device was to remain useful. It could be coercive because control over access to the instrument gave administrators power over researchers. A politically unreliable scientist might be excluded from travel or publication, but also from equipment use, experimental time, or project leadership. Thus, the material infrastructure of science did not automatically produce freedom. It produced a structured field in which competence, hierarchy, and political trust interacted.

The Academy's long-term programmes were also shaped by socialist-bloc cooperation. Council for Mutual Economic Assistance frameworks, Soviet partnerships, bilateral agreements, and conferences within the Eastern bloc created channels for exchange of instruments, methods, training, and research themes. Plasma physics, nuclear-related fields, electronics, materials, and some biological and chemical research all benefited from such structures in different ways. These channels were politically safer than Western cooperation, but they were not scientifically empty. Soviet and Eastern European science contained strong traditions in mathematics, physics, chemistry, space research, and certain engineering fields. Czechoslovak researchers could therefore gain real knowledge through bloc cooperation. At the same time, overreliance on bloc channels could reinforce technological lag in areas where Western developments moved faster. The Academy's laboratories thus lived in a divided international environment. They were not isolated, but their internationalisation was politically patterned. Long-term programmes had to navigate this geography of permitted and restricted circulation.

The question of evaluation was another aspect of long-term research. In a healthy scientific environment, programmes are judged by peer review, international comparison, reproducibility, citation, technological application, and the judgement of independent

communities. Under normalisation, evaluation mixed professional and political criteria. A programme could be praised for plan fulfilment, ideological alignment, economic relevance, or institutional loyalty, even when its scientific value was modest. Conversely, strong research could be limited if its leaders were politically distrusted. Yet the natural and technical sciences retained some external standards because experiments had to work and international journals could not be fully replaced by domestic ideological approval. This externality helped preserve quality in strong disciplines. It also generated tension with the administrative system. Political authorities could control access, but they could not simply declare a poor instrument excellent or an invalid result valid without eventual scientific cost. Long-term programmes therefore survived best when they remained connected to real standards beyond bureaucratic reporting. The stronger the external standard, the harder it was for ideology to replace science entirely.

The humanities also possessed long-term infrastructures, though of a different kind. Archives, critical editions, dictionaries, archaeological excavations, linguistic corpora, bibliographies, ethnographic collections, and art-historical documentation were durable research programmes that could survive even under censorship. These programmes lacked the protective aura of high technology, but they preserved cultural and scholarly capital. A long-term dictionary project, archaeological survey, textual edition, or historical source collection could be framed as national scholarship rather than political critique. Such work sometimes allowed humanists to maintain professional standards when contemporary interpretation was restricted. Yet the political system could still shape what was edited, which authors were included, how introductions were written, and which historical conclusions were drawn. The difference from laboratory science was that the “instrument” of the humanist was often an archive, corpus, or edition whose meaning was inseparable from interpretation. Nevertheless, these long-term programmes deserve recognition because they preserved scholarly continuity in fields where open theoretical debate was often dangerous. The Academy’s productivity under normalisation included not only laboratories of physics and chemistry, but also the slow infrastructures of memory.

The institutional campus itself became a significant feature of scientific life. Academy buildings concentrated laboratories, libraries, workshops, and administrative offices in ways that shaped collaboration and hierarchy. Moving institutes into better buildings, as with the Heyrovský Institute in 1988, could transform working conditions. Conversely, scattered laboratories, overcrowded premises, or inadequate facilities could hinder research for years. The spatial organisation of science is therefore part of its history. Laboratories require stable environments, but late-socialist construction and procurement were often slow, bureaucratic, and uneven. A new building could arrive after years of planning; a needed instrument could be delayed by import restrictions; a workshop could improvise solutions while waiting for official supplies. These conditions shaped research tempo. They also shaped morale. Scientists working in inadequate spaces experienced the gap between official rhetoric about science and the material reality of scientific labour. Those who obtained improved facilities could preserve or expand programmes, but always within the broader limits of the system.

The coexistence of long-term research and political restriction produced a distinctive kind of institutional patience. Scientists learned to think in extended horizons: a device might take years to acquire, a programme might survive several directors, a manuscript might wait for safer conditions, a collaboration might depend on rare travel permission, and a laboratory upgrade might be planned across a decade. This patience was partly scientific, because serious research often requires time. It was also political, because many researchers

understood that conditions might change only slowly. Some worked for the future, preserving instruments, data, samples, methods, and students for a time when research would become freer. This future-oriented patience became especially important in the 1980s, when the rigidity of the system was increasingly apparent but political change was still uncertain. Long-term programmes could therefore function as reservoirs of possibility. They kept skills alive even when public discourse stagnated. They did not by themselves create reform, but they ensured that the post-1989 transformation would inherit more than ruins.

At the same time, the emphasis on laboratories and instruments should not hide the inequalities of the normalised Academy. Strong infrastructures were distributed unevenly across disciplines and institutes. Politically favoured or technologically useful fields had better chances of receiving investment, while ideologically exposed or less visibly productive fields could be neglected, merged, or narrowed. Even inside strong fields, access to instruments could be unequal according to political reliability, institutional status, or personal networks. The existence of a powerful laboratory did not mean that every talented scientist could use it freely. Nor did the success of one institute compensate for the silencing of another. Material strength and intellectual restriction coexisted. This is why the Academy under normalisation cannot be evaluated only by counting instruments, buildings, or publications. One must ask how these resources were governed, who had access to them, which questions they served, and which questions remained impossible.

The long-term consequence of these laboratories and programmes became visible after 1989. The post-socialist transformation of Czech science required new funding systems, evaluation mechanisms, international integration, institutional autonomy, and restructuring of Academy institutes. Yet the transformation did not begin from zero. It inherited laboratories, trained researchers, instruments, buildings, methods, and research traditions preserved through the normalisation period. Some facilities were outdated; some teams had been isolated; some programmes required radical reassessment. But the material and professional base remained indispensable. The survival of plasma physics, chemistry, physical chemistry, electronics, mathematics, biological research, instrumentation, and materials science gave the new Academy resources for reintegration into European and global science. The same was true, in a different way, for archives, collections, and long-term humanistic projects. The paradox is therefore clear. Normalisation damaged scientific autonomy, but its institutions also preserved infrastructures that later supported renewal. The post-1989 Academy was built partly by freeing capacities that had survived inside the restricted Academy.

Thus, laboratories, instruments, and long-term research programmes were among the main reasons why the Czechoslovak Academy of Sciences remained scientifically significant during the period of normalisation and late socialism. Political control could discipline people, censor publications, supervise travel, and restrict critical fields, but it could not easily abolish the accumulated material infrastructure of modern research without harming the state's claims to technological modernity. Chemical laboratories, polymer research facilities, electrochemical institutes, tokamaks, laser systems, electron microscopes, computing centres, biological field stations, prototype workshops, and long-term textual or archival projects preserved forms of competence that were stronger than the immediate language of ideology. These infrastructures did not create freedom by themselves; they were embedded in the same party-state system that limited autonomy and distributed resources unequally. Yet they gave scientists time, space, instruments, and collective routines through which serious work could continue. The result was a late-socialist Academy marked by a profound contradiction: it was

politically constrained, morally compromised, and often internationally restricted, but it still maintained laboratories and programmes capable of producing knowledge with long-term value. Without these material continuities, the scientific renewal after 1989 would have been far poorer; with them, the Academy carried into the post-socialist period both the achievements and the unresolved burdens of science under ideological control.

3. Hidden Continuities and the Preservation of Scientific Competence

The most important scientific continuities of the Czechoslovak Academy of Sciences under normalisation were not always the most visible ones. Some were expressed in internationally recognised publications, instruments, discoveries, and laboratories, but others survived quietly in habits, skills, schools, archives, methods, and professional memory. Normalisation damaged the public autonomy of science, yet it did not fully erase the accumulated competence that had been built in previous decades. This is essential for understanding the Academy between 1969 and 1989. The institution was politically constrained, and many of its humanities and social-scientific fields were narrowed, censored, or reorganised. Yet within its institutes there remained forms of knowledge that could not be easily replaced by political loyalty or administrative command. A laboratory technician knew how to maintain an instrument; a senior chemist knew how to design a synthesis; a mathematician knew how to train students in proof; an archivist knew the internal geography of collections; a linguist knew how to preserve philological standards; a historian knew which questions were absent from official narratives. These forms of competence were not spectacular, but they were durable. They formed the hidden infrastructure of the Academy's later recovery. If the late-socialist Academy remained scientifically meaningful, it was partly because these concealed continuities survived beneath the surface of ideological supervision (*Míšková, Barvíková, & Šmidák, 1998*; *Nisonen-Trnka, 2012*; *Oates-Indruchová, 2008*).

The term "hidden continuity" should not be understood as a romantic label for resistance alone. It refers to a broader set of processes through which knowledge survived under constraint, sometimes heroically, sometimes cautiously, and sometimes through morally ambiguous compromise. Some continuities were maintained by scholars who privately rejected the regime but publicly adapted to it. Others were maintained by specialists who avoided political questions and concentrated on technical excellence. Still others were preserved by directors who used official loyalty to protect research teams, or by younger researchers who inherited methods without fully inheriting the public memory of their teachers. In the humanities, hidden continuity could mean the private preservation of forbidden bibliographies, cautious teaching, unpublished manuscripts, or source-based scholarship that avoided official falsehood even when it could not speak fully. In the natural sciences, it could mean the uninterrupted operation of laboratories, the transmission of tacit experimental knowledge, and the maintenance of international standards through limited channels. These continuities were not pure alternatives to normalisation; they existed inside it. That is why they must be analysed with care. They preserved scientific life, but they also reveal how deeply science had been forced to adapt to political conditions. The Academy survived not because normalisation was harmless, but because knowledge could persist in forms less visible than official ideology imagined.

One of the strongest hidden continuities lay in tacit knowledge. Scientific competence is not contained only in published papers, official research plans, or institutional statutes. It also

resides in routines that are learned by working with others: how to prepare a sample, recognise a failed reaction, calibrate an instrument, read a difficult archival source, translate a theoretical problem into a manageable research question, or judge whether a conclusion is methodologically sound. Such knowledge is difficult to purge because it is embedded in people and practices rather than in proclamations. A political decision could remove a director from office, but it could not instantly replace the collective intelligence of a laboratory or research school. A new politically reliable administrator might occupy a position, but the institute still needed people who knew how the work was actually done. This gave competent researchers a certain quiet importance even when they lost authority. It also meant that dismissed, demoted, or marginalised scholars could sometimes continue to influence younger colleagues informally. Tacit knowledge is often invisible in institutional documents, yet it may be more decisive for scientific continuity than formal resolutions. In the normalised Academy, it became one of the main ways in which competence survived political damage.

The continuity of research schools was another major factor. A research school is not simply a group of employees working in the same building. It is a tradition of questions, methods, standards, instruments, citations, mentorship, and internal judgement. The Academy's stronger disciplines — chemistry, polymer science, physical chemistry, mathematics, plasma physics, electronics, instrumentation, and several biological fields — had such schools by the late 1960s. Normalisation could weaken them by removing leaders, restricting travel, or replacing directors, but it could not always destroy their internal cohesion. A school could survive through senior researchers who remained in subordinate positions, through technicians who preserved experimental practice, through doctoral students who learned by observation, and through published or unpublished methodological traditions. In the humanities and social sciences, research schools were more vulnerable because they depended heavily on free discussion, citation, interpretation, and open debate. Yet even there, forms of school continuity persisted through private seminars, bibliographic memory, philological work, archival knowledge, and personal mentorship. Such continuity was not always publicly acknowledged. In some cases, younger scholars learned from people whose names could not safely be cited in official texts. This created an unusual academic genealogy: real intellectual descent could exist beneath the surface of official institutional legitimacy.

The preservation of competence was especially visible in the natural sciences because laboratory work demanded continuity regardless of ideological language. Instruments, experimental systems, and technical teams cannot function by decree. A spectrometer, electron microscope, tokamak, laser system, chemical laboratory, or computing facility requires maintenance, operational skill, troubleshooting, and a shared culture of precision. This gave natural science institutes a kind of practical resilience. Even where political control shaped leadership and access, the internal logic of experiment preserved certain standards. The regime could require ideological loyalty, but it could not make an invalid experiment valid. This did not mean that laboratories were free from political distortion. Access to equipment, foreign literature, travel, promotion, and publication could be politically filtered. Yet the core practice of laboratory science created a domain in which professional competence remained indispensable. Nisonen-Trnka's work on Czechoslovak natural scientists is useful precisely because it shows that natural science could function as both a site of political vulnerability and a refuge of professional identity (*Nisonen-Trnka, 2008*; *Nisonen-Trnka, 2012*). The laboratory was not outside normalisation, but it could preserve standards that normalisation could not fully absorb.

Chemistry offers a strong example of such continuity. The Academy's chemical institutes retained long-term traditions in organic chemistry, biochemistry, macromolecular chemistry, physical chemistry, electrochemistry, spectroscopy, and catalysis. These fields were not immune to political intervention, as the cases of František Šorm and Otto Wichterle clearly show. Yet the research cultures they helped build did not disappear when their public authority was restricted. The Institute of Organic Chemistry and Biochemistry preserved a strong laboratory environment that later enabled Antonín Holý's internationally significant work on acyclic nucleoside phosphonates. Holý's collaboration with Erik De Clercq began in the 1970s, and the research trajectory that followed eventually produced compounds of major antiviral importance (*De Clercq, 2013*; *Franc, 2024*). This later success should not be projected backward as if the normalisation system itself created it. Rather, it shows how scientific competence could mature within a constrained institution because deeper laboratory traditions survived political damage. The discovery of important compounds required stable chemical knowledge, experimental discipline, international collaboration, and institutional memory. It was a product of scientific continuity beneath political discontinuity. Such cases show why the Academy's history must distinguish between the regime's ideological claims and the real sources of scientific achievement.

Macromolecular chemistry reveals the same pattern in another form. Wichterle's earlier invention of soft contact lenses and his role in founding the Institute of Macromolecular Chemistry created an institutional and methodological basis that survived his political marginalisation. The field required knowledge of polymer chemistry, polymer physics, materials, experimental technique, and application-oriented thinking. Normalisation damaged the public status of Wichterle and other independent figures, but it did not erase the accumulated competence of the institute. The official language of the period could reframe scientific programmes in terms of socialist usefulness, but the real continuity lay in techniques, instruments, people, and research habits. A polymer laboratory cannot be recreated simply by appointing a politically loyal director. It requires a community that knows how materials behave, how experiments fail, and how theory and application interact. This is why hidden continuity in strong disciplines was often more powerful than visible administrative discontinuity. The political order could rename, discipline, or supervise institutions, but it still depended on the scientific culture produced before and around its control. In this sense, normalisation lived parasitically on competences that it often mistrusted.

Mathematics preserved continuity in a different way. Its infrastructure consisted less in expensive apparatus and more in schools of thought, seminars, problem traditions, libraries, and the discipline of proof. The Mathematical Institute of the Academy maintained a broad research structure in areas such as differential equations, numerical methods, functional analysis, probability, statistics, mathematical logic, graph theory, topology, and mathematical education (*Segeth, 2002*). These fields were politically supervised through appointments, travel, and institutional administration, but their internal content was less directly exposed to ideological correction than history or sociology. A mathematical argument could still be judged by international standards of validity. This gave mathematics a relatively strong capacity for hidden continuity. Younger researchers could inherit problems and methods even when foreign contact was restricted or administratively filtered. The abstraction of mathematics did not protect mathematicians as citizens or professionals from all political consequences, but it helped protect the internal integrity of the discipline. In late-socialist conditions, this mattered

greatly. Mathematics could preserve a culture of rigour that later supported computing, modelling, physics, engineering, economics, and post-1989 scientific reintegration.

In the humanities, hidden continuity was more fragile but no less important. It often survived through archives, bibliographies, textual scholarship, philological standards, and private memory. A historian who could not openly write about 1968 might still preserve source criticism in medieval or early modern studies. A literary scholar who could not discuss banned authors openly might keep their works in private circulation or maintain knowledge of their place in Czech culture. A philosopher who could not publish openly on freedom, pluralism, or phenomenology might teach conceptual distinctions informally or preserve translations and reading lists. A sociologist who could not conduct politically sensitive public research might retain methodological knowledge through demography, labour studies, education, or internal reports. These forms of continuity were not ideal because they often displaced scholarship away from urgent questions. Yet they prevented total intellectual rupture. Oates-Indruchová's studies of censorship and academic publishing show that scholars developed strategies of circumvention, self-censorship, and indirect communication that allowed some intellectual substance to survive under restrictive conditions (*Oates-Indruchová, 2008*; *Oates-Indruchová, 2020*). In the humanities, hidden continuity often meant preserving the conditions for future truth rather than being able to state the truth publicly in the present.

Sociology illustrates both the damage and the survival of competence. The discipline had been revived in the 1960s and then severely narrowed under normalisation. Its institutes, journals, personnel, and public functions were affected by the restoration of ideological control. Pecka describes the normalisation of Czech sociology as a tragic process of personnel, thematic, and institutional purge (*Pecka, 2011*). Yet sociological knowledge did not vanish entirely. Some methods survived in applied research, demography, labour studies, education, social planning, and internal expertise. Sommer's work on expert governance shows that social scientific expertise continued within socialist state structures even after the reformist public horizon had been curtailed (*Sommer, 2016*). This was a compromised continuity. Sociology could serve administrative knowledge while being prevented from functioning as open social critique. Nevertheless, methods, data practices, and analytical habits survived in limited forms. After 1989, such fragments mattered because they provided part of the professional basis for rebuilding the discipline. The survival was incomplete, but it was not negligible.

Economics occupied a similarly ambiguous position. Reform economics had been politically compromised by its connection with the Prague Spring, and many reform-oriented economists were removed, silenced, or pushed into marginal positions. Yet economic competence remained necessary to the late-socialist state. Planning, modelling, enterprise analysis, forecasting, and statistical work could not simply be abolished. Turnovec notes that modern economic approaches survived in limited institutional niches, including within the Academy's Institute of Economics, even while social-scientific careers and publications were subject to political control (*Turnovec, 2011*). This created a hidden continuity of method without an open continuity of reform politics. Economists could preserve mathematical tools, modelling habits, and empirical knowledge, but they could not freely draw systemic conclusions from them. The result was a divided discipline. It knew more than it could publicly say. This division was damaging, but it also meant that expertise was not entirely lost. When the post-socialist transformation began, some analytical capacities had survived in precisely these semi-protected and semi-silenced forms.

In historical scholarship, hidden continuity depended heavily on memory and sources. Official historical interpretation after 1968 had to conform to the normalisation narrative, especially concerning the Prague Spring, the Soviet invasion, Stalinism, and party legitimacy. Yet not all historical work became empty. Some historians preserved high standards in older periods, regional studies, archival editions, archaeology, medieval studies, early modern history, and source criticism. The problem was that the most politically urgent recent history was often the least free. Hidden continuity therefore took the form of postponed history. Documents were preserved, memories were kept, private notes were made, and questions were carried forward for a later time. This did not compensate for the public falsification of history, but it prevented complete erasure. The historian's competence survived where the official historian's voice could not speak fully. After 1989, the reopening of recent history depended not only on new political freedom but also on the survival of archival knowledge, methodological training, and people capable of returning to suppressed questions.

The preservation of competence also depended on technicians, librarians, archivists, laboratory assistants, editors, translators, and other non-celebrated workers. Institutional histories often focus on famous scientists, directors, and political decisions, but research continuity is carried by many kinds of labour. A technician who maintained an ageing instrument under conditions of shortage preserved scientific capacity. A librarian who protected catalogues and subscriptions preserved access to world science. An archivist who knew where documents were stored preserved future historical research. An editor who softened ideological interventions or helped a manuscript pass through institutional filters preserved scholarly communication. A translator who made foreign literature available preserved intellectual contact. These roles were often hidden because they did not always produce named authorship. Yet without them, the Academy's competence would have deteriorated much more quickly. The preservation of science under normalisation was therefore collective. It was maintained not only by eminent scholars but by the everyday labour of people who kept the machinery of knowledge functioning.

Libraries and personal book collections were especially important. Access to foreign literature was one of the major conditions of scientific competence, and under normalisation such access was uneven, filtered, and politically sensitive. Natural scientists often had stronger official arguments for subscriptions to foreign journals because technical isolation would immediately damage research quality. Humanists and social scientists faced greater ideological suspicion, especially when Western theory, émigré works, or politically sensitive historiography were involved. Nevertheless, books circulated through personal channels, photocopies, conferences, private loans, and unofficial networks. A single foreign book could sustain a seminar, a research project, or an intellectual line of continuity. Personal libraries became small reservoirs of alternative knowledge. They preserved authors, methods, and debates that official institutions could not fully acknowledge. This kind of continuity was materially modest but intellectually powerful. It helped prevent the Academy's scholarly culture from becoming completely provincial.

International contacts also functioned as hidden continuities. Normalisation restricted travel and monitored foreign cooperation, but it did not completely isolate Czechoslovak science. Selected researchers continued to attend conferences, publish abroad, correspond with colleagues, and participate in socialist-bloc or Western networks. In some fields, such as chemistry, physics, mathematics, and biomedical research, international communication was indispensable. The collaboration between Holý and De Clercq shows how a channel of

international cooperation could carry scientific work beyond the limits of domestic politics (*De Clercq, 2013*). In the humanities and social sciences, international contact was more sensitive, yet it also survived through exile, samizdat, unofficial meetings, and delayed publication. Such contacts were unequal because access depended on political trust, discipline, and institutional position. Yet even limited contact helped preserve standards. It reminded scholars that domestic ideological language was not the whole world of knowledge. International comparison became a quiet corrective to intellectual closure.

Exile created another form of hidden continuity, though it also represented a serious loss. Scholars who left Czechoslovakia after 1968 carried knowledge, methods, languages, and institutional memory into foreign universities and research centres. From the perspective of the Academy, this was a depletion of scientific capital. From the perspective of Czech and Czechoslovak science as a broader intellectual community, however, exile also preserved competences that could not survive freely at home. Émigré scholars published, taught, corresponded, and kept alive interpretations that official institutions suppressed. Their work sometimes returned indirectly through foreign books, private channels, or later post-1989 reintegration. This continuity was dispersed rather than institutional. It weakened the Academy in the short term but broadened the geography of Czech scientific memory. The Academy under normalisation therefore existed in relation to an external Czech and Czechoslovak scientific community that it could not openly recognise. The next part of the chapter will address exile more directly, but it is already important here because hidden continuity did not stop at the borders of the state.

The grey zone between official and unofficial life was another crucial space of preservation. Some scholars remained inside Academy institutions while maintaining private contacts with excluded colleagues, dissident circles, environmental experts, foreign scholars, or unofficial seminars. They were not always dissidents in the strict sense, but neither were they simply loyal functionaries. Burget, Loučová, and Olšáková show how expert communities, dissent, and the environmental agenda could intersect in grey-zone communication under late socialism (*Burget, Loučová, & Olšáková, 2021*). This pattern matters beyond environmental history. It shows that competence could move through semi-official channels, internal reports, expert consultations, private meetings, and cautiously worded public interventions. The grey zone preserved knowledge that official ideology could not fully absorb but that open dissent could not fully institutionalise. It was morally ambiguous because it involved compromise. Yet it was historically significant because it created pathways through which expertise survived and sometimes reached wider society. In this sense, hidden continuity was not only disciplinary but social.

Environmental expertise is especially revealing because it connected natural science, social responsibility, and public critique. Pollution, industrial degradation, landscape damage, and health risks could be measured scientifically, but their implications were political. A chemical analysis of water, a study of air pollution, or an ecological report could expose failures of socialist industrial modernisation. Such knowledge could not always be discussed openly, yet it could not be dismissed as mere ideology either. Expert knowledge therefore created pressure inside the system. Scientists and technical specialists could preserve competence by producing data, monitoring trends, and circulating information through official or semi-official channels. In some cases, this expertise contributed to a broader environmental consciousness that overlapped with dissent and civic concern. Environmental research thus shows that the boundary between natural science and social critique was porous. Hidden

continuity could become hidden criticism when measurement revealed what political language preferred to conceal. The Academy's competence in such fields had significance beyond narrow professional survival.

Internal reports and restricted circulation texts also preserved competence. Not all meaningful research appeared in public journals or books. Some work circulated as institute reports, internal analyses, expert opinions, commissioned studies, or documents marked for restricted use. This was especially common in fields where conclusions might be politically inconvenient but administratively useful. Economics, sociology, demography, environmental research, technological assessment, and policy-related studies all produced knowledge that could be known inside the state but not openly debated. Such documents created a peculiar archive of late-socialist expertise. They preserved data, methods, and diagnoses, but separated them from public accountability. This separation was one of the moral failures of the system, yet it also meant that knowledge did not disappear entirely. After 1989, some of these hidden or semi-hidden forms of expertise could be reassessed. They showed that the late-socialist state sometimes knew more about its problems than it was willing to admit publicly.

The preservation of competence also involved generational transmission under damaged conditions. Young researchers entering the Academy in the 1970s and 1980s often encountered an institution shaped by absence. They did not always know the full stories of dismissed teachers, banned books, interrupted debates, or purged institutes. Yet they could still learn serious methods from senior scholars who remained. In laboratories, this learning occurred through apprenticeship in experimental practice. In mathematics, it occurred through seminars, problem solving, and proof culture. In the humanities, it occurred through close reading, archival technique, philology, and private guidance. This transmission was often partial because political conditions had interrupted normal academic genealogies. Some mentors were absent, silent, or marginalised. Some topics could not be openly assigned to students. Nevertheless, enough transmission survived to prevent complete rupture. The Academy's post-1989 recovery depended heavily on the fact that a younger generation had still received some serious training, even within a compromised institution.

Professional ethics formed another hidden continuity. Under normalisation, public truth was often distorted, but many researchers continued to respect narrower standards of honesty within their disciplines. A physicist could refuse to falsify data. A chemist could report failed reactions accurately. A historian could preserve exact citations even in a politically cautious text. A linguist could maintain philological precision. An economist could distinguish between reliable and manipulated statistics, even if public conclusions were restricted. These ethical habits were modest, but they mattered. They prevented the total collapse of scientific credibility. They also created a moral foundation for later renewal. If every standard had been surrendered, the Academy after 1989 would have inherited only institutions without trust. The survival of professional ethics did not absolve the institution of compromise, but it explains why reform remained possible. Competence was preserved not only technically but ethically, through small acts of accuracy.

Self-censorship both damaged and preserved competence, which makes it one of the most ambiguous mechanisms of the period. On one hand, self-censorship narrowed inquiry, weakened intellectual courage, and trained scholars to avoid dangerous questions. On the other hand, it sometimes allowed a text to be published with enough scholarly substance to preserve a field. Oates-Indruchová's work on Aesopian language and academic censorship

shows how authors developed strategies to speak indirectly, protect arguments, and communicate with informed readers under conditions of control (*Oates-Indruchová, 2018*; *Oates-Indruchová, 2020*). Such strategies were not ideal forms of freedom. They were survival techniques. A coded text could keep a concept alive, but it could not replace open debate. A cautious publication could preserve evidence, but it could also normalise indirectness. The hidden continuity created by self-censorship was therefore costly. It preserved fragments of thought while deforming the style and public function of scholarship. This is one of the central ambiguities of intellectual life under normalisation.

The preservation of competence was uneven across the Academy. Strong natural science institutes often retained clearer professional continuity because they had laboratories, equipment, international standards, and practical justification. Humanities and social-scientific fields often preserved competence in more fragmented ways, through private memory, archival work, coded writing, or safer subfields. Some institutes were deeply damaged by purges and ideological leadership, while others managed to protect serious work under formal conformity. Some directors were destructive; others were protective. Some researchers adapted honourably; others used normalisation for career advancement. There was no single Academy experience. The institution contained zones of excellence, fear, routine, opportunism, solidarity, technical brilliance, intellectual narrowing, and quiet endurance. Hidden continuity must therefore be mapped carefully, discipline by discipline and institute by institute. It was real, but it was never evenly distributed. Its unevenness shaped the post-socialist inheritance.

The distinction between institutional continuity and intellectual continuity is also important. An institute might continue to exist under the same or a similar name while losing much of its intellectual vitality. Conversely, an intellectual tradition might survive after its institutional base had been dissolved, through people, notes, private seminars, or exile networks. Normalisation often preserved institutions while hollowing out parts of their critical content. It also sometimes destroyed institutions while unintentionally dispersing their intellectual influence elsewhere. The Academy's visible organisational chart therefore does not tell the whole story. The deeper question is what kinds of competence remained alive behind the institutional surface. In some cases, a normalised institute was more scientifically serious than its political language suggested. In other cases, a formally prestigious body concealed intellectual stagnation. Hidden continuity requires attention to this gap between form and substance. The history of the Academy under normalisation is, in many places, a history of such gaps.

The continuity of competence also depended on memory of the 1960s. The reform decade had introduced methodological openness, internationalisation, interdisciplinary debate, and new ambitions in social and natural sciences. Normalisation publicly condemned much of that atmosphere, but people who had experienced it did not simply forget it. They remembered different standards of discussion, different possibilities of international contact, and different relations between science and society. This memory could become painful because it revealed the narrowness of the present. Yet it also preserved an alternative horizon. Younger colleagues could sometimes sense that the official academic world was not the only possible one because older scholars carried the memory of a more open period. This memory did not always become explicit political opposition. Sometimes it survived as professional taste: a preference for serious argument over ideological formula, for international comparison over provincial

certainty, for evidence over ritual language. Such memory was one of the Academy's hidden resources. It kept alive the idea that normalisation was not normal.

The post-1989 transformation revealed the value of these hidden continuities. When political control collapsed, the Academy did not have to build all scientific competence from nothing. It inherited laboratories, archives, collections, instruments, journals, research teams, mathematical schools, chemical traditions, biological programmes, and humanistic expertise. Many structures needed reform, and many fields required moral and intellectual reckoning. Some leaders had to be replaced; suppressed scholars had to be rehabilitated; international integration had to be rebuilt; evaluation had to be modernised. Yet the existence of preserved competence made renewal possible. The Academy could re-enter European and global science partly because some standards had survived even under restriction. This does not mean that normalisation was less damaging than it appeared. It means that scholars, technicians, librarians, archivists, and hidden networks had preserved enough scientific substance to make recovery feasible. The history of post-1989 renewal therefore begins before 1989, in the quiet survival of competence during the preceding two decades.

At the same time, hidden continuity also created unresolved post-1989 problems. The survival of competence had often required compromise, and compromise left moral questions behind. Who had protected science, and who had protected themselves? Who had preserved a laboratory by accepting political rituals, and who had advanced through the exclusion of others? Which publications were sincere scholarship under constraint, and which were ideological service? Which directors had shielded their institutes, and which had disciplined them? These questions could not always be answered cleanly because the grey zone had been wide. The Academy inherited not only research capacity but also damaged trust. Hidden continuity therefore had a double legacy. It preserved the possibility of renewal, but it also carried the ambiguities of survival into the new period. Scientific competence could be recovered more easily than moral clarity. This made the transformation of the Academy after 1989 both an institutional and an ethical process.

The concept of hidden continuity also helps avoid two misleading narratives. The first narrative presents the normalised Academy as a dead institution, emptied of real science by ideology. This is inaccurate because many institutes continued to produce serious work, and many disciplines preserved high standards. The second narrative presents scientific productivity as proof that political control was not deeply damaging. This is equally inaccurate because productivity often survived despite the system, not because the system respected autonomy. The real history lies between these simplifications. Normalisation damaged the public, moral, and intellectual ecology of the Academy, especially in the humanities and social sciences. Yet it did not destroy all competence. The survival of competence was partial, uneven, costly, and often hidden. It must be recognised without being used to excuse the political order that made it hidden in the first place.

Thus, hidden continuities and the preservation of scientific competence were central to the survival of the Czechoslovak Academy of Sciences under normalisation. The Academy's public autonomy was restricted, its leadership was politically supervised, and many disciplines were censored, narrowed, or damaged, but beneath this surface there remained laboratories, research schools, tacit skills, archives, instruments, libraries, professional ethics, unofficial networks, international contacts, and memories of earlier intellectual openness. These continuities were especially visible in strong natural-scientific fields, where laboratory

practice, technical infrastructure, and international standards made competence difficult to replace by ideological loyalty. They were more fragile but still significant in the humanities and social sciences, where scholarship survived through source criticism, philology, coded language, private memory, applied expertise, and postponed research questions. The preservation of competence was never pure or simple. It involved compromise, silence, self-censorship, grey-zone behaviour, and sometimes moral ambiguity. Yet without these hidden continuities, the Academy would have entered the post-1989 period as an empty shell rather than as a damaged but still living institution. The late-socialist Academy therefore left a dual inheritance: scientific capital preserved under constraint, and unresolved ethical consequences produced by the very strategies that made preservation possible.

Emigration, Exclusion, and the Dispersed Czech Scientific Community

1. Scientists Forced into Exile or Internal Marginalisation

The forced exile and internal marginalisation of scientists after 1968 formed one of the most painful consequences of normalisation for the Czechoslovak Academy of Sciences. The process was not limited to the physical departure of scholars from the country, although emigration was its most visible and historically dramatic form. It also included dismissal from institutes, removal from leadership, loss of publication rights, exclusion from foreign travel, reassignment to inferior posts, transfer into non-academic employment, and the quiet erasure of names from official institutional memory. The Academy was therefore affected not only by a loss of people, but by a loss of intellectual continuity, professional trust, and moral authority. Some scientists left Czechoslovakia because they saw no possibility of continuing serious work under the restored political order; others stayed but were pushed into silence or marginal professional existence. Both groups belonged to the same historical wound. Exile and internal marginalisation were not separate stories, but two forms of displacement produced by the same political system. The émigré lost the domestic institution, while the internally marginalised scholar lost the right to act fully within it. In both cases, the Academy lost part of its living scientific capital. The restoration of party control thus did not merely discipline individuals; it fractured the Czech and Czechoslovak scientific community into official, unofficial, exiled, silenced, and semi-tolerated segments. This fragmentation became one of the defining features of academic life in the 1970s and 1980s (*Kostlán, 2010*; *Míšková, Barvíková, & Šmidák, 1998*; *Payne, 1972*). Kostlán's study of emigration from the Czechoslovak Academy of Sciences identifies the wave of 1968–1970 as especially significant and estimates total Academy emigration during Communist rule at about 760–790 persons, or roughly 6–7 per cent of Academy workers.

The decisive historical turning point was the defeat of the Prague Spring and the subsequent transformation of institutional uncertainty into systematic normalisation. In August 1968, many scientists still imagined that the reform process might survive in some limited form, or that the occupation would not lead to a full restoration of Stalinist-style political discipline. By 1969 and 1970, however, the direction had become clear. The replacement of reform

leadership, the adoption of the official interpretation of the “crisis development”, the purging of party and academic bodies, and the restructuring of the Academy signalled that reformist science would not be tolerated as an autonomous force. For many scholars, the question was no longer whether the Academy would remain intellectually open, but whether one could remain in the country without sacrificing professional and moral integrity. The shock of invasion was therefore followed by a slower existential calculation. Some scientists left immediately or during foreign stays; others waited until their positions became untenable; still others decided to remain, whether from attachment to family, language, laboratory, students, or national responsibility. The choices were unequal because opportunities abroad differed by discipline, age, reputation, language competence, and access to foreign contacts. A young chemist or physicist with international publications could often find a foreign laboratory more easily than an older historian whose expertise was tied to Czech archives and language. Emigration was therefore both political and professional. It depended not only on courage or fear, but on whether a scholar’s knowledge could be transported across borders.

The scale of Academy emigration after 1968 should be seen as part of a longer history of Czech scholarly exile, but it had a specific post-Prague Spring character. Earlier waves of exile had followed the Nazi occupation, the Communist takeover of 1948, and later episodes of repression, but the 1968–1970 wave was marked by the collapse of a reformist hope from within socialism itself. Many Academy scientists who left were not long-standing enemies of the socialist system. Some had been loyal, or at least professionally integrated, members of state-socialist institutions. Some had joined the Communist Party in earlier decades, worked inside official research structures, or believed in the possibility of a more open socialist order. The Warsaw Pact invasion and the subsequent normalisation campaign undermined that loyalty. Kostlán notes that many emigrating Academy workers had previously been loyal to the regime, but their trust was deeply shaken by the Soviet invasion, with memories of the Second World War and earlier political persecution intensifying the feeling of existential threat (*Kostlán, 2010*). This is crucial because it shows that exile was not simply a choice made by already alienated outsiders. It was often the result of a broken contract between scientists and the state. The Academy had promised a space for research, prestige, and modernisation; normalisation revealed that all of these could be subordinated to political obedience. Exile became a response to that rupture.

The movement into exile was shaped by discipline. Natural scientists often had more portable skills and stronger international professional networks. Chemists, physicists, mathematicians, biologists, engineers, and medical researchers could sometimes continue their work abroad because their methods, instruments, and publication languages were internationally shared. This did not mean that exile was easy for them. They still had to rebuild careers, learn institutional cultures, prove themselves in foreign environments, and often endure the emotional cost of separation from home. Yet their scientific capital could be recognised across borders more readily than that of scholars whose work was deeply embedded in Czech cultural, historical, or political contexts. Kostlán’s study indicates that chemists were represented among the emigrants at a higher-than-average share, which is consistent with the broader strength and international orientation of Czechoslovak chemical research (*Kostlán, 2010*). Humanists and social scientists also emigrated, but their situation was often more complicated. A historian of Czech modern politics, a scholar of Czech literature, or a sociologist of Czechoslovak society could find exile intellectually productive, but the loss of domestic archives, audiences, language communities, and teaching structures

was severe. Exile therefore operated differently across scientific branches. It exported some forms of competence more easily than others, and it wounded different disciplines in different ways.

The major destinations of Academy émigrés also reveal the transnational geography of scientific capital. Kostlán identifies the United States as the principal destination, followed by Canada, West Germany, and other European countries (*Kostlán, 2010*). This pattern reflected both political asylum routes and the structure of Western research opportunities. North America offered large university and research systems capable of absorbing specialised scientists, especially in fields such as chemistry, physics, medicine, engineering, mathematics, and biology. West Germany and other European countries offered geographical proximity, cultural familiarity, and existing academic links. The movement of Czechoslovak scientists into these spaces was therefore not a random scattering. It followed networks of professional recognition, Cold War asylum, prior conference contacts, personal invitations, and disciplinary demand. For the Academy, however, each successful foreign placement represented a domestic loss. A scientist who entered a Canadian laboratory, a German university, or an American research institute could continue contributing to world science, but no longer to the institutional life of the Czechoslovak Academy. This created a painful paradox. Czechoslovak science survived abroad precisely because it was constrained at home. Exile preserved individual scientific careers while impoverishing domestic institutional continuity.

The age and career profile of émigrés also mattered. Kostlán's prosopographic analysis shows that the core of Academy emigrants consisted of scholars born between 1918 and 1941, with many leaving at the ages of 26 to 40, and a significant group also leaving between 40 and 50 (*Kostlán, 2010*). This was a devastating age structure for the Academy. Scientists in their late twenties and thirties often represented the future of disciplines: they were trained, mobile, ambitious, and capable of building new laboratories or research directions. Scholars in their forties frequently represented established competence: they had already acquired authority, publications, international contacts, and the ability to supervise younger researchers. Losing both groups meant losing not only current productivity but also future leadership. The very people most capable of carrying the Academy beyond the 1960s reform moment into a modern international research environment were among those pushed out. The institutional consequences could not be repaired simply by appointing politically reliable replacements. A research career is a long investment; once lost, it cannot be recreated administratively. The exile wave therefore interrupted the generational structure of the Academy. It removed scientists at precisely the age when their contribution to institutional renewal would have been greatest.

Internal marginalisation was the domestic counterpart of exile. Some scholars did not leave Czechoslovakia, whether because they could not, would not, or chose to remain despite the risks. Their punishment often took forms less visible than emigration but no less damaging. They were dismissed from institutes, transferred to technical or subordinate work, removed from editorial boards, barred from teaching, denied travel, forbidden to publish, deprived of doctoral students, or forced into jobs unrelated to their qualifications. Some entered manual labour, translation, documentation, library work, or marginal research posts. Others remained physically inside Academy institutions but were stripped of influence. This form of internal exile could be psychologically severe because the scholar remained in the country and sometimes even near the original workplace while being denied normal participation in scholarly life. The internally marginalised person became a reminder of what the institution had done to itself. He

or she might walk the same streets, meet former colleagues, and preserve knowledge, but without the authority to use it publicly. Normalisation thus created exiles without passports: people displaced inside their intellectual homeland.

The case of Otto Wichterle demonstrates the logic of internal marginalisation in the natural sciences. Wichterle was internationally recognised for his work in macromolecular chemistry and for the invention of soft contact lenses, yet he was politically punished after the Prague Spring. The Academy's historical overview notes his worldwide recognition and his role as one of the authors of the "Two Thousand Words" manifesto, while also placing his later presidency after 1989 within the democratic reconstruction of the Academy (*Czech Academy of Sciences, n.d.*). His significance lies not only in the invention itself but also in the contradiction between scientific greatness and political vulnerability. The regime needed the prestige and usefulness of polymer science, but it distrusted the independent public scientist. Wichterle could not simply be erased, because his work had already entered world science and technology. Yet he could be removed from authority, limited in influence, and forced into a diminished institutional position. His fate shows that in the natural sciences marginalisation often operated by separating the scientist from leadership while preserving the field's practical value. The state wanted the fruits of science without the autonomy of the scientist. This was one of the characteristic moral distortions of normalisation.

František Šorm's fate shows a related but distinct form of internal marginalisation. Šorm was a leading chemist and a major figure in the Academy's leadership before and during the reform period. His removal from high party and Academy positions after 1969 marked the political defeat of the reform-associated scientific elite. Unlike many younger scientists who could rebuild careers abroad, a figure such as Šorm embodied the institutional authority of Czechoslovak science itself. To marginalise him was to send a message to the whole Academy that scientific prestige could not stand above party discipline. Natural science did not protect him from political consequences because his role had become public, institutional, and symbolic. This was a crucial lesson for other scientists. The boundary between safe scientific work and dangerous public authority was not fixed by discipline alone. A chemist could be politically vulnerable if he represented institutional autonomy or reformist legitimacy. Šorm's marginalisation therefore belongs not only to the history of chemistry but to the history of scientific governance. It signalled the subordination of Academy leadership to the restored party-state order (*Nisonen-Trnka, 2012*; *Payne, 1972*).

In the humanities and social sciences, internal marginalisation often struck the discipline itself as well as individual scholars. Sociologists connected with the 1960s revival were especially vulnerable because sociology had become one of the intellectual languages of reform. Pavel Machonin's experience is particularly important. His major work on Czechoslovak society and social stratification was completed at the end of the reform period and then became politically unacceptable under normalisation. In his later reflection on sociology during normalisation, Machonin distinguished several streams of the discipline: active support for normalisation, neutral operation in official institutions, persecution through professional bans or other means, active work in dissent, and work in exile (*Machonin, 2004*). This typology captures the fractured world of the normalised Academy and its surroundings. Sociology did not simply disappear; it was divided into official, persecuted, dissident, and exiled forms. Machonin also emphasised that persecuted sociologists found work or unofficial research opportunities largely through institutions outside official Czech sociology and sometimes through Slovak social-science institutions. His account makes clear that internal marginalisation did not

always mean intellectual death, but it did mean exclusion from the normal institutional life of the discipline.

The fate of sociology also shows how internal marginalisation could produce non-academic or extra-academic science. Scholars banned from official sociological institutions sometimes continued research through applied institutes, policy-related bodies, demography, labour studies, environmental expertise, or informal networks. This work could remain scientifically meaningful, but it was displaced from its proper disciplinary home. The result was what might be called a sociology outside official sociology. Such work was often fragile, dependent on personal protection, institutional loopholes, and semi-official opportunities. It could not easily train students, establish open research programmes, or publish freely. Yet it preserved methods, data, and interpretative habits. Machonin's reflections suggest that the persecuted stream of sociology contributed significantly to knowledge of what was actually happening in society during normalisation (*Machonin, 2004*). This is a crucial point. Internal marginalisation could force scholars away from official visibility, but it could not entirely eliminate their capacity to observe and understand society. In some cases, the marginal position even sharpened their awareness of the system's contradictions. Nevertheless, the cost was high: the discipline's public institutional continuity was broken.

Historians experienced marginalisation through the control of memory. The disbanding and reorganisation of historical institutes after 1968 were not merely personnel measures; they were attempts to control the interpretation of recent history. Scholars associated with the documentation of the invasion, the study of Stalinism, or reformist historical approaches were removed, silenced, or redirected. The case of the Academy's Institute of History and the publication of *Seven Days in Prague* symbolised the danger of historical truth to the normalisation regime. A historian did not need to advocate opposition politics directly in order to be dangerous; accurate documentation itself could become politically intolerable. Internal marginalisation in history often meant exclusion from contemporary themes, loss of access to publication, or pressure to work on safer periods. Some historians survived by moving into medieval, early modern, regional, or source-editing work. Others maintained private notes, samizdat connections, or exile contacts. The discipline was therefore divided between official historical production and hidden memory. This division had long-term consequences because societies depend on historians to organise public time. When historians are marginalised, historical consciousness itself is damaged.

Philosophers faced marginalisation through the narrowing of conceptual language. The reformist currents of the 1960s had included Marxist humanism, phenomenology, structuralism, philosophy of science, and broader European theoretical debate. After normalisation, philosophy was expected to return to a legitimising form of Marxism-Leninism. Philosophers who could not or would not perform this role were pushed into silence, peripheral work, translation, private seminars, or non-academic employment. The case of Jan Patočka, although institutionally complex and not reducible to the Academy alone, illustrates the broader fate of philosophical independence under Communist rule. The Academy's historical overview notes that the Academy could provide asylum to researchers expelled from universities for ideological reasons, including Patočka, before later normalisation pressures took hold (*Czech Academy of Sciences, n.d.*). Patočka's later association with Charter 77 belongs to the wider story of dissent, but his intellectual marginalisation shows how philosophy could survive outside official academic structures. In philosophy, internal exile meant that one could remain intellectually alive while being institutionally silenced. The

discipline's deepest work often moved into private apartments, seminars, letters, and manuscripts. Such forms preserved thought, but they deprived philosophy of normal public academic development.

Oriental studies and literary scholarship were also affected by marginalisation, partly because they connected Czech scholarship with broader cultural and geopolitical horizons. Jaroslav Průšek, a major sinologist and literary scholar, had been an internationally recognised figure associated with the Oriental Institute and with a broad understanding of modern Asian literatures. His marginalisation after 1968 reflected not only personal political judgement but also the normalisation regime's suspicion toward intellectual independence and international scholarly authority. The case is important because it shows that even fields not directly centred on Czechoslovak politics could be vulnerable when their leading figures were associated with reformist or independent cultural life. Internationally visible humanistic scholarship could be dangerous because it created reputations and networks that did not depend entirely on domestic party approval. The marginalisation of such scholars weakened the Academy's ability to participate in global humanistic inquiry. It also narrowed the cultural range of Czech scholarship at a time when world studies, area studies, and comparative literature should have been expanding. Internal marginalisation therefore did not only silence domestic political critique. It also provincialised fields that had previously connected Czech research with wider world cultures (*Payne, 1972*).

Legal scholars experienced marginalisation through the restriction of legality itself. The Prague Spring had reopened questions of constitutionalism, federation, civil rights, public accountability, and socialist legality. After the invasion, such questions became dangerous because they exposed the contradiction between law and political force. Scholars such as Viktor Knapp, who had significant authority in legal theory, belonged to a field in which professional expertise could not be neatly separated from the legitimacy of the state. Legal marginalisation could mean loss of leadership, restriction of publication, or pressure to confine work to technical aspects of law. Yet law as a discipline was indispensable to the regime because the party-state needed legal forms for administration, labour relations, economic management, and institutional control. This created a paradox similar to that in economics: legal expertise was needed, but legal critique was dangerous. Internally marginalised legal scholars could sometimes continue work in narrower areas, but their ability to discuss legality as a constraint on power was curtailed. The Academy therefore lost not only individuals but also a language through which power might have been made accountable. This loss had consequences far beyond academic law.

Internal marginalisation often affected publication most severely. A scholar without the right to publish was present but academically muted. Publication is not an ornament of scientific life; it is the normal medium through which research becomes part of a discipline. To ban or restrict publication was to break the chain between thought and community. Payne observed that many dismissed scholars were banned from publishing, even translations, and were cut off from foreign books and periodicals (*Payne, 1972*). For a laboratory scientist, this could mean loss of international recognition and inability to communicate results. For a historian or philosopher, it could mean the disappearance of an entire intellectual voice from public life. Some scholars responded by writing for drawers, publishing abroad, circulating samizdat, or working under conditions of anonymity. Others stopped writing altogether. The damage was cumulative because unpublished work cannot easily enter teaching, citation, criticism, or

institutional memory. Internal marginalisation thus operated through silence imposed at the point where private knowledge should have become public science.

Foreign travel restrictions created another form of internal marginalisation. A scholar might remain employed but lose the ability to attend conferences, visit laboratories, consult archives, or maintain international collaboration. In a small country with strong scientific traditions but limited resources, international mobility was especially important. It allowed researchers to access literature, instruments, methods, and professional recognition beyond the domestic system. Losing travel rights could therefore severely weaken a career, even without formal dismissal. For natural scientists, it could isolate them from rapidly developing fields. For humanists and social scientists, it could cut them off from theoretical debates, foreign archives, émigré scholarship, and comparative perspectives. Travel became a privilege distributed according to political reliability. The internally marginalised scholar was often trapped inside the country while foreign peers advanced in open scholarly environments. This was another way in which the regime converted citizenship into professional confinement. A border could become an academic instrument.

Internal marginalisation also damaged the training of younger generations. A dismissed or silenced scholar could not supervise doctoral students, organise seminars, lead research teams, or create institutional schools. Even when younger researchers encountered such figures privately, the transmission of knowledge became informal and insecure. This was especially damaging in fields that depend on interpretative traditions, such as history, philosophy, sociology, law, and literary studies. A laboratory can sometimes preserve technique through technicians and team routines, but theoretical and humanistic disciplines depend heavily on open mentorship, reading lists, discussion, and intellectual debate. When mentors are removed from public teaching, a generation loses more than names. It loses styles of reasoning, standards of judgement, and access to unfinished questions. The normalisation regime understood this, whether explicitly or intuitively. To marginalise senior scholars was to interrupt the reproduction of critical intellectual life. The Academy's generational continuity was therefore weakened not only by emigration but also by the domestic silencing of those who remained.

The psychological dimension of internal exile should not be overlooked. Scholars who stayed in Czechoslovakia often lived for years with the knowledge that their talents were underused, their public voice was blocked, and their colleagues had adapted to their absence. Some were watched by security organs; others were simply ignored. Some experienced humiliation through reassignment to inferior tasks; others endured the quieter pain of being cited less, invited less, or remembered less in official settings. This kind of marginalisation worked through everyday signals. A name disappeared from a journal; an invitation did not arrive; a former student avoided public contact; a colleague accepted a post made available by dismissal. The internally marginalised scholar became socially present but institutionally reduced. Such experiences produced bitterness, resilience, withdrawal, or moral clarity, depending on individual circumstances. They also created deep fractures within scholarly communities. After 1989, these fractures did not automatically heal because the memory of who had been silent, who had helped, and who had benefited remained.

Exile, by contrast, brought freedom from domestic censorship but introduced new forms of loss. Scientists abroad often regained the possibility to publish, teach, travel, and participate in international research, yet they lost daily contact with their language, students, archives,

laboratories, colleagues, and national institutional culture. Some built distinguished careers; others faced professional downgrading, credential problems, language barriers, or the difficulty of entering competitive Western systems. For scholars in natural sciences, exile could be scientifically fruitful if they entered well-equipped laboratories. For humanists, it could be more ambivalent because the audience for Czech-language scholarship was limited, and the domestic sources of research were harder to access. Yet exile also created new intellectual possibilities. It allowed scholars to write openly about Czechoslovakia, preserve suppressed interpretations, participate in international debates, and maintain contacts with dissident or unofficial circles at home. Exile was therefore both loss and preservation. It removed scientific capital from the Academy but prevented that capital from being entirely destroyed. The exiled scholar became absent from domestic institutions but present in a wider Czechoslovak intellectual world.

The relationship between external exile and internal marginalisation was often maintained through correspondence, visiting relatives, foreign broadcasts, samizdat, émigré journals, and personal networks. These channels were fragile and politically risky, but they kept the divided scientific community from becoming completely severed. An émigré scholar could send books, articles, or information to colleagues at home. A domestic scholar could pass manuscripts abroad for publication or receive intellectual encouragement through private contact. In some cases, foreign publications by émigrés preserved debates that could not be printed in Czechoslovakia. In other cases, internal scholars supplied knowledge of domestic conditions to exile circles. The Academy as an official institution could not recognise these networks, and often treated them as suspect or hostile. Yet from the perspective of Czech science as a whole, they were channels of continuity. They connected the displaced outside with the silenced inside. They also helped prepare the intellectual reintegration that became possible after 1989.

One must also recognise that exile and marginalisation affected families and social status, not only professional careers. A scientist who emigrated often left relatives behind and risked being denounced as disloyal. Those who remained could face suspicion because of family members abroad. Children of politically compromised scholars could encounter obstacles in education or career advancement. Internally marginalised scholars might struggle economically after dismissal or reassignment, and their families shared the consequences. The regime's power lay partly in the fact that punishment extended beyond the individual without always needing explicit legal form. A blocked career could become a family problem; a foreign contact could become a source of suspicion; a refusal to conform could affect children's prospects. These pressures made exile and internal marginalisation deeply personal. They also influenced decisions. Some scholars left because they feared for their families' future; others stayed because they could not bear to uproot them. The history of academic exile is therefore also a history of households, loyalties, and intimate sacrifice.

The distinction between those who left and those who stayed should not be turned into a moral hierarchy. Exile required courage and risk, but staying could also require courage. Some scholars remained because they felt responsible for students, archives, laboratories, national culture, elderly relatives, or the hope of preserving something from within. Others left because staying would have meant intellectual suffocation or complicity. Some who stayed compromised deeply; some who left disengaged from domestic concerns. Some who left preserved Czech science abroad; some who stayed preserved it at home. The choices were made under pressure and with incomplete knowledge of the future. Nobody in 1969 could

know that the regime would last another two decades, nor how 1989 would unfold. Historical judgement must therefore be precise rather than schematic. The tragedy of normalisation lies partly in the fact that it forced scholars into choices that no healthy academic community should have had to make.

The Academy's official memory during normalisation tended to minimise or erase the significance of those who had left or been marginalised. Émigrés could be treated as traitors, unreliable persons, or simply non-persons. Internally marginalised scholars could disappear from anniversary publications, institutional histories, bibliographies, and public events. This erasure was part of the normalisation of memory. The institution had to present itself as stable, loyal, and continuous, even though some of its most important continuities had been broken. Names removed from public discourse became part of a hidden archive of absence. After 1989, one of the tasks of institutional reconstruction was therefore commemorative: to restore names, biographies, contributions, and injustices to the history of Czech science. The Academy's present historical overview openly acknowledges that normalisation was particularly hard on the Czechoslovak Academy of Sciences and that the Communist leadership took revenge for the role of Academy social science groups in Prague Spring reform efforts (*Czech Academy of Sciences, n.d.*). Such acknowledgement is important because it reverses the silence imposed during the normalisation period. It makes exile and marginalisation part of institutional history rather than a suppressed deviation.

The impact of exile and marginalisation differed across the natural sciences and the humanities. In natural sciences, the departure of a specialist could weaken a laboratory, interrupt a research line, or transfer technical knowledge abroad. Yet if the institute retained instruments, teams, and younger researchers, some continuity could remain. In the humanities and social sciences, the departure or silencing of a leading figure could destroy a school more completely because interpretative traditions depend on open debate, mentorship, and publication. A historian's archive knowledge, a philosopher's conceptual language, or a sociologist's methodological orientation might survive only through personal transmission. If the person left, was silenced, or was removed from students, the tradition could be interrupted. On the other hand, humanistic exiles could often continue writing in a way that laboratory scientists could not easily continue experimental work without institutional equipment. The damage was therefore different, not simply greater or lesser. Natural science lost laboratory personnel and technical continuity; humanistic and social-scientific fields lost public voice, interpretative lineages, and the ability to study society openly.

The state's attitude toward émigré scientists was contradictory. Officially, emigration was condemned as disloyalty, especially when it followed the invasion and normalisation. Practically, however, the regime sometimes remained interested in the achievements of Czechoslovak-born scientists abroad, especially when their work brought prestige to the broader national scientific tradition. This contradiction became more visible after 1989, when exiled scholars could be reintegrated into the history of Czech science. During normalisation, however, official institutions could not easily acknowledge that scientific excellence had left because of political repression. To do so would have been to admit the cost of the regime's policies. Therefore, exile was often converted into silence. The names of émigrés could disappear from domestic bibliographies, or their contributions could be mentioned without full context. This silence impoverished the Academy's self-understanding. A scientific community that cannot acknowledge its absent members cannot accurately understand its development.

Internal marginalisation also created a distorted hierarchy inside the Academy. Political reliability could elevate some people beyond their scholarly merit, while political suspicion could push stronger scholars to the margins. This affected institute leadership, research agendas, editorial policy, and access to international contact. The distortion was not absolute; many competent scientists remained in official positions, and some politically acceptable administrators were also serious scholars. Yet the principle of evaluation had been compromised. Once political loyalty became a condition of institutional authority, the normal academic hierarchy of merit was weakened. Younger researchers learned that intellectual quality was necessary but not sufficient. They also learned to read signs of political safety. This affected the culture of ambition. Some ambitious scholars pursued excellence; others pursued reliability; many tried to balance both. Internal marginalisation therefore damaged not only its immediate victims but also the ethical atmosphere in which careers were formed.

The long duration of normalisation made these effects cumulative. If exile and marginalisation had lasted only a few years, the Academy might have repaired the damage relatively quickly. Instead, the period from 1969 to 1989 covered an entire generation of scientific careers. Students became researchers, researchers became directors, and young émigrés became established foreign scholars. Internal absences hardened into institutional habits. Disciplines adjusted to missing people, missing topics, and missing debates. The Academy continued to function, but it functioned around voids. These voids became normalised. By the 1980s, younger scholars might know only indirectly why certain names were not cited or why certain questions were not asked. The long-term effect was therefore not only loss but habituation to loss. This is one of the reasons why post-1989 renewal required not only political change but historical reconstruction.

The relationship between exile, marginalisation, and scientific productivity was also paradoxical. Some of the scientists who left became more productive abroad than they could have been at home. Some who stayed preserved indispensable domestic competence despite restrictions. Some internally marginalised scholars produced work later recognised as important precisely because they had kept intellectual independence outside official structures. Yet the Academy as an institution suffered from the fragmentation of these energies. It could not fully benefit from émigré achievements, and it could not fully use the talents of those it marginalised. The system therefore wasted scientific capital even when individual scholars found ways to continue. This waste is one of the clearest measures of normalisation's cost. It was not only a moral injustice but an institutional inefficiency. A regime that claimed to value science deprived itself of some of its best scientists because it feared their autonomy.

The history of scientists forced into exile or internal marginalisation also helps explain the later symbolic importance of figures such as Wichterle after 1989. His election as president of the Academy after the revival of democracy carried more than administrative meaning. It represented a reversal of normalisation's moral hierarchy. A scientist who had been politically punished became a symbol of scientific autonomy and institutional reconstruction. The Academy's historical overview explicitly connects Wichterle with worldwide recognition for contact lenses and with his post-1989 role in reconstructing the research organisation (*Czech Academy of Sciences, n.d.*). This symbolic restoration mattered because post-1989 reform needed figures who embodied both scientific excellence and moral continuity. Yet no symbolic restoration could fully repair the lost decades. Many exiled or marginalised scholars had aged,

died, or built lives elsewhere. Some could return intellectually, but not institutionally. The Academy's renewal therefore contained both recovery and irretrievable loss.

By the end of the 1980s, the dispersed Czech and Czechoslovak scientific community existed in several overlapping spaces. There was the official Academy, with its institutes, laboratories, controlled publications, and surviving competence. There were internally marginalised scholars, some outside formal academia, some working quietly inside it. There were émigré scientists abroad, integrated into foreign universities, laboratories, and research centres. There were dissident and samizdat intellectual circles, especially important for philosophy, history, sociology, law, and cultural criticism. There were grey-zone experts who moved between official work and semi-official critique. This fragmented structure was the direct result of normalisation. It allowed the regime to maintain the appearance of institutional stability, but only by dividing the scientific community against itself. The Academy remained standing, yet part of its intellectual body was elsewhere: abroad, underground, in private apartments, in unpublished manuscripts, in internal reports, or in the memories of those who had been silenced. To understand late-socialist Czech science, one must therefore look beyond the official institution to the dispersed community that normalisation produced.

Thus, scientists forced into exile or internal marginalisation represented one of the deepest losses suffered by the Czechoslovak Academy of Sciences after 1968. Exile removed hundreds of researchers from the Academy's institutional life, especially during the wave of 1968–1970, and transferred part of Czech and Czechoslovak scientific capital to the United States, Canada, West Germany, and other countries. Internal marginalisation damaged those who remained by depriving them of posts, students, publications, travel, leadership, or public voice. The two processes were different in form but connected in cause: both resulted from the restoration of party control and the regime's fear of autonomous scientific authority. Natural scientists, humanists, social scientists, legal scholars, historians, philosophers, and literary scholars were affected differently, but all experienced the fragmentation of the scholarly community. Some émigrés preserved Czech science abroad; some internally marginalised scholars preserved knowledge at home; some official institutes continued productive work while carrying the burden of absence. The Academy therefore survived normalisation as an institution, but not as an undivided community. Its later renewal after 1989 required not only organisational reform, but also the recovery of names, biographies, interrupted traditions, and moral debts created by exile and internal displacement.

2. The Relationship between Émigré Scholars and the Academy

The relationship between émigré scholars and the Czechoslovak Academy of Sciences after 1968 was defined by separation, silence, suspicion, and indirect continuity. It cannot be described simply as a relationship between the Academy and its former employees, because normalisation transformed emigration into a political category. A scientist who left the country after the Soviet-led invasion was not merely a colleague abroad; in official terms, he or she could become an unreliable person, a deserter, an ideological enemy, or at least a name that should no longer circulate freely in institutional memory. Yet from the perspective of the history of Czech and Czechoslovak science, émigré scholars remained part of the same intellectual community. They had been trained in domestic universities and Academy institutes, had worked in Czechoslovak laboratories and archives, and had often contributed to the Academy's strongest research traditions before their departure. Their emigration therefore did

not remove them from scientific history, even when it removed them from the official institutional structure. The Academy under normalisation could not openly maintain normal collegial relations with them, but it also could not erase the fact that their competence had been formed in the very institutions now obliged to disown or ignore them. This produced a fractured relationship: institutionally broken, politically dangerous, but scientifically and biographically persistent. The émigré scholar became both absent and present — absent from official posts, meetings, bibliographies, and institutional rituals, but present in the dispersed memory of colleagues, the continuation of research lines abroad, and the long-term reconstruction of Czech science after 1989. The relationship between exile and the Academy was therefore not a closed chapter of loss; it was a long, unstable, and often hidden relation between an institution that had been politically captured and a scientific community that exceeded the borders of the state (*Kostlán, 2010*; *Nisonen-Trnka, 2012*).

The scale of this relationship was significant because emigration from the Academy was not marginal. Antonín Kostlán's prosopographic study of emigration from the Czechoslovak Academy of Sciences estimates the total number of emigrants from the Academy during Communist rule at about 760–790 people, representing roughly 6–7 per cent of Academy workers, with the main wave occurring between 21 April 1968 and 1970 (*Kostlán, 2010*). This means that the relationship between the Academy and émigré scholars was not a matter of a few exceptional biographies, but a structural feature of the institution's late-socialist history. The emigrants included a broad range of scientific branches, with chemists represented at a higher-than-average share, and their main destinations included the United States, Canada, West Germany, and other European countries (*Kostlán, 2010*). Such figures indicate a substantial transfer of trained scientific capital from domestic institutions to foreign research systems. The Academy did not lose only bodies in offices; it lost potential directors, supervisors, research group leaders, editors, inventors, and future members of international networks. Yet the loss was not absolute from the viewpoint of Czech science as a broader intellectual phenomenon. Many émigrés continued to publish, teach, and conduct research abroad, thereby preserving or even strengthening parts of the scientific competence that the domestic system had made politically vulnerable. The relationship between the Academy and exile was therefore a paradoxical relationship between institutional loss and transnational preservation. The official Academy could not benefit openly from these scholars, but Czech scientific history continued through them outside the Academy's borders.

In the first years after 1968, official relations between the Academy and émigré scholars were usually severed or sharply restricted. A scientist who failed to return from abroad, applied for asylum, or settled in a Western country could be removed from personnel records, condemned in internal assessments, stripped of institutional affiliation, or treated as politically compromised. In many cases, contact with such a person became dangerous for colleagues who remained in Czechoslovakia. Correspondence could be monitored, visits could be questioned, and citation of foreign publications by émigrés could require caution or be avoided altogether. The Academy as an institution was expected to demonstrate loyalty to the normalisation order, and this meant distancing itself from those who had left after the "crisis development". This distancing had practical consequences. It weakened collaboration, interrupted co-authorship, blocked access to foreign laboratories, and deprived younger researchers of mentors who had moved abroad. It also produced a moral wound because colleagues who had worked together in the 1960s were now placed on opposite sides of a politically enforced boundary. The émigré did not stop being a scientist, but the domestic

institution could no longer treat him or her simply as a colleague. The relationship became mediated by suspicion, silence, and the political grammar of betrayal.

The official silence around émigré scholars was one of the most damaging forms of this separation. Names could disappear from institutional histories, anniversary publications, bibliographies, and public accounts of research programmes. In fields where émigrés continued to publish abroad, their work could still be known privately but could not always be acknowledged publicly. This was especially damaging when émigré scholars had contributed to research lines that continued inside the Academy. A laboratory, method, school, or theoretical approach might have been shaped by a person whose later name became inconvenient. The result was a distorted institutional memory. Science depends on citation and genealogy; it needs to know who did what, who trained whom, and how ideas developed. Normalisation damaged that memory by converting biography into political risk. The Academy's official narrative therefore often had to present continuity without acknowledging some of the people who had made continuity possible. This produced what might be called an archive of absence. The absent names did not disappear from the minds of colleagues, but they became difficult to place openly in the institutional story.

At the same time, complete severance was impossible because scientific knowledge circulates in ways that political institutions cannot fully control. Émigré scholars published in foreign journals, worked in foreign universities and laboratories, attended conferences, entered international academies, and sometimes became highly visible in their disciplines. Their publications could reach Czechoslovak colleagues through libraries, personal exchanges, photocopies, conference proceedings, or private channels. In the natural sciences, where international literature was indispensable, it was often difficult to ignore a significant result simply because its author was politically inconvenient. A chemist, physicist, or mathematician inside Czechoslovakia might know that a former colleague abroad had published important work, even if open acknowledgment was complicated. In the humanities and social sciences, circulation was more politically sensitive, but exile journals, samizdat, foreign broadcasts, and private correspondence kept some connections alive. The relationship between émigré scholars and the Academy therefore survived in unofficial, semi-official, and mediated forms. It was rarely a normal institutional relationship, but it was not complete isolation. Knowledge crossed borders even when institutions pretended that it should not.

The case of Josef Michl illustrates this pattern with particular clarity. Michl had been trained in Czechoslovak chemistry and earned his PhD in the Czechoslovak Academy of Sciences under Rudolf Zahradník before building a major career in the United States. His departure after 1968 placed him outside the domestic Academy system, but his scientific trajectory remained connected to Czech chemical traditions. Later accounts note that he was abroad during the invasion and recognised that his earlier political associations would likely have stopped his career at home; in exile, however, he developed into an internationally prominent chemist working across organic, physical, and inorganic chemistry (*Munk, 2011*). The Prague Post article on Czech scientists in exile records Michl's view that exile forced him to become more flexible and intellectually adventurous, and it describes his later recognition in the international chemical community. This example shows how exile could transform a domestic loss into an international scientific gain. For the Academy, however, the gain was indirect and delayed. Michl's work became part of the global reputation of Czech-trained chemistry, but not part of the normal institutional productivity of the Czechoslovak Academy during normalisation. Only after 1989 could such careers be more openly reconnected with domestic scientific memory.

The relationship with émigré natural scientists was often complicated by the practical need for international scientific standards. A former Academy chemist, physicist, or biologist abroad might work in a field where domestic researchers needed to follow the literature regardless of politics. In such cases, the émigré scholar could become an unofficial bridge to world science. He or she might send articles, recommend contacts, host visiting researchers after political conditions softened, or contribute to the reputation of Czech science abroad. Yet these connections depended on caution. Domestic colleagues could not always correspond freely or acknowledge assistance openly. The émigré, meanwhile, might be uncertain whether contact would endanger people at home. This created a relationship of asymmetrical freedom. The scholar abroad could speak and publish more openly, while the colleague at home had to calculate the institutional consequences of every connection. The Academy as an official body could not endorse such ties, but individual scientists often understood their value. The result was a shadow network of scientific continuity that existed beneath formal diplomatic and institutional relations.

František Janouch provides another important example because his exile combined scientific displacement with active support for dissent at home. Janouch had worked in a senior position at the Nuclear Physics Institute of the Czechoslovak Academy of Sciences and was also a professor at Charles University before being dismissed after the 1968 invasion and banned from lecturing. In 1974, he moved to Sweden at the invitation of the Royal Swedish Academy of Sciences, and in 1978 he established the Charter 77 Foundation to support Czechoslovak dissidents (*Associated Press, 2024*). This biography shows how a relationship that began as scientific exile could become a broader channel of political and cultural support. Janouch's foundation sent assistance to persecuted Charter 77 signatories and helped smuggle banned books and equipment into Czechoslovakia, supporting underground publication and intellectual communication (*Associated Press, 2024*). For the official Academy, such activity would have been politically unacceptable. Yet from the perspective of the wider Czech intellectual community, it represented a form of preserved responsibility by an exiled scientist toward the society from which he had been expelled. Janouch's case therefore demonstrates that the relationship between émigré scholars and domestic intellectual life could extend beyond disciplinary research into the defence of free culture and civic knowledge.

Janouch's trajectory also reveals the difference between the official institution and the moral community of science. The Czechoslovak Academy under normalisation could not treat him as an ordinary former colleague because he had become associated with exile activism and support for dissent. Yet his scientific and civic biography remained tied to the Academy because his earlier career had been formed there. His dismissal was not simply a personal event; it symbolised the regime's willingness to sacrifice advanced scientific competence for political reliability. His later activity in Sweden demonstrated that scientific exile could become a platform for reconnecting with the domestic society in a non-institutional way. The official Academy was closed to him, but the broader Czech intellectual world was not. This distinction matters because normalisation tried to make the official institution identical with legitimate science. Exile disproved that claim. A scientist could be outside the Academy and still participate in the fate of Czech science, Czech intellectual life, and Czech public truth. The émigré relationship to the Academy was therefore often mediated by a deeper loyalty to scholarly freedom rather than by loyalty to the institution as politically administered.

In the humanities and social sciences, the relationship between émigré scholars and the Academy was even more politically sensitive because exile scholarship often dealt directly

with Czechoslovak history, culture, politics, and social development. Historians, sociologists, philosophers, legal scholars, economists, literary critics, and cultural theorists abroad could write about topics suppressed at home. Their publications might reinterpret 1948, Stalinism, 1968, normalisation, dissent, national culture, or the crisis of reform socialism. Such work was valuable for preserving intellectual continuity, but dangerous for official institutions. Academy researchers at home could not freely cite or discuss such writings, even when they knew of them. The émigré scholar therefore became a paradoxical authority: intellectually relevant, but institutionally inadmissible. In some fields, exile scholarship preserved debates that the Academy could not host publicly. In others, it developed perspectives shaped by distance, foreign archives, and Western theory. The relationship was thus one of intellectual complementarity and institutional blockage. The exiled humanist or social scientist often continued the questions that the normalised Academy had been forced to abandon.

The memory of the 1960s played a central role in this relationship. Many émigré scholars had experienced the Prague Spring not as a remote political episode but as the culmination of professional and intellectual renewal. They had participated in the revival of sociology, the opening of philosophy, the reform of economics, the reassessment of history, or the internationalisation of natural science. Their exile therefore carried with it a memory of what the Academy had briefly been or might have become. This memory could be preserved abroad more openly than at home. Domestic Academy scholars often had to refer to the 1960s through silence, coded language, or official condemnation. Émigrés could write memoirs, publish analyses, teach students, and speak publicly about the reform period. Their relationship with the Academy was therefore also a relationship with an alternative institutional memory. They remembered the Academy not only as a normalised organisation, but as a site of unfinished reform. This memory later became important after 1989, when the history of the Academy had to be rewritten beyond the official normalisation narrative.

Sociology again provides a clear example. The discipline had been revived during the 1960s and then fragmented after normalisation into official, persecuted, dissident, and exiled streams. Pavel Machonin's later reflection on sociology during normalisation explicitly distinguished these streams and noted that some sociological knowledge continued outside official Czech sociology, including through exile and semi-official spaces (*Machonin, 2004*). This fragmentation shaped the relationship between émigré sociologists and the Academy. Official Academy sociology could not easily acknowledge exiled or persecuted scholars as legitimate contributors, because doing so would challenge the political basis of its normalised structure. Yet sociological knowledge about Czechoslovak society continued to develop outside official institutions. Exile and internal marginalisation thus became parts of one dispersed disciplinary field. The Academy retained the name and some institutional resources of sociology, while parts of the discipline's critical memory lived elsewhere. After 1989, the reintegration of sociology required more than institutional reform; it required reconnecting these separated streams of knowledge. The émigré relationship to the Academy was therefore one of delayed disciplinary repair.

The Academy's relationship with émigré scholars was also shaped by the fear of contamination. Contact with émigrés could be interpreted as political unreliability, especially if the émigré was connected with dissent, exile publishing, Radio Free Europe, Western universities, or organisations supporting opposition at home. This fear affected correspondence, citation, private meetings, and conference encounters. A domestic scholar attending an international conference might meet a former colleague abroad, but such a

meeting could be sensitive. Should it be reported? Could it be mentioned? Was it safe to exchange publications? Such questions turned ordinary scholarly interaction into political risk. The relationship between the Academy and émigrés therefore became mediated through caution and ambiguity. It was not simply forbidden in every case, but it was never innocent. Scholars had to distinguish between official contacts, tolerated professional encounters, private friendships, and politically dangerous communication. This made the scientific community emotionally and morally divided. People who had once belonged to the same institute now had to meet as if geography itself had become ideological.

Nevertheless, émigré scholars sometimes served as informal representatives of Czech science abroad. They could explain domestic scientific traditions to foreign colleagues, support young researchers who managed to travel, review publications, organise conferences, and maintain the reputation of Czech scholarship in international settings. In chemistry, physics, mathematics, medicine, engineering, and other natural sciences, such representation could be highly effective because émigrés entered strong Western institutions and professional societies. Their achievements helped demonstrate that Czech scientific training had produced researchers of global calibre. This was a source of pride, but also a source of institutional embarrassment for the normalised Academy. The state could not fully claim the success of people it had effectively forced out or denounced. Yet foreign colleagues often saw these scientists as Czech or Czechoslovak, regardless of official domestic silence. Exile therefore carried national scientific identity beyond the control of the state. It turned the Academy's lost people into ambassadors of a scientific tradition that the Academy itself could not openly celebrate. This was one of the historical ironies of normalisation.

For émigré scholars themselves, the relationship with the Academy could be emotionally ambivalent. Some felt anger toward the institution because it had dismissed, silenced, or abandoned them. Others distinguished between the politically controlled Academy leadership and the colleagues, laboratories, or teachers they still valued. Some maintained affection for the scientific culture in which they had been formed, while rejecting the regime that controlled it. Others built new identities abroad and kept only limited ties with the domestic academic world. The relationship depended on personal biography, discipline, career success abroad, family circumstances, and the degree of persecution experienced before departure. Exile was not a uniform condition. A young scientist who became a successful professor in the United States had a different relationship to the Academy than an older humanist struggling to publish Czech-language work abroad. Yet many émigrés shared a sense that their departure had been forced by political circumstances rather than chosen as ordinary academic mobility. This distinguished exile from normal international career migration. The Academy was not simply a former employer; it was the institution from which normal scholarly belonging had been broken.

The domestic Academy's practical need for foreign literature created indirect points of contact with émigré scholarship. Even if direct institutional cooperation was restricted, publications by émigré scientists could enter libraries or private collections. In fields where results were internationally important, complete exclusion was difficult. A publication by a Czech chemist abroad could be scientifically relevant even if politically awkward. A mathematical theorem could not be ignored indefinitely because of the author's exile status. In the humanities, however, books and articles by émigré scholars were often more easily excluded because their content could be classified as politically hostile or ideologically inappropriate. This difference reinforced the unevenness between disciplines. Natural-scientific exile could sometimes re-

enter domestic scientific awareness through the impersonal authority of international literature. Humanistic and social-scientific exile was more likely to remain in samizdat, private reading, or foreign libraries. The Academy's relationship with émigrés therefore varied according to how easily a field could separate scientific content from political biography.

The role of conferences after periods of cautious thaw or selective opening should also be noted. Even under normalisation, some Czechoslovak scholars attended international meetings, especially in less politically sensitive fields. These events could create temporary spaces of contact with émigré colleagues. Such encounters were often brief, careful, and emotionally charged. They could involve exchange of publications, news about mutual acquaintances, or discreet discussion of conditions at home. For the émigré, meeting domestic colleagues could revive the lost institutional world. For the domestic scholar, meeting émigrés could reopen the sense of a broader scientific community beyond the controlled Academy. Yet these encounters remained asymmetrical. The émigré could speak more freely; the domestic scholar often could not. The conference thus became a border zone where scientific communication and political caution met. Such small contacts helped maintain continuity, but they also revealed the abnormality of the situation. In a healthy scientific community, former colleagues would not have to calculate the political meaning of a conversation.

The Academy's official relationship with émigrés began to change only with the crisis of late socialism and especially after the Velvet Revolution. Before 1989, open rehabilitation was impossible because it would have implied a judgement against normalisation itself. After 1989, the institution could begin restoring names, inviting émigrés, acknowledging their achievements, and rebuilding formal cooperation. Conferences on scholars in exile, such as those later sponsored by the Czech Academy of Sciences, became symbolic acts of recovery as well as scholarly events. A Prague Post report from 2011 noted that a number of Czech scientists who had worked abroad during Communism returned to Prague for a "Scholars in Exile" conference sponsored by the Czech Academy of Sciences, and that many agreed exile had created opportunities unavailable in Czechoslovakia (*Munk, 2011*). Such events did not simply commemorate biographies; they reconnected divided institutional memory. They allowed the Academy to recognise that part of its history had continued outside it. This recognition was an essential component of post-1989 institutional healing.

The post-1989 relationship, however, could not simply restore what had been lost. Many émigré scholars had built careers, families, laboratories, and intellectual identities abroad. Some returned only temporarily; others contributed through visiting lectures, collaborations, advisory roles, or symbolic presence. Some were too old to re-enter institutional life fully; others had died before rehabilitation became possible. The Academy could restore honours, cite publications, and acknowledge injustice, but it could not recover the lost decades of domestic teaching, supervision, and research leadership. This is why the relationship between émigré scholars and the Academy remained marked by irreversibility. Reconnection was real, but it was not restoration in the full sense. The scientific community could become more whole in memory than it had been in institutional practice. The Academy after 1989 inherited both the achievements of émigré scholars and the absence their exile had created at home. This dual inheritance required humility. It showed that institutional reform must include remembrance of what cannot be repaired.

The relationship with émigré scholars also influenced the Academy's post-socialist internationalisation. Scholars abroad could serve as bridges to Western universities, grant systems, journals, laboratories, and professional associations. They understood both Czech scientific culture and foreign academic environments. This made them valuable interlocutors during the reintegration of Czech science into European and global research systems. In some cases, émigrés returned as visiting professors, collaborators, evaluators, or mentors. In other cases, their students or colleagues abroad became new partners for Czech institutes. Exile networks therefore became resources for post-1989 renewal. This does not mean that exile should be retrospectively treated as beneficial. It was caused by repression and produced serious losses. But once it had occurred, the dispersed community became part of the international capital through which Czech science could reconnect with the world. The relationship between émigrés and the Academy thus changed from politically forbidden contact to a potential source of reconstruction.

At the same time, the reintegration of émigré scholars could generate tensions. Domestic scholars who had remained through normalisation sometimes felt that their survival under difficult conditions was misunderstood or undervalued by émigrés. Émigrés sometimes felt that domestic colleagues had compromised too much or benefited from their absence. The Academy had to navigate these moral memories carefully. The opposition between those who left and those who stayed was never simple. Some who stayed protected research and colleagues; others collaborated. Some who left preserved scientific freedom; others became distant from domestic realities. The post-1989 relationship therefore required not only institutional openness but also ethical dialogue. Reconciliation could not be achieved by replacing one heroic narrative with another. The Academy's history had to recognise exile, internal marginalisation, grey-zone survival, and official continuity as parts of the same fractured scientific world. The émigré relationship to the Academy became a mirror in which the institution could see both its losses and its compromises.

In natural sciences, post-1989 reconnection was often easier because collaboration could be organised around laboratories, joint publications, conferences, and technical projects. A chemist abroad could collaborate with a Prague institute; a physicist could support participation in international networks; a mathematician could return for seminars; a biomedical scientist could help connect research groups. The language of science provided a shared framework beyond political memory, even if memory remained present. In the humanities and social sciences, reintegration could be more difficult because the issues were not only professional but interpretative. Exiled historians, sociologists, philosophers, and literary scholars had often developed alternative accounts of Czechoslovak history and culture that challenged official domestic traditions formed under normalisation. Reconnection therefore required debate about the meaning of the past, not only exchange of research methods. This difference reflects the broader distinction between knowledge fields under normalisation. Natural-scientific exile often returned through collaboration; humanistic exile often returned through controversy, reinterpretation, and canon repair. Both were necessary. The Academy needed both technical reintegration and intellectual self-revision.

The relationship between émigré scholars and the Academy also forces a broader conceptual distinction between institution and community. The Academy as an official institution was territorially located, legally defined, and politically supervised. The scientific community, however, extended across borders through training, memory, correspondence, publications, citations, and shared disciplinary standards. Normalisation tried to make the institution the

authorised form of the community. Exile revealed that the community could survive outside the institution. This distinction is crucial for the history of Czech science. If one studies only official Academy structures, the émigrés appear as lost personnel. If one studies the broader community, they appear as displaced but continuing participants in Czech and Czechoslovak intellectual life. Both perspectives are necessary. The Academy lost them, but science did not lose them entirely. Their relationship to the Academy therefore remained negative institutionally and positive historically: negative because the official relationship was severed, positive because their work preserved capacities that later enriched the reconstructed institution.

This distinction also helps explain why exile was so threatening to the normalisation regime. An émigré scientist could demonstrate that serious scholarship did not depend on party approval. He or she could succeed in foreign institutions, publish internationally, and sometimes criticise the regime openly. This undermined the regime's claim that socialist institutions were the natural home of progressive science. It also exposed the cost of repression: the country's trained scholars were contributing to other research systems. In the humanities and social sciences, émigrés could challenge official historical and sociological narratives. In natural sciences, they could surpass domestic laboratories that had been constrained by travel restrictions and resource limitations. Exile therefore had symbolic power. It showed that the Academy's official hierarchy was not identical with scientific merit. For that reason, the regime's suspicion of émigrés was not accidental. It reflected the fact that exile made visible the gap between institutional loyalty and intellectual quality.

The émigré relationship to the Academy also had a generational dimension. Older scholars who left after 1968 often carried direct memory of pre-normalisation Academy life. Younger scholars who grew up abroad or built careers in Western institutions gradually acquired different academic habits, expectations, and standards. When these generations later reconnected with Czech institutions, they did not return to the same Academy they had left. They encountered an institution shaped by 20 years of normalisation, but also one eager to reform. This could produce creative exchange, but also misunderstanding. Domestic scholars had adapted to scarcity, hierarchy, and caution; émigrés had adapted to competitive grant systems, open debate, and international mobility. The encounter therefore involved not only political memory but different academic cultures. In this sense, exile transformed Czech science by creating a comparative mirror. It showed domestic scholars alternative ways of organising research, but it also showed émigrés the resilience of those who had preserved science under constraint.

The case of exile support for dissent also reveals the Academy's relationship to the wider cultural field. Janouch's Charter 77 Foundation did not merely support scientists; it supported dissidents, banned authors, families of persecuted people, and underground publishing. It smuggled banned books and equipment that enabled the publication of censored works (*Associated Press, 2024*). Such activity belonged to the broader intellectual ecology in which science, culture, and civic freedom overlapped. An exiled nuclear physicist became a organiser of cultural and political support because the repression of science was connected with the repression of public truth more generally. For the official Academy, this was politically unacceptable; for the broader history of Czech intellectual life, it was central. The émigré scientist could act where the domestic institution could not. This expanded the meaning of scientific responsibility. It suggested that the scientist's duty was not limited to research

output, but could include defence of the conditions under which truth could circulate. That idea had deep significance for the Academy's post-1989 reconstruction.

The relationship between émigrés and the Academy must therefore be read not only as a matter of communication, but as a question of legitimacy. Who had the right to represent Czech science under normalisation: the official Academy, the émigré scholars abroad, the silenced scientists inside the country, or some combination of them? The normalisation regime answered this question by granting legitimacy to the official institution alone. Historical analysis must answer differently. The official Academy retained laboratories, institutes, and formal continuity, but émigrés preserved alternative forms of intellectual freedom and international connection. Internally marginalised scholars preserved memory and methods outside full institutional recognition. The true history of Czech science lies in the relationship among all these segments. Émigré scholars were not outside the story because they were outside the state. They were outside the state because the state had narrowed the conditions of belonging. Their relationship with the Academy therefore reveals how political power can fracture an intellectual community without being able to destroy its deeper continuities.

By the late 1980s, the relationship remained largely unresolved. Official contacts were still restricted; private contacts persisted; exile publications circulated unevenly; domestic scholars continued to work under supervision; and émigré scholars lived in foreign academic worlds. Yet the coming political transformation would soon reveal how much suppressed connection had survived. After 1989, the Academy could begin acknowledging exiles, inviting them back, citing them openly, and integrating their work into institutional history. This did not happen instantly or without tension, but it marked a fundamental change. The émigré scholar could again become a colleague rather than a forbidden name. The relationship moved from silence to recognition, from suspicion to dialogue, and from political absence to historical presence. The process was incomplete, but it altered the Academy's self-understanding. It showed that the Academy's history had not been contained within its official borders between 1969 and 1989. Part of that history had been written in Stockholm, Boulder, Toronto, Munich, London, Paris, Vienna, and many other places where Czech and Czechoslovak scholars continued their work.

Thus, the relationship between émigré scholars and the Czechoslovak Academy of Sciences during normalisation was one of broken institutional affiliation but persistent scientific belonging. The official Academy, subordinated to the party-state, could not openly maintain ordinary scholarly relations with those who had left after 1968, especially when they became associated with Western institutions, exile publishing, or support for dissent. Yet émigré scholars remained part of the wider Czech and Czechoslovak scientific community because their training, research traditions, memories, and professional identities had been formed in domestic institutions. Their careers abroad represented a loss for the Academy, but also a preservation of scientific capital that the normalised system could not fully absorb. In the natural sciences, émigrés often remained connected indirectly through international literature, conferences, and later collaborations; in the humanities and social sciences, they preserved suppressed interpretations, memories, and critical debates that could not be hosted openly at home. After 1989, the relationship changed from silence and suspicion to recognition and partial reintegration, although the lost decades could not be restored. The Academy's post-socialist renewal therefore depended not only on reforming the institution that had survived inside Czechoslovakia, but also on recovering the dispersed scientific community that had continued beyond its borders.

3. Exile as a Form of Lost and Preserved Scientific Capital

Exile after 1968 was one of the most severe forms of scientific loss suffered by the Czechoslovak Academy of Sciences, but it was never only loss. It removed people, skills, laboratories of thought, professional networks, and future institutional leaders from Czechoslovakia; at the same time, it preserved forms of intellectual freedom that could not remain fully alive inside the normalised Academy. The paradox is central to the history of late-socialist Czech and Czechoslovak science. A scholar who left Prague, Brno, Bratislava, or another research centre carried away knowledge that the domestic institution had helped create, but that the institution under party control could no longer properly use. In this sense, exile converted domestic scientific capital into transnational scientific capital. It weakened the Academy as a national institution, yet it helped preserve Czech and Czechoslovak scholarship as a wider intellectual community beyond the borders of the state. The émigré scientist became a sign of institutional failure, because a country that had invested in training and research lost part of its elite. At the same time, the émigré scientist became a carrier of continuity, because methods, memories, research habits, and intellectual questions survived abroad when they were restricted at home. This double character makes exile historically difficult to evaluate in simple terms. It was a wound, a displacement, a rescue, and a bridge at the same time (*Kostlán, 2010*; *Nisonen-Trnka, 2012*).

The notion of scientific capital is useful here because it allows the history of exile to be understood beyond the biography of individual emigrants. Scientific capital includes formal education, tacit skills, laboratory experience, disciplinary reputation, international contacts, language competence, publication record, methodological culture, mentorship capacity, and the ability to create new research environments. The Academy accumulated such capital through decades of institutional development, especially from the founding of the Czechoslovak Academy of Sciences in the early 1950s through the more internationally open and methodologically dynamic 1960s. When scientists left after 1968, this accumulated capital moved with them. It could not remain stored in institute buildings or personnel files. A chemist carried synthetic skill and experimental imagination; a physicist carried mathematical and instrumental competence; a sociologist carried methods of empirical inquiry; a historian carried interpretative memory; a philosopher carried conceptual vocabularies that could no longer be spoken publicly. The political regime often treated emigrants as deserters or unreliable persons, but historically they were displaced bearers of institutional investment. Their exile therefore exposed a contradiction in the normalisation system. The state wanted a strong Academy, but its political actions drove away some of the people through whom strength had been created.

The lost dimension of exile was immediate and institutional. Laboratories lost researchers who knew equipment, projects, and methods from within. Institutes lost possible future directors and supervisors. Research groups lost colleagues who might have trained students, written monographs, built experimental lines, edited journals, and represented Czechoslovak science abroad. The loss was not always numerically overwhelming in each institute, but it could be strategically serious because the people who left were often young or mid-career scholars with high mobility, strong international contacts, and reformist expectations. Kostlán's study of emigration from the Czechoslovak Academy of Sciences estimates that around 760–790 Academy workers emigrated during Communist rule, about 6–7 per cent of Academy

personnel, with the 1968–1970 wave forming the most important concentration (*Kostlán, 2010*). Such figures do not capture the full intellectual effect, because one major scientist can carry an entire research direction and one younger researcher can represent decades of future work. Nor do they measure the effect of fear on those who remained. Exile was therefore a direct loss of human capital and an indirect cause of caution, self-censorship, and institutional mistrust. Every departure reminded colleagues that the Academy's future was no longer secure.

The preserved dimension of exile was equally real, though it became visible more slowly. A scholar abroad could publish freely, teach without official Marxist-Leninist supervision, attend conferences, obtain access to better equipment, read prohibited literature, and participate in international debates without the same forms of domestic censorship. This did not mean that exile was comfortable or automatically successful. Many émigrés faced linguistic barriers, professional downgrading, loss of status, uncertainty of citizenship, separation from family, and the painful experience of beginning again in a foreign academic system. Yet exile also offered the possibility of intellectual continuation. A research question stopped in Prague could continue in Stockholm, Toronto, Munich, Boulder, Paris, Vienna, London, or another scholarly centre. A banned interpretation of Czechoslovak society could be written abroad. A laboratory skill blocked at home could be developed in a better-equipped Western institute. A domestic scientific tradition could survive in a foreign environment and later be recognised again as part of Czech science. Exile thus preserved capital by moving it into spaces where political control was weaker or absent. The cost was separation from the Academy; the gain was continuity of scholarship.

This double character was especially visible in the natural sciences. Chemists, physicists, mathematicians, biologists, engineers, and medical researchers often possessed portable forms of expertise. Their methods, publications, and experimental languages could be recognised in foreign institutions more readily than those of scholars whose work depended heavily on Czech archives, local audiences, or Czech-language cultural debates. This helps explain why some natural scientists were able to build successful careers abroad. Their exile was still a domestic loss, but their competence entered world science rather than disappearing. The case of Josef Michl is instructive because he had been trained within Czechoslovak chemical research and completed his doctoral work in the Czechoslovak Academy environment before building a major international career in the United States. His experience shows how Czech scientific training could become part of global research after emigration (*Munk, 2011*). From the Academy's perspective, such careers were painful because they demonstrated what the institution had lost. From the wider perspective of Czech science, however, they showed that domestic schools had produced scientists capable of succeeding in the most competitive international settings. Exile therefore made visible both the strength and the self-damaging character of the Czechoslovak scientific system.

Chemistry is particularly revealing because it was one of the strongest Czech scientific traditions and one of the fields with notable émigré representation. The Academy's chemical institutes had produced high-level expertise in organic chemistry, biochemistry, macromolecular chemistry, physical chemistry, electrochemistry, and related areas. When chemists left, they carried with them laboratory cultures formed in these institutions. Their success abroad testified to the quality of Czechoslovak chemical training, but it also deprived domestic institutes of people who could have strengthened research under more open conditions. The loss was not only numerical. Chemistry depends on tacit knowledge: how to

think synthetically, how to read experimental failure, how to build collaboration between theory and practice, and how to connect laboratory curiosity with application. Such tacit knowledge travels with researchers. It cannot be confiscated at the border. Normalisation could remove names from domestic institutional memory, but it could not prevent those names from appearing in foreign journals, laboratories, and scientific networks. In this sense, chemical exile transformed Academy capital into international capital. The Academy lost direct control over it, but the Czech chemical tradition continued to live through it.

The case of František Janouch reveals another form of preserved capital, one in which scientific competence became connected with civic and intellectual responsibility. Janouch had worked in nuclear physics and held a senior position in the Nuclear Physics Institute of the Czechoslovak Academy of Sciences before being dismissed after the 1968 invasion and later leaving for Sweden. In exile, he did not merely continue as a scientist; he became an organiser of support for Czechoslovak dissent through the Charter 77 Foundation (*Associated Press, 2024*). This biography shows that scientific capital could be converted into moral and organisational capital. A scientist trained in the Academy could use the credibility, contacts, and discipline of scholarly life to support broader intellectual freedom. From the viewpoint of the normalised Academy, this was politically unacceptable and could not be officially acknowledged. From the viewpoint of Czech intellectual history, however, it was a powerful continuation of the scientist's public responsibility. Janouch's exile did not preserve only technical expertise; it preserved the idea that science belongs to a wider culture of truth. In this sense, exile could carry forward values that the domestic institution had been forced to suppress.

Humanities and social-scientific exile preserved a different kind of capital. Historians, sociologists, philosophers, economists, legal scholars, and literary critics abroad often continued debates that could not be carried out openly in Czechoslovakia. Their capital was not always laboratory-based, but it was no less important. It included interpretation, memory, theoretical language, documentary knowledge, and the ability to connect Czech experience with international scholarship. Exile allowed them to write about Stalinism, the Prague Spring, Soviet domination, normalisation, dissent, civil society, banned literature, and the crisis of socialist legitimacy. These themes were central to the understanding of Czechoslovak society, yet they were restricted within the normalised Academy. The exiled humanist or social scientist therefore preserved the public dimension of knowledge. He or she could speak where domestic institutions had to be silent. The loss for the Academy was severe because such scholars could no longer train students or shape official research agendas at home. The preservation for Czech science was also significant because their work kept alive questions that would later re-enter domestic scholarship after 1989.

Sociology again illustrates the ambiguity of exile as both rupture and preservation. The discipline had been revived in the 1960s as part of the wider intellectual renewal of Czechoslovak society, but normalisation fragmented it. Some sociologists entered official loyalist structures, some were persecuted, some worked in marginal or applied institutions, some joined dissent, and some emigrated. Machonin's later reflection on sociology during normalisation emphasised this fragmentation and identified exile as one of the streams through which the discipline continued outside official structures (*Machonin, 2004*). Exile preserved sociological critique by allowing scholars to analyse Czechoslovak society from outside the ideological constraints of the domestic system. Yet it also separated them from the empirical life of the society they studied. Access to data, institutions, and everyday observation

became more difficult. Domestic sociologists, including those in marginal positions, often knew the social reality more directly but could not publish freely. Exile and internal marginalisation therefore formed complementary but incomplete forms of scientific capital. One had freedom with distance; the other had proximity with constraint.

Historical exile preserved memory in a particularly important way. The normalisation regime tried to impose an official interpretation of the Prague Spring, the invasion, and the restoration of party rule. Historians inside the Academy could not freely challenge that interpretation in public scholarly form. Émigré historians, however, could document events, publish critical analyses, and preserve alternative narratives of Czechoslovak history. Their work helped prevent the official version from becoming the only available historical memory. This was a form of preserved cultural and scientific capital because historical knowledge is not only information about the past; it is a society's capacity to understand its time. The Academy lost historians who might have renewed domestic scholarship, but Czech historical consciousness gained external guardians. These historians abroad often wrote for foreign audiences as well as for Czechs and Slovaks. They translated the experience of Czechoslovakia into broader Cold War, Central European, and comparative frameworks. In doing so, they preserved both national memory and international intelligibility.

Philosophical exile and internal philosophical marginalisation carried yet another kind of capital. Philosophy under normalisation was forced back into a narrower doctrinal space, especially in official institutions. Concepts such as freedom, subjectivity, civil responsibility, plurality, and truth could not be developed openly when they challenged Marxist-Leninist orthodoxy or the legitimacy of the post-1968 regime. Philosophers abroad, or philosophers connected with unofficial circles, could preserve these conceptual languages. They could connect Czech thought with phenomenology, existentialism, political philosophy, ethics, and European debates beyond the approved canon. This form of capital is harder to count than publications in chemistry or physics, but it is fundamental. A society deprived of philosophical language loses part of its ability to name its condition. Exile preserved some of that language. It also allowed Czech philosophical traditions to remain visible internationally, even when domestic institutional philosophy was narrowed. The preservation of concepts was therefore one of the deepest forms of intellectual capital carried by exile.

Literary and cultural exile preserved another essential field of knowledge. Normalisation restricted the publication and interpretation of banned authors, émigré writers, modernist traditions, and cultural criticism associated with the 1960s. Scholars and writers abroad could maintain alternative canons, publish forbidden texts, edit journals, and interpret Czech culture without the same censorship. This work mattered for the Academy because literary scholarship and cultural history were part of the broader scholarly ecosystem, even when many of its most vital discussions moved outside official institutions. Exile preserved the continuity of Czech cultural memory when official cultural institutions narrowed the canon. It also connected Czech literature and criticism with European and North American audiences. The capital preserved here was not only scholarly but symbolic. It kept alive the idea that Czech culture was larger than the cultural policy of the normalised state. After 1989, the reintroduction of banned and émigré literature into public life depended partly on this preserved exile work. The Academy's later cultural scholarship benefited from a memory that had survived beyond its official structures.

The loss of scientific capital through exile was intensified by the fact that emigration often struck people at highly productive stages of their careers. Younger scientists were mobile, adaptable, and capable of building long-term careers abroad; mid-career scholars had already accumulated expertise, publications, and leadership potential. Kostlán's prosopographic analysis indicates that many Academy emigrants belonged to age groups that represented both current productivity and future institutional leadership (*Kostlán, 2010*). This meant that the Academy lost not only established authority but also future development. A 35-year-old scientist leaving in 1969 might have become a director, supervisor, or international representative by the 1980s. A 45-year-old scholar might have trained an entire generation. Instead, those future contributions unfolded elsewhere. The loss was therefore temporal. Exile removed possible futures from the domestic institution. It changed not only what the Academy was in the 1970s, but what it could have become by 1989. This is one of the most difficult losses to measure because it concerns unrealised trajectories.

At the same time, exile preserved future possibilities in a different form. The scholars who built careers abroad became potential bridges after 1989. They knew Western research systems, grant practices, peer review, publication standards, laboratory cultures, and university structures. They could advise, collaborate, host Czech researchers, participate in conferences, and help rebuild international networks. Their capital had been lost domestically for two decades, but it had accumulated abroad. After the Velvet Revolution, that capital could partially return through cooperation, visiting lectures, joint projects, and institutional recognition. This return was never complete, and it could not recover the lost years of domestic mentorship. Yet it mattered. The post-socialist Academy's reintegration into European and global science benefited from émigré networks and from the symbolic rehabilitation of scholars who had continued their work outside Czechoslovakia. Exile thus preserved capital in deferred form. What had been politically separated could later become a resource for reconstruction. The tragedy is that such preservation had been made necessary by repression.

Scientific capital in exile was also preserved through publication. Foreign publication allowed émigré scholars to remain visible in world science and to contribute to debates from which domestic scholars were partly cut off. In natural sciences, publication in international journals sustained professional authority and inserted Czech-trained researchers into global citation networks. In the humanities and social sciences, books and essays published abroad preserved interpretations that domestic censorship excluded. Publication created an external archive of Czech and Czechoslovak intellectual life. This archive could be inaccessible or dangerous at home, but it existed. It could later be recovered, translated, cited, and integrated into post-1989 scholarship. The normalised Academy's official publication system could not absorb this capital, but it could not destroy it either. In some cases, domestic scholars privately read or circulated émigré works despite risk. In others, the works waited abroad until conditions changed. Publication abroad was therefore both displacement and preservation.

Teaching in exile was another form of preserved scientific capital. Émigré scholars trained students in foreign universities, supervised research, and introduced Czech or Czechoslovak questions into international academic settings. A Czech historian abroad could teach Central European history; a sociologist could teach state socialism and social change; a chemist could train students in methods learned partly in Prague; a physicist could build a research group drawing on Czechoslovak technical formation. Through teaching, the scientific capital of the Academy entered other academic genealogies. This was a loss for domestic students who could not learn from these scholars, but it also globalised Czech intellectual influence. The

émigré teacher became a transmitter of knowledge in a foreign environment. Sometimes his or her students later became scholars of Czech, Slovak, or Central European topics. In this way, exile contributed indirectly to the internationalisation of Czech studies and Czech scientific traditions. The Academy could not claim this as normal institutional success, but historically it belonged to the wider afterlife of its scientific culture.

The preservation of capital through exile also depended on language. Natural scientists often worked in international languages of science, especially English, German, or French, and this made their transition easier in some respects. Humanists and social scientists faced a more complicated linguistic situation. Much of their deepest knowledge was tied to Czech or Slovak sources, concepts, and audiences. Writing in foreign languages could broaden readership but also alter the texture of argument. Writing in Czech abroad preserved cultural intimacy but limited circulation. Exile therefore forced many scholars to become linguistic mediators. They had to translate not only words but contexts, historical experiences, and intellectual traditions. This translation was itself a form of scientific capital. It allowed Czechoslovak experience to enter global debates and prevented it from remaining trapped inside domestic censorship. Yet it also involved loss because some meanings are harder to carry across languages. The émigré scholar often lived between audiences, never fully at home in either.

The relationship between lost and preserved capital was also shaped by access to material infrastructure. A natural scientist leaving Czechoslovakia could sometimes enter better-equipped laboratories abroad and become more productive than would have been possible at home. This meant that exile could enhance scientific output while simultaneously impoverishing the domestic institution. A historian or sociologist might gain access to foreign libraries, archives, and theoretical debates, but lose direct access to domestic archives and fieldwork. A philosopher might gain freedom of thought but lose the immediate Czech intellectual audience. The balance of loss and preservation therefore varied by discipline. Laboratory-based exile could transform technical capacity; archive-based exile could preserve interpretation but complicate source access; theory-based exile could expand conceptual freedom but create distance from domestic language. Each form of capital travelled differently. Exile was not a single scientific experience but a set of discipline-specific displacements.

The existence of a scientific diaspora also changed the meaning of the Academy's borders. The official institution remained inside Czechoslovakia, but the community of scientists trained by or connected with it became transnational. This diaspora was not formally organised as a single body, yet it existed through personal networks, correspondence, citations, conferences, émigré associations, and shared memory. It carried fragments of Academy culture into other systems. Some émigrés remained emotionally attached to Czech science; others moved away from it. Some maintained contacts with domestic colleagues; others avoided contact to protect people at home or because the emotional cost was too high. The diaspora was therefore uneven and internally diverse. Nevertheless, it meant that the Academy's history from 1969 to 1989 cannot be contained within its official institutional walls. Part of its human capital was living elsewhere, producing elsewhere, and remembering elsewhere. To write the history of the Academy without exile would be to accept the normalisation regime's artificially narrowed definition of the scientific community.

Exile also preserved moral capital. This term should be used carefully, because not every émigré was a public dissident and not every person who stayed was morally compromised. Yet

exile often kept alive the public refusal of normalisation's official lies. Scholars abroad could state that the invasion had been an invasion, that the Prague Spring had been a genuine reform movement, that purges had damaged science, and that censorship had narrowed intellectual life. Such statements were not merely political opinions; they preserved the moral vocabulary necessary for later historical reckoning. Inside the Academy, many people knew these things but could not say them publicly. Exile therefore carried a speech function that domestic institutions had lost. This was especially important for the restoration of truth after 1989. A society emerging from normalisation needed not only data and laboratories but also a language for naming what had happened. Exiled scholars helped preserve that language.

The preservation of moral capital, however, could create tension with domestic survivors. Those who stayed sometimes felt that émigrés underestimated the difficulty of preserving science from within. Those who left sometimes felt that domestic colleagues had adapted too readily or benefited from their exclusion. Both perceptions could contain elements of truth and injustice. Survival inside the Academy required compromise, but compromise varied greatly in moral weight. Exile allowed freer speech, but it also removed the scholar from daily domestic pressures. After 1989, these different experiences could not simply be reconciled by celebration. They required careful historical differentiation. The scientific capital preserved abroad and the competence preserved at home were both necessary, but they had been preserved under different moral conditions. The Academy's reconstruction required acknowledging both without turning either into a simplistic myth.

The loss of capital through exile also contributed to intellectual provincialisation inside Czechoslovakia. When internationally connected scholars left, domestic institutes lost people who could mediate foreign debates, translate new methods, and maintain comparative standards. Travel restrictions and censorship intensified the effect. A discipline can continue to function domestically while slowly losing contact with world developments. This danger was especially serious in humanities and social sciences, where theoretical debates in Western Europe and North America developed rapidly in the 1970s and 1980s. Natural sciences also faced provincialisation where access to equipment, journals, and conferences was limited. Émigré scholars abroad often remained current with these developments, while domestic colleagues had to rely on delayed or filtered access. This created a widening gap between parts of the diaspora and parts of the official Academy. After 1989, bridging that gap required more than political freedom; it required catching up with two decades of uneven intellectual development.

Yet exile could also prevent total provincialisation by creating external reference points. Domestic scholars who privately followed émigré work could maintain awareness of broader debates. Foreign publications by Czech and Czechoslovak scholars reminded them that their disciplines existed in wider intellectual worlds. Contacts with émigrés, even when limited, could bring books, offprints, concepts, and invitations. Such channels were small but important. They helped keep open the idea that scholarly standards were not identical with domestic official expectations. In this sense, exile functioned as an external memory of normal academic life. It preserved a sense of what free research looked like. That sense mattered even when it could not be expressed publicly. It allowed some domestic scholars to measure the normalised Academy against standards beyond itself.

The symbolic return of émigré scholars after 1989 therefore had more than personal meaning. It represented the reintegration of lost scientific capital into national memory. Conferences,

honorary degrees, invited lectures, restored citations, renewed collaborations, and public commemorations all helped repair the broken relationship between the Academy and its diaspora. The "Scholars in Exile" conference later sponsored by the Czech Academy of Sciences, described in a Prague Post report, was one example of this commemorative and scholarly process (*Munk, 2011*). Such events acknowledged that the history of Czech science had continued abroad and that exile was part of the Academy's story. They also allowed émigrés to compare their experiences, reflect on opportunities and losses, and reconnect with the country from which they had been displaced. These acts of recognition did not erase injustice, but they changed the institutional meaning of exile. The émigré was no longer a forbidden name or a political absence. He or she became part of a restored and more honest scientific genealogy.

The reintegration of exile capital was selective and incomplete. Not all émigrés returned, not all wanted to return, and not all could be reintegrated institutionally. Some had died; some were retired; some had become fully embedded in foreign institutions; some maintained emotional distance from the country that had expelled or rejected them. Others returned only through publications, archives, correspondence, or symbolic recognition. This incompleteness should not be viewed as failure alone. Exile had transformed lives irreversibly. A scholar who had spent 20 years building a career abroad could not simply resume a position lost in 1969. The Academy could recover memory and create new cooperation, but it could not restore the lost time of mentoring, institution-building, and everyday scholarly life. Thus, exile remained both recovered and unrecoverable. Its capital could return in fragments, but its full domestic trajectory had been broken permanently.

The post-1989 Academy benefited from exile capital in several ways. Émigré scholars helped reopen international contacts, evaluate domestic research, support young scholars, contribute to conferences, and reconstruct suppressed intellectual traditions. Their foreign experience provided comparison at a moment when Czech science had to transform its evaluation systems, funding structures, publication practices, and international orientation. In natural sciences, émigrés could help connect laboratories to global networks. In humanities and social sciences, they could help restore banned questions, reintroduce theoretical pluralism, and reconnect Czech scholarship with debates from which it had been partly isolated. Yet this benefit should not be used to justify exile retrospectively. It was not a planned internationalisation strategy; it was the unintended consequence of political repression. The fact that exiled scholars later helped renewal does not reduce the damage caused by their forced departure. It only shows the resilience of scientific capital when carried by people across hostile borders.

Exile as preserved capital also challenges narrow national narratives of science. Scientific knowledge is not fully contained by state institutions, even when those institutions are powerful. It travels through people, books, instruments, memories, citations, and students. The Czechoslovak Academy under normalisation tried to define legitimate science through official affiliation and political reliability. Exile showed that scientific legitimacy could survive outside official recognition. A Czech scientist in the United States, Sweden, Canada, West Germany, or Britain could remain part of Czech scientific history even when absent from domestic institutions. This is not because nationality determines science, but because intellectual formation, memory, and disciplinary lineage matter. Exile made Czech science both more wounded and more international. It forced the scientific community to exist in

dispersed form. That dispersion was painful, but it also preserved capacities that might otherwise have been crushed.

The experience of exile also reveals the limits of the state's control over knowledge. The party-state could control passports, employment, publication permissions, and institutional appointments, but it could not fully control what scholars carried in their minds or what they produced after leaving. Scientific capital is portable precisely because it is embodied. A dismissed physicist could carry mathematical training; a chemist could carry experimental imagination; a historian could carry memory and sources; a philosopher could carry concepts; a sociologist could carry methods. The state could punish the person, but the knowledge could reappear elsewhere. This does not mean that exile was harmless. Knowledge depends on institutions, and displacement can damage it severely. But exile also demonstrates that knowledge has a resilience that political systems often underestimate. The Academy lost control over some of its capital because that capital lived in people rather than in buildings alone.

At the same time, one must not overstate the preservation achieved by exile. Some careers were damaged beyond repair. Some scholars never regained comparable positions abroad. Some changed fields, accepted lower status, or left research entirely. Some lost access to the sources, languages, or instruments necessary for their work. Some experienced exile as intellectual isolation rather than liberation. The image of successful émigré science represents only part of the story. For every visible international career, there may have been quieter biographies of loss, underemployment, and unrealised potential. Scientific capital can be preserved abroad, but it can also be wasted abroad if institutions fail to receive it. Exile therefore multiplied uncertainty. It offered freedom from normalisation, but not a guarantee of scientific continuation. The historian must include both successful and broken trajectories.

This is why exile should be understood as dispersed capital rather than simply preserved capital. Dispersed capital is not concentrated in one institution, and its value depends on whether networks can connect it. During normalisation, the network between the Academy and émigrés was politically restricted, so much of the capital remained unusable at home. After 1989, parts of the network could be rebuilt, allowing some value to return. But dispersed capital is always vulnerable to distance, ageing, institutional mismatch, and memory loss. The Academy's exile history therefore teaches that scientific communities require open circulation to benefit from their dispersed members. When borders are political wounds rather than normal channels of mobility, scientific capital becomes fragmented. The normalisation regime did not merely lose people; it broke the circuits through which their knowledge could have continued to enrich domestic science.

The moral meaning of exile is therefore inseparable from its institutional meaning. It represented the refusal, forced or chosen, to accept the conditions of normalised scientific life. For some, exile was an act of self-preservation; for others, it was the only way to continue serious research; for others still, it was a consequence of being abroad at the wrong historical moment and deciding not to return. Whatever the individual path, exile revealed that the Academy's official stability had been purchased at the price of exclusion. The institution continued, but part of its conscience and competence had been displaced. This is why the recovery of exile after 1989 was not only a matter of adding names to lists. It required recognising that the Academy's late-socialist history was incomplete without those who had

been forced outside it. The exiled scholar was not an external footnote. He or she was part of the institution's broken self.

Thus, exile after 1968 functioned simultaneously as a form of lost and preserved scientific capital. It was lost because the Czechoslovak Academy of Sciences was deprived of researchers, mentors, future leaders, international mediators, laboratory skills, interpretative traditions, and public intellectual authority. It was preserved because many émigré scholars continued to conduct research, publish, teach, support dissent, maintain memory, and connect Czech and Czechoslovak scholarship with wider international science. In the natural sciences, exile often transferred portable laboratory and theoretical competence into foreign research systems, where it could flourish but no longer directly strengthen domestic institutes. In the humanities and social sciences, exile preserved forbidden histories, critical theories, sociological interpretations, philosophical languages, and cultural memories that the normalised Academy could not openly sustain. The result was a dispersed scientific community in which official institutions, internal marginalisation, dissident circles, and foreign careers all carried parts of Czech and Czechoslovak knowledge. After 1989, some of this capital could be symbolically and practically reintegrated, but the lost decades of domestic teaching, leadership, and institutional development could not be fully restored. Exile therefore remains one of the clearest measures of normalisation's damage and one of the clearest proofs of scientific resilience under political rupture.

The Late Socialist Academy before 1989

1. Institutional Stability and Intellectual Stagnation

The late-socialist Academy before 1989 was marked by a peculiar combination of institutional stability and intellectual stagnation. After the violent political reordering of the early normalisation years, the Czechoslovak Academy of Sciences did not remain in a state of continuous institutional emergency. Its institutes continued to operate, its laboratories continued to produce results, its administrative organs continued to plan and report, and its leading bodies continued to present the Academy as one of the principal scientific pillars of the socialist state. The Academy survived as a large, visible, and comparatively well-established research organisation, not as a ruined remnant of the reform period. Yet this stability was deeply ambiguous. It was stability after purge, stability after the disciplining of leadership, stability after the narrowing of intellectual life, and stability within a system that had already defined the permissible limits of scientific and public thought. The institution functioned, but it functioned within boundaries that had been politically imposed after 1968. Its everyday continuity therefore concealed a structural contradiction: the Academy remained indispensable to the state's claim to modernity, while the state denied it the full autonomy required for modern science. The Academy's official historical overview itself notes that normalisation was particularly hard on the Czechoslovak Academy of Sciences, especially because the party leadership took revenge for the role of social-science groups in the reform efforts of the Prague Spring (*Czech Academy of Sciences, n.d.*).

This stability was first of all administrative. By the later 1970s and 1980s, the exceptional violence of the initial purge had been transformed into routine governance. The Academy had a hierarchy of presidium, departments, collegia, institutes, directors, party organisations, planning offices, personnel departments, editorial boards, and international-relations channels. Such a structure produced predictability. Researchers knew the path through which a project had to be approved, a travel request submitted, a manuscript reviewed, a promotion evaluated, or a cooperation agreement negotiated. Yet predictability did not mean freedom. It meant that control had become regularised. The early normalisation question — who would be dismissed, demoted, or silenced? — gradually became a more ordinary but no less important question: what can be done safely within the system? Stability therefore operated as a form of discipline. Once the boundaries were known, many researchers adjusted to them without needing direct intervention. The Academy's institutional machinery made normalisation less spectacular but more durable. A stable structure can preserve science, but it can also stabilise constraint.

The presidency of Jaroslav Kožešník and his successors symbolised this stabilised normalisation order. Kožešník became the leading figure of the Academy after the fall of František Šorm and occupied the presidency through the 1970s until the end of 1980, followed by Bohumil Kvasil and then Josef Říman before the political breakthrough of 1989 (*Czech Academy of Sciences, n.d.*). The Academy's list of representatives records Kožešník's tenure from October 1969 as acting chairman and from May 1970 as president, then Kvasil from January 1981 to October 1985, and Říman from December 1985 until December 1989 (*Czech Academy of Sciences, n.d.*). This succession is important because it shows that late-socialist Academy leadership was not improvised year by year. It developed a stable administrative class capable of managing research under party-state expectations. Kožešník's background in mechanics, automation, and cybernetics also reflected the regime's desire to present scientific leadership in technocratic language, even while political loyalty remained decisive. The president of the Academy was not only a scholar-administrator but also a political figure within the system of socialist governance. Under normalisation, the symbolic centre of the Academy shifted away from reformist scientific authority and towards managerial reliability. The late-socialist Academy therefore acquired institutional continuity, but it did so under a leadership pattern that confirmed rather than challenged the restored political order.

The stability of the Academy also depended on the long-term survival of institutes. Many institutes created or reorganised in the 1950s, 1960s, and early 1970s continued to function through the normalisation period. Their persistence gave researchers a sense that science had not collapsed, even when public autonomy had been broken. Laboratories in chemistry, physics, mathematics, biology, materials science, electronics, instrumentation, and related fields maintained programmes, trained younger staff, and produced visible outputs. Humanistic and social-scientific institutes also continued, though under more intensive ideological restriction and with more severe damage to critical traditions. The Academy's institutional map therefore remained dense. This density mattered because it preserved professional communities and material infrastructures that could not easily be recreated later. However, institutional continuity could also become a façade. An institute might retain its name while losing its intellectual edge, or preserve its building while changing the permissible meaning of its research. Normalisation often preferred this kind of continuity: institutions were preserved, but their public function was narrowed. The Academy remained a system of institutes, but the intellectual climate of many of those institutes had changed profoundly.

The intellectual stagnation of the late-socialist Academy did not mean that nothing serious was produced. That would be a serious misreading of the period. As the preceding discussion of strong disciplines, laboratories, and hidden continuities has shown, important research continued, especially in natural, mathematical, chemical, biomedical, technical, and some archival or philological fields. The stagnation lay elsewhere: in the narrowing of intellectual risk, the weakening of public critique, the bureaucratisation of research priorities, the restriction of theoretical pluralism, and the inability of the institution to reflect openly on its condition. A scientist could still solve a technical problem, publish a specialised article, or maintain a laboratory programme. Yet the Academy as a public intellectual institution could not freely examine the social, political, historical, legal, economic, or moral structures within which it operated. This produced a distinction between disciplinary productivity and institutional vitality. Some disciplines remained productive, but the Academy's broader intellectual life became cautious, repetitive, and self-limiting. Its strongest achievements did not remove the atmosphere of stagnation; rather, they made the stagnation more paradoxical. A politically constrained institution could produce knowledge, but not fully renew itself.

The social sciences and humanities were the clearest sites of this stagnation. Their regulatory framework under normalisation narrowed research questions, publishing possibilities, theoretical vocabulary, and permissible interpretations of history and society. Libora Oates-Indruchová has shown that the social sciences and humanities in Czechoslovakia between 1968 and 1989 were subject to a complex regulatory system that affected academic research, publication, and scholarly communication (*Oates-Indruchová, 2008*). This regulation did not always appear as crude censorship. It often worked through institutional review, editorial filtering, self-censorship, cadre assessment, and the anticipation of political reaction. Such mechanisms are particularly effective because they reshape intellectual habits before direct prohibition is needed. A historian avoids the recent past; a sociologist avoids politically sensitive public opinion; a philosopher avoids conceptual freedom; an economist avoids systemic critique; a legal scholar avoids the contradiction between legality and power. Over time, the avoidance itself becomes part of the discipline's structure. Stagnation therefore appears not as absolute silence but as a repeated turning away from the most important questions.

In historical scholarship, the problem was especially acute because the late-socialist state depended on a controlled interpretation of recent history. The Prague Spring, the Warsaw Pact invasion, the Communist takeover of 1948, Stalinism, the political trials, the reform movement, and the legitimacy of Soviet influence could not be treated as open scholarly problems. Historical institutes could conduct serious research in safer periods, and some source-based work retained real value. Yet the history most necessary for society's self-understanding was often the least free. This created a distorted historical culture. The Academy could preserve archives and produce editions, but it could not openly organise national memory around truthful discussion of the recent past. The result was a public historical stagnation that affected not only historians but society as a whole. When the recent past is politically frozen, the present also becomes harder to understand. In this sense, the stagnation of historical research was not merely disciplinary; it was civic. A society that cannot freely narrate its past loses part of its capacity for reform.

Sociology experienced a related but distinct form of stagnation. The discipline had been one of the intellectual engines of the 1960s, because it could analyse social structure, stratification, public opinion, bureaucracy, work, and modernisation. After normalisation, sociology was not

completely abolished, but its critical capacity was sharply reduced. Emanuel Pecka described the normalisation period as one of the most tragic chapters in Czech sociology, marked by personnel, thematic, and institutional purges (*Pecka, 2011*). Pavel Machonin later distinguished between official, persecuted, dissident, and exiled forms of sociology, a typology that captures the fragmentation of the discipline under normalisation (*Machonin, 2004*). Official sociology could continue when framed as administrative expertise, demographic analysis, labour research, or policy support. It became dangerous when it tried to interpret society independently of party language. This division produced stagnation because the discipline's public function was severed from its methodological potential. Sociology could count, describe, and sometimes advise, but it could not freely diagnose the political foundations of the society it studied.

Economics also revealed the stagnation of late socialism in a particularly direct way. The economy itself was increasingly rigid, technologically lagging, and poorly adapted to the changing global environment, yet economists could not openly discuss the full political causes of this condition. Reform economics had been compromised by its association with the Prague Spring, and the normalisation order treated systemic critique as politically suspect. Nevertheless, the state needed economic expertise for planning, forecasting, enterprise management, and internal diagnosis. This created a split between knowledge and publicity. Economists could produce analyses, models, internal reports, and technical proposals, but the most destabilising conclusions could not be presented openly. František Turnovec's account of economics in the Czech lands under Communism notes the ideological sensitivity of the social sciences, the blacklisting of reform economists, and the fact that some factual studies illuminating negative economic trends could be classified as secret or internal (*Turnovec, 2011*). This is a classic symptom of institutional stagnation. The system generates knowledge about its problems but prevents that knowledge from becoming public reform. Expertise survives, but reform remains blocked.

Philosophy suffered stagnation through the narrowing of conceptual imagination. The reform period had allowed Marxism to be rethought through humanism, phenomenology, structuralism, philosophy of science, and European debate. Normalisation restored a more doctrinal language in which Marxism-Leninism functioned primarily as a legitimising framework. This did not mean that all philosophical work was empty. Serious scholarship survived in the history of philosophy, logic, aesthetics, methodology, and carefully bounded theoretical fields. Yet philosophy's public role as critical reflection on society, freedom, subjectivity, responsibility, and truth was deeply restricted. The result was not only censorship of particular concepts but a dulling of philosophical courage. If theory cannot ask whether the political language of the state is true, it becomes commentary rather than inquiry. Philosophical stagnation therefore lay in the forced separation between thinking and public consequence. The Academy could host philosophical institutions, but not a fully autonomous philosophical public. This distinction was one of the defining features of late-socialist intellectual life.

The natural sciences experienced stagnation differently. They often retained stronger professional standards, laboratory continuity, and international visibility, but they were not immune to structural inertia. Shortages of modern equipment, bureaucratic procurement, restricted access to Western technologies, political filtering of travel, and the rigidity of planning all limited development. Strong research groups could compensate through ingenuity, local instrument-making, socialist-bloc cooperation, and selective Western

contacts, but such strategies could not fully replace open international circulation. The Academy's natural sciences were therefore comparatively productive but still constrained. Their stagnation was less often conceptual and more often infrastructural, administrative, and translational. A laboratory might produce good science, yet struggle to obtain equipment quickly; develop a prototype, yet fail to see it implemented in industry; maintain contact with world science, yet through politically mediated channels. The problem was not that natural scientists stopped thinking. The problem was that the institutional environment slowed the movement from competence to renewal. Even strong disciplines had to operate in an order that preferred control over flexibility.

The contradiction between institutional stability and innovation became especially visible in the relationship between the Academy and the planned economy. Official ideology celebrated science as a productive force and expected research to serve socialist development. In practice, the translation of Academy research into economic modernisation was often limited by bureaucratic separation, weak incentives, production rigidities, and political caution. Laboratories could develop methods, materials, instruments, and expert reports, but the planned economy did not always absorb them effectively. This created frustration among researchers whose work had practical potential. The Academy's stable institutional structure could maintain research programmes, but it could not by itself overcome the systemic inertia of late socialism. The state wanted scientific solutions but resisted the organisational reforms that many solutions implied. Thus, the Academy became both a resource for modernisation and a witness to the impossibility of full modernisation under the existing political-economic order. Its stability did not translate into dynamic transformation. It often became a controlled repository of expertise rather than a driver of structural change.

This stagnation was reinforced by the language of reporting. Institutes had to describe their work through plans, fulfilment indicators, ideological relevance, cooperation with industry, socialist commitments, and officially approved scientific priorities. Such reporting produced an appearance of order, but it often weakened honest institutional self-knowledge. Reports could mention problems, but usually in a language that did not challenge the system's foundations. Successes were emphasised; failures were framed administratively; sensitive diagnoses were internalised or softened. The more routinised this language became, the harder it was for the institution to speak truthfully about itself. This is one of the ways in which stability becomes stagnation. A bureaucracy can continue functioning while losing the capacity for self-correction. The Academy's reports, plans, congress statements, and ceremonial texts therefore have to be read critically. They reveal not only what the institution did, but also how it learned to represent itself within the limits of normalised discourse. The gap between real scientific work and official institutional language widened over time.

The Academy's party supervision also became routine, and routine is historically important. In the early 1970s, political intervention was visible in purges, dismissals, and reorganisations. By the late 1970s and 1980s, much of the same control operated through established expectations. Party organisations, cadre files, director appointments, travel approvals, publication decisions, and ideological training were not extraordinary events; they were part of institutional life. This created a form of stability that no longer needed constant theatrical repression. People knew what was expected and often adjusted before being told. This internalisation of boundaries is one of the most effective features of normalisation. It makes censorship less visible because authors censor themselves; it makes political control less visible because directors anticipate it; it makes intellectual stagnation less visible because

disciplines learn to avoid forbidden questions. The Academy's institutional stability therefore rested partly on self-regulation under constraint. It was a managed peace after a defeated reform.

The leadership archives of the Academy from the late normalisation period indicate both continuity and emerging signs of change. The Masaryk Institute and Archives of the Czech Academy of Sciences describe the secretariat fonds of Academy presidents, including Jaroslav Kožešník, Bohumil Kvasil, and Josef Říman, as key sources for the functioning of the Czechoslovak Academy in these years; the Josef Říman secretariat is described as containing documentation from the end of normalisation with indications of changes and relaxation in some scientific fields, as well as correspondence, reports, information on all areas of Academy activity, contacts with the Central Committee and central offices, foreign cooperation, and workplace problems (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This archival description is valuable because it shows that late-socialist stability was not entirely frozen. By the second half of the 1980s, some changes and tensions were visible, though still framed within the existing system. The Academy was recording workplace problems, foreign cooperation, and internal-external relations in a way that suggests a complex institution rather than a monolith. Yet the very fact that these materials were organised through presidential secretariats confirms the highly centralised administrative character of the institution. Stability was documented, managed, and archived from above. Emerging relaxation existed, but it did not yet amount to structural freedom.

The 1980s also brought a wider crisis of socialist legitimacy that affected the Academy indirectly. Economic stagnation, technological lag, environmental degradation, generational dissatisfaction, and the contrast with Western scientific and technological development became increasingly difficult to ignore. The rise of *perestroika* in the Soviet Union after 1985 complicated the ideological environment because reform language returned from the centre of the socialist bloc itself. Czechoslovak normalisation leadership, however, remained comparatively cautious and resistant to deep reform. This created an awkward situation for the Academy. Scientists and experts could see the need for innovation, but the political system remained slow to allow open debate. Research institutes possessed knowledge that might have contributed to reform, yet the institutional channels for such contribution were still constrained. The Academy's stability therefore began to look less like strength and more like immobility. It could continue operating, but it could not easily reinvent its public role. By the late 1980s, institutional stability increasingly revealed the depth of unresolved reform needs.

Environmental problems exposed this immobility especially clearly. Industrial pollution, landscape degradation, air and water quality, and public health concerns required expert measurement and interdisciplinary analysis. Scientists could collect data and produce reports, but the public political consequences of environmental knowledge were sensitive. Burget, Loučová, and Olšáková have shown that the grey zone became an important channel for communication among experts, dissent, and environmental agendas in late-socialist Czechoslovakia (*Burget, Loučová, & Olšáková, 2021*). Environmental expertise therefore moved between official science, semi-official concern, and civic critique. This is important for understanding stagnation because environmental problems cannot be solved by technical knowledge alone if political discussion is restricted. The Academy could contribute data and expertise, but the system limited the public use of that knowledge. The result was another split between knowing and acting. Scientific competence existed, but institutional arrangements inhibited effective response. Such splits became characteristic of late socialism more broadly.

The Academy's stable institutes also produced a stable social world for researchers. Employment in an Academy institute could offer professional identity, access to libraries, laboratories, colleagues, and a degree of status. For many researchers, especially those in less politically exposed fields, the Academy remained a meaningful workplace where serious work could be done. This should not be dismissed. Scientific life is sustained by routines, and not all routines are oppressive. Daily laboratory work, archival research, seminars, technical discussions, and manuscript preparation could preserve professional dignity. Yet the same stable workplace could also cultivate caution, passivity, and avoidance. A researcher might choose not to raise certain questions because a secure position was too valuable to risk. An institute might protect its work by avoiding public controversy. A community might prefer predictable stagnation to dangerous reform. Stability therefore had a psychological dimension. It offered safety after trauma, but it also encouraged the acceptance of narrowed horizons.

The generational aspect of stagnation was especially important. Scholars who entered the Academy after the early 1970s often began their careers in an already normalised environment. They did not experience the 1960s as mature professionals, and they learned the rules of caution as part of ordinary academic life. For them, the absence of certain names, topics, and arguments could appear almost natural unless older colleagues transmitted alternative memories. This produced a slow transformation of intellectual expectations. The first generation of normalisation remembered defeat; the next generation learned adaptation. Some younger researchers were talented and professionally serious, but their careers were formed within a restricted institutional culture. They could master technical fields, specialised methods, and safe research agendas, yet may have lacked exposure to open debate in sensitive disciplines. Intellectual stagnation therefore reproduced itself generationally. It was not only a consequence of fear among older scholars but a condition of formation for younger ones.

The stagnation of the Academy was also connected with the weakened public authority of science. In the reform period, scientists and scholars had contributed to debates about social reform, economic modernisation, legal change, and public responsibility. Under normalisation, the official public voice of the Academy became more ceremonial, planned, and politically cautious. It could speak about achievements, anniversaries, socialist development, scientific progress, and international cooperation, but not freely about the moral and political contradictions of the system. Individual scientists might retain public respect, especially in technical and natural-scientific fields, but the Academy as an institution could not function as an open critical authority. This weakened the relationship between science and society. Citizens could not rely on official scientific institutions to say publicly what many experts knew privately. The result was a loss of trust in public language. The Academy remained prestigious, but its prestige was divided between genuine scientific achievement and official conformity. Such divided prestige is another sign of stagnation.

Publishing practices reveal the same pattern. Academic publishing continued, but under editorial, institutional, and ideological constraints. Oates-Indruchová's later monograph on censorship in Czech and Hungarian academic publishing between 1969 and 1989 demonstrates how scholarly communication in the period operated through a complex system of filters, negotiations, and self-censorship (*Oates-Indruchová, 2020*). A publication could be scientifically useful and politically safe at the same time, but many topics required careful handling. Introductions could be written in ritual ideological language; conclusions could be softened; citations could exclude émigré or banned authors; theoretical frameworks could be

selected according to safety. Such practices allowed scholarship to continue, but they also slowed renewal. A discipline renews itself through open disagreement, citation of opponents, theoretical risk, and public criticism. Normalised publishing reduced these functions. It allowed controlled circulation of knowledge while limiting the more disruptive energies of scholarship. This is why publication volume alone cannot be taken as evidence of intellectual vitality.

The Academy's foreign cooperation also combined stability with constraint. Official exchanges, conferences, socialist-bloc cooperation, and selected Western contacts continued. In natural and technical sciences, such cooperation could be significant, especially where international standards and instruments were indispensable. Yet access to foreign cooperation remained politically mediated. Travel was not simply a matter of merit; it also depended on trust, institutional position, and the sensitivity of the field. Scientists learned to treat mobility as a privilege rather than a normal part of research life. This affected the intellectual culture of the Academy. Some people gained international visibility; others remained isolated. Some institutes maintained contacts; others became provincial. The institution as a whole therefore had an uneven international horizon. It was neither fully closed nor fully open. Such selective openness helped preserve strong disciplines but also reinforced hierarchy and caution. It was another example of controlled stability rather than dynamic exchange.

The Academy's stable relationship with the Communist Party also limited institutional self-reform. Because leadership appointments, research priorities, and public statements were embedded in the party-state structure, reform from within could not easily challenge the political foundations of normalisation. Institute directors might improve working conditions, protect staff, or encourage professional standards, but they could not openly redefine the Academy's autonomy. The presidium could manage the institution, but not transform its relationship to power. Even when certain fields began to loosen in the late 1980s, the general framework remained intact until the political breakthrough. This meant that stagnation was not merely psychological but constitutional. The institution lacked legitimate mechanisms for open self-correction. It could adjust, but not fundamentally revise itself. The Academy's stability therefore depended on the postponement of reform. By 1989, that postponement had become one of its central problems.

It is useful here to distinguish stagnation from decline. Stagnation does not necessarily mean continuous deterioration in every measurable output. Some institutes improved facilities, some fields produced important results, and some younger researchers developed strong professional skills. Stagnation means rather that the institution's capacity for open renewal was blocked. It could continue, but it could not freely transform. It could produce, but it could not fully question the conditions of production. It could plan, but it could not openly criticise the planning system. It could internationalise selectively, but not as an autonomous scientific community. It could preserve competence, but at the cost of self-censorship and moral ambiguity. This distinction is important because it allows a more accurate account of the late-socialist Academy. The institution was not dead, but it was not healthy.

The comparison with the earlier reform period makes the stagnation clearer. In the 1960s, the Academy had been part of a broader intellectual movement toward methodological renewal, international openness, social expertise, and critical reflection. It was not free in a liberal-democratic sense, but it was dynamic. After normalisation, dynamism was replaced by

controlled productivity. The institution still produced research, but the sense of open possibility diminished. The reform period had linked science with public transformation; late socialism linked science with administrative stability. The reform period had allowed some disciplines to reimagine society; late socialism required them to describe society within boundaries. The reform period had made international contact part of intellectual renewal; late socialism filtered it through trust and usefulness. The contrast is therefore not between science and non-science, but between two different regimes of scientific life. Normalisation did not abolish the Academy; it domesticated it.

The institutional stability of the late-socialist Academy also had a conservative effect on internal hierarchies. Once leadership structures had been normalised, they tended to reproduce themselves. Directors, senior administrators, party officials, and trusted scholars shaped hiring, promotion, travel, publication, and access to resources. Younger researchers learned that advancement depended not only on talent but on navigating this hierarchy. In some fields, merit and loyalty could coincide; in others, loyalty outweighed merit. This produced frustration and cynicism. It also contributed to the slow ageing of institutional culture. A stable hierarchy can preserve experience, but it can also block new ideas. By the 1980s, unresolved generational tensions were becoming more visible. The Academy needed renewal, but the structures through which renewal would normally occur were politically and administratively constrained. Institutional stability therefore became an obstacle to institutional vitality.

The humanities and social sciences bore the deepest marks of this blocked renewal, but the natural sciences also faced generational and structural issues. Younger natural scientists needed access to modern equipment, international laboratories, foreign literature, and flexible research funding. When these were limited, talent could be underused. Some young researchers adapted by concentrating on narrow projects, waiting for rare travel opportunities, or depending on senior patrons. Others became frustrated by the gap between their ambitions and the institutional possibilities available to them. The Academy could train competent researchers, but not always give them the conditions needed for world-class development. This was especially evident in fast-moving fields such as computing, molecular biology, electronics, materials science, and advanced instrumentation. Stable institutes could become too slow for rapidly changing science. The late-socialist Academy therefore risked preserving yesterday's strengths while struggling to enter tomorrow's fields. Stagnation was thus also a problem of tempo.

The issue of tempo is crucial. Modern science changes quickly, especially in fields driven by instruments, computing, molecular methods, and international collaboration. A system that requires political approval for travel, slow procurement for equipment, bureaucratic planning for research directions, and ideological caution in publication inevitably slows response. Some fields can tolerate delay; others cannot. By the 1980s, the global scientific environment was accelerating, while the Czechoslovak institutional environment remained comparatively rigid. This created a widening gap between domestic capacity and international opportunity. Strong traditions helped compensate, but they could not solve the structural problem. A laboratory may be excellent, yet if it receives modern instruments too late, attends conferences selectively, and publishes under constrained conditions, its development is slowed. The Academy's stability thus became increasingly misaligned with the pace of world science. This misalignment is one of the technical meanings of intellectual stagnation.

Yet the late-socialist Academy also contained seeds of renewal. Hidden continuities, professional ethics, surviving laboratories, international contacts, and younger researchers dissatisfied with stagnation all formed resources that would matter after 1989. Some people inside the institution understood that reform would eventually be necessary, even if they could not yet speak openly about its full implications. Some disciplines preserved standards precisely by comparing themselves with international science. Some experts produced internal diagnoses of economic, environmental, or technological problems that later gained public significance. The institution's stability therefore had an unintended positive side: it preserved the infrastructure from which renewal could begin. If normalisation had completely destroyed the Academy, post-1989 reconstruction would have been far more difficult. Instead, the Academy entered the political breakthrough damaged but not empty. Its stagnation was real, but so was its accumulated capacity. This dual condition shaped the transition that followed.

The final years before 1989 were therefore marked by tension between functioning and obsolescence. The Academy still worked; institutes still held meetings; laboratories still conducted experiments; books and articles still appeared; foreign cooperation still existed; young researchers still entered careers. At the same time, the political language of the institution sounded increasingly exhausted. The gap between official optimism and social reality widened. The Academy's routines continued, but the world around them was changing. Soviet reforms, technological acceleration, environmental concern, economic weakness, and civic dissent all exposed the inadequacy of normalised stability. The Academy's late-socialist order was not collapsing visibly every day, but its ability to justify itself intellectually was weakening. In this sense, stagnation was not passivity alone. It was the accumulation of unresolved contradictions beneath a surface of administrative order.

Thus, the institutional stability of the Czechoslovak Academy of Sciences in the late-socialist period was inseparable from intellectual stagnation. The Academy remained a large, functioning, and scientifically significant organisation, with institutes, laboratories, research programmes, publications, administrative routines, and selected international contacts. Its stability preserved important scientific capacities, especially in natural, mathematical, technical, biomedical, and some archival or philological fields. Yet this stability had been achieved after the defeat of reformist intellectual life and under the continuing supervision of the party-state. It therefore stabilised constraint as much as it stabilised science. The humanities and social sciences were especially narrowed by censorship, self-censorship, ideological regulation, and the suppression of critical memory, while the natural sciences faced slower but real limits through bureaucracy, equipment shortages, controlled mobility, and weak translation of research into systemic innovation. By the 1980s, the Academy possessed competence without sufficient autonomy, expertise without full public authority, and institutional continuity without adequate mechanisms of renewal. Its late-socialist condition was therefore neither collapse nor health, but a disciplined continuity that preserved the material and professional basis of science while delaying the intellectual and institutional reforms that would become unavoidable after 1989.

2. Generational Change and Unresolved Reform Needs

Generational change in the late-socialist Czechoslovak Academy of Sciences was not a calm biological process in which one cohort naturally replaced another. It was a politically distorted

succession shaped by the memory of the Prague Spring, the purges of the early normalisation period, the emigration of many trained researchers, and the long administrative stability of the 1970s and 1980s. By the final decade before 1989, the Academy contained several generations whose experiences of science differed sharply. There were older scholars formed before or immediately after the establishment of the Czechoslovak Academy of Sciences in the early 1950s, many of whom had experienced Stalinism, post-war reconstruction, and the first consolidation of the Academy system. There was the reform generation of the 1960s, marked by methodological opening, international contacts, and hopes for a more autonomous relationship between expertise and public life. There was the normalisation generation, whose careers were shaped by caution, ideological filtering, and the need to survive inside the restored party-state order. There was also a younger cohort entering research in the 1980s, often technically competent and professionally ambitious, but formed in an institution that had already learned to avoid certain questions. These generations did not simply follow one another; they overlapped, mistrusted, protected, taught, and sometimes blocked one another. The Academy therefore entered the last years of state socialism not only with unresolved institutional problems, but with an unresolved generational structure. Its need for reform was partly organisational, but it was also biographical and moral (*Míšková, Barvíková, & Šmidák, 1998*; *Nisonen-Trnka, 2012*; *Oates-Indruchová, 2008*).

The older generation had lived through more than one regime of scientific power. Some of its members had experienced interwar academic culture, Nazi occupation, post-war reconstruction, the Communist takeover, Stalinist centralisation, and the creation of the Academy as a Soviet-style research institution. Others had entered science in the 1950s and built careers under the first official language of socialist science. By the 1970s and 1980s, many of these senior figures occupied positions of memory, authority, or marginalisation. Some became loyal administrators of the normalisation order, while others were politically displaced, demoted, or internally exiled. Their experience made them cautious, but it also gave them a long historical perspective. They knew that academic institutions could be reorganised, purged, renamed, and ideologically redefined, yet they also knew that scientific competence could survive beneath political structures. For younger scholars, these older figures could be mentors, warnings, or obstacles. A senior researcher who had preserved standards through several political cycles might quietly teach intellectual seriousness, while another who had adapted too successfully to power might embody the stagnation of the institution. The older generation therefore did not transmit a single legacy. It transmitted both resilience and fear.

The generation of the 1960s was especially important because it carried the memory of a different Academy. This was the generation that had participated in the partial reopening of sociology, philosophy, economics, law, historical scholarship, cultural studies, and several internationally active natural-scientific fields. It had known the Academy as a place where research could be connected with reform, public expertise, and broader European intellectual exchange. After 1968, many members of this generation were purged, demoted, forced into exile, or pushed into silence. Others remained inside the institution but learned to speak cautiously. By the 1980s, this cohort still carried a memory of intellectual possibility that the official normalisation narrative tried to suppress. Its position was therefore contradictory. It was wounded by defeat, but it also preserved an alternative standard against which late-socialist stagnation could be measured. Younger researchers who encountered members of this generation could learn that the Academy had not always been as cautious and bureaucratic as it appeared in the 1970s. Yet the transmission of this memory was often

indirect, private, and fragmentary. The reform generation remained one of the Academy's hidden reservoirs of renewal, but its public authority had been broken.

The normalisation generation developed under very different conditions. These were scholars whose careers began or matured after the defeat of the Prague Spring and who learned early that professional advancement required political caution. For them, cadre assessments, travel permissions, ideological language, and controlled publication were not temporary anomalies but ordinary features of academic life. Many were serious researchers and should not be reduced to caricatures of conformity. They learned methods, built laboratories, wrote dissertations, edited publications, and trained students under the conditions available to them. Yet their professional formation occurred inside a narrowed institutional culture. They knew which names were difficult to cite, which topics were unsafe, which foreign contacts required care, and which public gestures were expected. This generation was therefore skilled in survival. It could maintain research, negotiate with administrators, and use the language of usefulness or ideological correctness to protect projects. But this skill also had a cost: it normalised the separation between private judgement and public speech. The unresolved reform need of the late 1980s was partly the need to free this generation from the habits through which it had survived.

The youngest researchers of the 1980s faced a different problem again. Many were too young to have experienced the Prague Spring as adults, but old enough to feel the stagnation of late socialism. They often entered institutes with strong expectations of professional work, especially in technical, natural-scientific, mathematical, medical, and applied fields. They wanted access to modern equipment, foreign literature, conferences, computing facilities, and more flexible research programmes. In the humanities and social sciences, younger scholars encountered a more difficult inheritance: missing debates, censored authors, distorted histories, and supervisors who had learned to speak in indirect language. Some young researchers accepted the institutional rules as the only possible academic world. Others sensed that the rules were exhausted, especially as the Soviet Union itself began speaking of restructuring and openness after 1985. This cohort became important because it would soon have to participate in the post-1989 transformation, but it had been trained in a system that had not prepared it for open competition, international evaluation, or public debate. The Academy therefore had younger talent, but much of that talent had been formed under conditions of delayed reform. The question was not whether a new generation existed, but whether the institution could give it a new scientific horizon.

Leadership succession revealed the same generational and reform problem at the top of the institution. After František Šorm's departure from the presidency in 1969, Jaroslav Kožešník became the central figure of the normalised Academy, followed by Bohumil Kvasil and then Josef Říman in the final years before 1989. The official list of representatives records Kožešník's leadership from October 1969 as acting chairman and then as president from 1970 to 1980, Kvasil from 1981 to 1985, and Říman from December 1985 to December 1989 (*Czech Academy of Sciences, n.d.*). This leadership chronology matters because it shows that the Academy's generational change was not led by a reformist renewal of authority. It was managed through cadres acceptable to the normalisation order. Even when leadership passed from one person to another, the institutional grammar remained largely the same: planning, political reliability, party supervision, controlled foreign relations, and public conformity. By the second half of the 1980s, the Soviet bloc was changing, but the Academy's top structure still carried the habits of post-1969 consolidation. Succession therefore did not automatically mean renewal. The

Academy had presidents, vice-presidents, directors, and administrative organs capable of maintaining the institution, but not necessarily of transforming it.

The unresolved need for leadership reform was connected with the difference between managerial competence and scientific authority. A large research institution requires administration, but scientific administration becomes sterile when it is separated from independent scholarly legitimacy. Under normalisation, leadership positions were shaped by political reliability, not only by scientific standing. This did not mean that all administrators were scientifically weak, but it did mean that the normal hierarchy of merit was compromised. A younger researcher could see that advancement required not only publications, discoveries, or methodological skill, but also acceptable political conduct and institutional caution. This affected the formation of ambition. Some learned to pursue excellence within limits; others learned to pursue office within the system. By the 1980s, the Academy needed a leadership model capable of defending research autonomy, supporting internationalisation, reforming evaluation, and restoring moral credibility. The existing model had been designed to prevent precisely such autonomy. This was one of the central unresolved reform needs before 1989. The Academy required not only new personnel, but a different principle of authority.

The need for personnel reform was inseparable from the long-term effects of cadre policy. The personnel files and political assessments of normalisation had shaped hiring, promotion, doctoral admission, travel, and leadership for two decades. Their effects could not be undone simply by waiting for older people to retire. They had produced institutional cultures in which trustworthiness was often confused with obedience, and caution with maturity. The careers of many talented scholars had been delayed or damaged, while some less talented but politically acceptable figures had gained influence. This did not produce a completely incompetent Academy, but it produced an uneven and morally distorted one. By the late 1980s, unresolved personnel questions accumulated beneath the surface: who had been excluded unfairly, who had occupied positions through political loyalty, who had protected others, who had denounced colleagues, and who could lead a future reform? These questions were not yet openly answerable inside the institution. They would become acute after 1989, when the Academy had to confront both scientific evaluation and moral rehabilitation. Generational change therefore carried hidden ethical accounts.

Doctoral training and early-career formation were among the most important unresolved issues. The Academy remained a major training ground for researchers, especially through aspirantura and institute-based mentorship. Yet training under normalisation often reproduced the limits of the system. In natural sciences, young researchers could receive strong technical instruction but limited access to modern instruments or unrestricted foreign collaboration. In humanities and social sciences, they could receive excellent philological or archival training while being discouraged from politically sensitive interpretation. A young sociologist might learn methods but not open public sociology; a young historian might learn sources but not the recent history society most needed; a young economist might learn modelling but not systemic critique. The Academy therefore produced competence, but often under conditions that fragmented competence from public responsibility. Reform required rebuilding not only curricula and supervision, but the moral atmosphere of training. Younger researchers needed to learn that asking difficult questions was not a career error but a scholarly obligation. That change could not happen fully before political transformation.

The generational problem was made worse by exile and internal marginalisation. Hundreds of Academy workers emigrated during Communist rule, with the post-1968 wave being especially significant, and many others were pushed into internal marginality (*Kostlán, 2010*). This meant that younger scholars often lost potential mentors whose intellectual formation belonged to the reform decade. The loss was not only quantitative. It removed specific lines of transmission: reform sociology, critical economics, independent philosophy, contemporary history, comparative literary criticism, and several internationally connected natural-scientific networks. Some of this knowledge survived abroad or in private circles, but it no longer functioned normally inside the Academy. Generational succession was therefore interrupted by absence. A younger scholar might inherit an institute, but not the full intellectual lineage that had once animated it. In certain fields, this produced a gap between institutional continuity and intellectual continuity. Reform after 1989 had to repair precisely that gap. It had to reconnect younger generations with mentors, texts, methods, and questions that normalisation had removed from ordinary academic circulation.

Internationalisation was another unresolved reform need, especially for the younger generation. Late-socialist science could not function without foreign literature, conferences, instruments, and collaboration, yet access to them remained politically mediated. Strong natural-scientific fields maintained some international contacts, while many humanities and social-scientific fields were more restricted. For younger researchers, this created unequal access to world science. Some could travel as members of trusted delegations; others depended on senior patrons; still others remained isolated. The gap between global scientific development and domestic possibilities widened during the 1980s, especially in fast-moving fields such as computing, molecular biology, electronics, materials science, and economic theory. Reform required treating international mobility not as a political privilege but as a normal condition of research. It also required reintroducing émigré scholarship, Western theory, and comparative debate into fields that had been narrowed by censorship. The Academy's younger generation needed open horizons. Without them, generational change would merely replace older cautious scholars with younger cautious scholars.

The problem of equipment and research infrastructure also had a generational dimension. Many senior laboratories had survived through ingenuity, improvisation, and long-term programmes, but younger scientists often confronted outdated instruments, slow procurement, limited computing capacity, and restricted access to Western technologies. The Academy's strongest laboratories could still produce meaningful results, but the tempo of world science was accelerating. A young physicist, chemist, biologist, or engineer in the 1980s needed equipment and methods that the planned economy could not always provide quickly. This was not only a material problem; it shaped ambition. Researchers trained to work around scarcity often became highly resourceful, but they also lost time. The need for reform therefore included funding, procurement, international purchasing, modern laboratory management, and technical support. The Academy had preserved infrastructure, but much of it required renewal. Generational change without material modernisation would have left younger scholars inside old constraints. The late-socialist system could maintain laboratories, but it struggled to give them the flexibility required for the next scientific era.

The relationship between the Academy and industry was another unresolved field of reform. Official ideology insisted that science should serve production and national economic development, yet the actual transfer of knowledge from Academy institutes to industrial practice was often inefficient. Younger researchers in applied sciences could see that

prototypes, methods, or expert recommendations did not always become implemented innovation. The planned economy lacked flexible mechanisms for evaluating demand, rewarding technological risk, and absorbing research results. This weakened the practical motivation of scientists and reduced the social effect of their work. It also created frustration in fields that were technically capable but institutionally blocked. By the 1980s, reform was needed not only inside the Academy but in the whole system connecting research, industry, planning, and economic decision-making. The Academy could not solve this alone. Yet it was one of the institutions best placed to diagnose the problem. The difficulty was that diagnosis itself could become politically sensitive when it pointed beyond technical inefficiency to the rigidity of the economic system.

Economics became the field in which unresolved reform needs were most openly concentrated during the late 1980s. The creation of forecasting and prognostic work inside the Academy reflected the regime's growing awareness that long-term economic and social development required more sophisticated expertise. In 1986, a specialised Institute for Economic Forecasting was created at the Czechoslovak Academy of Sciences, tasked with producing an analysis of economic downturn and guidelines for restructuring; under Valtr Komárek, it brought together economists from different generations, including younger figures later associated with post-1989 reform (*Sommer, 2015*). This institute became a late-socialist grey-zone space in which expert diagnosis could move closer to systemic critique than had been possible in many official settings. Its significance lay not only in the names later connected with politics, such as Václav Klaus, Karel Dyba, Tomáš Ježek, Dušan Tříska, and Vladimír Dlouhý, but also in the fact that the Academy itself became a site where reform knowledge accumulated before the political breakthrough. The Prognostic Institute did not abolish normalisation, but it revealed that the system needed forms of expertise it could not fully control. It was a symptom of unresolved reform needs inside the state and inside the Academy.

The Prognostic Institute also demonstrates that generational change could produce unexpected reform reservoirs within late-socialist institutions. It gathered older reform-associated economists and younger experts socialised under normalisation. This combination was historically significant. The older reform generation carried memory of 1960s economic debates, while younger economists brought technical skills, modelling, and awareness of contemporary global economic thought. Their cooperation occurred in an officially tolerated institutional space, but one that increasingly exceeded the intellectual limits of traditional normalisation discourse. The institute's existence showed that the Academy's social-scientific capacity had not disappeared, even after two decades of censorship and marginalisation. Yet it also showed the limits of late-socialist reform from above. Expert analysis could be produced, but political will and institutional mechanisms for deep transformation remained weak. The Academy could incubate reform thinking, but the regime hesitated to act on it. Generational change therefore created knowledge before it created power.

The Communist Party's conceptual documents on education, science, and research in the normalisation decades reveal the same unresolved tension. Jan Slavíček's recent study, based on internal records of Central Committee commissions, shows that the party repeatedly approached education, science, and research through both technocratic and ideological lenses. The leadership recognised developmental problems and the need for modernisation, but it continued to frame solutions through ideological orthodoxy, class selection, political loyalty, and the leading role of the party (*Slavíček, 2025*). This duality explains why reform needs

accumulated without being resolved. The regime knew that science and education were essential for closing the developmental gap with advanced countries, but it feared the social and political consequences of intellectual autonomy. The result was a half-reformist, half-defensive posture. Experts were needed, but expertise had to remain subordinate. Younger researchers were to be trained, but their formation remained politically filtered. Innovation was desired, but the institutional freedoms necessary for innovation were restricted.

This contradiction affected the Academy's relationship with universities. The Academy had strong research institutes, while universities trained large numbers of students and provided disciplinary education. Under a healthier system, the relation between academy research and university teaching would have been more open, mobile, and mutually reinforcing. Under normalisation, both spheres were politically supervised, and mobility between them could be shaped by cadre criteria. Dismissed university scholars sometimes found limited refuge in Academy settings in earlier periods, while Academy researchers contributed to doctoral training and specialised teaching. Yet the separation between research and higher education also produced problems. Younger scholars could be trained in institutes without broad teaching experience, while university departments could be deprived of leading researchers. Reform required a more flexible relationship among Academy institutes, universities, and other research organisations. It also required rehabilitating scholars excluded from teaching and restoring open scholarly debate to classrooms. Generational renewal could not be achieved solely inside Academy buildings; it had to involve the whole scientific and educational ecosystem.

The humanities and social sciences faced particularly difficult generational reconstruction. Younger scholars in these fields inherited not only restricted institutions but damaged canons. Certain authors had been banned, émigré works excluded, Western theories treated with suspicion, and recent history ideologically distorted. This meant that reform needs included the recovery of knowledge, not merely the improvement of administration. A young historian needed access to suppressed documents and interpretations; a philosopher needed access to plural theoretical traditions; a sociologist needed open empirical research; a literary scholar needed the return of banned and émigré authors; a legal scholar needed to think again about rights, constitutionalism, and the relation between law and power. Normalisation had not only prevented some work from being published; it had shaped what younger scholars had been allowed to learn. Reform therefore required intellectual restitution. It required reopening libraries, revising bibliographies, restoring citations, and reconnecting domestic research with exiled and international scholarship. Without this, generational change in the humanities would have reproduced inherited omissions.

Natural and technical sciences required different reforms. Their most urgent needs were not the rehabilitation of banned authors, but material modernisation, open international collaboration, flexible project funding, fair evaluation, and better connection with global research frontiers. They also required ethical renewal, because political loyalty had influenced appointments and opportunities even in fields whose content was less ideological. Younger natural scientists needed a system in which travel, publication, equipment, and leadership were allocated by scientific merit rather than political trust. They also needed access to emerging fields that normalisation had slowed or underdeveloped. Computing, molecular biology, advanced materials, environmental science, photonics, and new biomedical technologies required rapid international integration. The Academy possessed important traditions, but traditions could become constraints if they prevented adaptation to new

scientific paradigms. Reform therefore had to combine respect for established schools with openness to new disciplines. Generational change was not simply a matter of replacing older scientists; it was a matter of changing the scientific tempo.

Environmental research revealed the need for a new relation between expertise and public responsibility. By the 1980s, environmental degradation had become one of the areas where the gap between official optimism and lived reality was most visible. Experts could measure pollution, assess risks, and document landscape damage, but public debate remained constrained. Research by Burget, Loučová, and Olšáková on expert communities, dissent, and the environmental agenda shows how grey-zone communication became important in late-socialist Czechoslovakia (*Burget, Loučová, & Olšáková, 2021*). This field attracted younger experts because it combined technical knowledge with civic urgency. It also revealed that the Academy needed mechanisms through which scientific findings could enter public discussion without being filtered by political defensiveness. Environmental science therefore pointed toward a broader reform need: science had to be allowed to speak socially inconvenient truths. A research institution that cannot publicly communicate risk is not fully serving society. By the late 1980s, this problem extended beyond the environment to economics, public health, demography, technology, and social policy.

The archival record of the Academy's final normalisation leadership indicates that change was being registered even before 1989. The Masaryk Institute and Archives describes the secretariat fonds of Josef Říman, president from 1985 to 1989, as containing documentation from the end of normalisation with signs of changes and relaxation in several scientific fields, as well as correspondence, activity reports, materials on Academy workplaces, cooperation with central authorities, foreign relations, and workplace problems (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This archival description matters because it shows that the institution was not simply frozen until the Velvet Revolution. It was aware of pressures, problems, and shifts in its environment. Yet awareness did not equal transformation. The materials were still organised through presidential and administrative channels, not through open democratic self-government. The Academy could document problems, but its capacity to solve them remained constrained by the political system. The late 1980s therefore appear as a period of controlled awareness: the institution sensed the need for change, but lacked the freedom to undertake it fully.

The unresolved reform needs of the Academy were also connected with evaluation. Under normalisation, scientific work was evaluated through a mixture of professional criteria, plan fulfilment, ideological acceptability, institutional loyalty, and practical usefulness. This mixture weakened trust. In some fields, genuine international standards persisted; in others, political safety could protect mediocre work. By the 1980s, a modern research institution needed transparent peer review, international comparison, fair promotion, competitive project selection, and clearer distinction between scholarly quality and political conformity. Younger researchers especially needed confidence that their careers would depend on scientific achievement. Without such confidence, talent either adapted downward, withdrew into narrow survival, or sought opportunities abroad. Evaluation reform was therefore both technical and moral. It had to change procedures, but also restore belief that science could judge itself according to its standards. This would become one of the great tasks after 1989, but its necessity was already visible before the political break.

The question of moral accountability also became unavoidable, even if it could not yet be publicly addressed. Generational change meant that a new Academy would have to decide how to treat those who had been purged, those who had emigrated, those who had been internally marginalised, those who had cooperated with normalisation, and those who had benefited from it. These were not only political questions; they affected appointments, honours, institute leadership, publication histories, and disciplinary memory. A reform that ignored moral accountability would preserve the surface of the old hierarchy. A reform that treated every compromise identically would be historically unjust. The Academy needed a nuanced process of rehabilitation and evaluation, capable of distinguishing victims, protectors, opportunists, loyal administrators, cautious professionals, and serious scholars who had survived within limits. Such nuance was difficult to achieve in advance of political freedom. Nevertheless, the unresolved moral structure of generational change was already present in the 1980s. The institution carried accounts that would have to be settled later.

The ageing of institutional leadership also contributed to the sense of stagnation. Many leading figures had been formed in earlier ideological and administrative worlds, while younger scholars faced scientific fields changing rapidly beyond Czechoslovakia. This produced a mismatch between institutional authority and scientific future. Older leaders could preserve order, but not always understand the needs of emerging fields or the expectations of younger researchers. In some institutes, senior scholars protected excellence and trained successors responsibly. In others, hierarchy became defensive and self-reproducing. The issue was not age alone but the relationship between age, political formation, and openness to change. A scientifically vigorous senior figure could be a source of renewal; a politically cautious administrator could become an obstacle. By the late 1980s, the Academy needed a mechanism for generational succession based on competence and vision rather than on normalisation loyalty. Without such succession, institutional stability risked becoming institutional blockage.

The younger generation also faced the temptation of exit. Some researchers sought foreign opportunities where possible, while others moved toward applied institutes, industry, administration, or later politics. The Academy could no longer assume that its prestige alone would retain the most ambitious people if it could not offer intellectual openness and modern conditions. This was especially true in economics, computing, and technical fields where expertise became valuable beyond traditional academic structures. The late-socialist state still restricted mobility, but professional aspirations increasingly exceeded institutional possibilities. After 1989, this would become more visible as researchers moved into government, business, foreign universities, and new sectors. The unresolved reform need was therefore not only to replace old structures but to make the Academy attractive to talent. A research institution cannot renew itself if younger scholars see it as a place of stagnation, bureaucracy, or moral compromise. Generational change demanded a new institutional promise.

The late-socialist Academy also needed reform in its public role. During normalisation, the official public voice of science had become cautious, ceremonial, and subordinated to state discourse. Younger scholars entering the 1980s were part of a society increasingly aware of the gap between official language and reality. If science was to regain credibility, it had to speak more openly about economic problems, environmental risks, social change, historical truth, technological backwardness, and institutional dysfunction. This required more than academic freedom inside institutes; it required a new relation between science and society. The Academy

had to become a source of public knowledge rather than merely an expert reservoir for the state. Such a transformation was impossible under full normalisation, but its need became increasingly clear. Expertise without public voice had become one of late socialism's central failures. Generational renewal required restoring the scientist as a responsible public actor.

The international context sharpened these reform needs. By the 1980s, the global scientific landscape was increasingly shaped by computing, molecular biology, advanced materials, environmental research, telecommunications, biotechnology, and international project networks. Czechoslovak science retained strong traditions, but it risked falling behind where rapid adaptation and open collaboration were required. The Academy's younger researchers could not remain competitive through domestic planning alone. They needed participation in international peer communities, access to journals, conferences, databases, instruments, and collaborative grants. The normalisation system's controlled internationalisation became increasingly inadequate. It had allowed selected contact, but it could not support the scale and speed of integration required by late 20th-century science. Reform therefore meant opening borders intellectually, materially, and institutionally. The Academy's future depended on becoming part of a wider scientific world, not merely representing socialist science within approved channels.

By 1989, generational change and unresolved reform needs had converged into a single institutional problem. The Academy had preserved competence, but it had not resolved the contradictions created by normalisation. It had younger researchers, but not a fully open career structure. It had laboratories, but not always modern equipment or flexible funding. It had social scientists and economists, but not free public diagnosis. It had humanists, but not an unrestricted memory of the recent past. It had international contacts, but not equal international mobility. It had administrative stability, but not democratic self-government. It had survived exile and marginalisation, but not yet reintegrated the dispersed scientific community. The Academy stood before the political breakthrough as a functioning but unfinished institution. Its reform needs were not marginal adjustments; they concerned the very principles by which scientific authority, institutional legitimacy, and public truth would be organised.

Thus, generational change in the late-socialist Czechoslovak Academy of Sciences revealed the depth of unresolved reform needs before 1989. The Academy contained older scholars shaped by several political regimes, a wounded reform generation marked by the Prague Spring and its defeat, a normalisation generation trained in caution and compromise, and a younger cohort increasingly aware of the limits of late-socialist science. This generational layering preserved memory, competence, and professional continuity, but it also reproduced fear, self-censorship, distorted career hierarchies, and delayed renewal. The institution needed reform in leadership, personnel policy, doctoral training, internationalisation, equipment, evaluation, science-industry relations, public expertise, moral accountability, and the rehabilitation of suppressed disciplines and scholars. Some reform energies were already visible in late-socialist expert spaces, especially in economic forecasting, environmental expertise, and selected scientific fields, but the political system could not fully release them. The Academy therefore reached 1989 not as an empty institution, but as a constrained one carrying both valuable scientific capital and unresolved historical debts. Its post-socialist transformation would be possible precisely because competence had survived, but necessary precisely because survival had been achieved under conditions that had damaged autonomy, trust, and intellectual courage.

3. The Academy before the Political Breakthrough

The Czechoslovak Academy of Sciences entered the final months before the political breakthrough of 1989 as a large, functioning, and internally burdened institution. It was not collapsing in the ordinary administrative sense. Its institutes continued to work, its laboratories continued to produce results, its journals and publishing channels continued to operate within limits, its research plans were still formulated, and its leadership still spoke the language of socialist scientific development. Yet beneath this institutional continuity there was a deep accumulation of unresolved tensions. The Academy had preserved considerable scientific competence, but it had done so under a system that had damaged public autonomy, distorted careers, silenced critical disciplines, and fragmented the scientific community through exile and internal marginalisation. It was therefore a stable institution, but not a settled one. Its stability concealed the need for reform rather than eliminating it. The political system around it still insisted on control, while many of the Academy's strongest internal needs pointed towards openness, internationalisation, professional self-government, and moral rehabilitation. In this sense, the Academy before the breakthrough was not simply waiting for political events outside itself. It had become one of the places where the contradictions of late socialism were stored, disciplined, and partly understood. The period of normalisation was, as the Academy's historical overview later acknowledged, especially severe for the institution because the Communist Party leadership took revenge for the role played by groups from the Academy's social-science institutes in the reform efforts of the Prague Spring (*Czech Academy of Sciences, n.d.*).

The political breakthrough of November and December 1989 would soon transform the whole meaning of institutional life in Czechoslovakia, but before it happened the future was not obvious. The Velvet Revolution began with the police suppression of a student demonstration in Prague on 17 November 1989, and within days mass demonstrations, strikes, civic mobilisation, and negotiations with the regime made the collapse of one-party rule irreversible. The resignation of the Communist Party leadership, the removal of the party's constitutional monopoly, the formation of a largely non-communist government, and the election of Václav Havel as president on 29 December 1989 turned the political order upside down in a matter of weeks (*Wolchik, 1990*; *Balík, Holzer, & Kopeček, 2008*). Yet the Academy on the eve of these events was still operating within the assumptions of the late-socialist system. Its official channels had not been designed for democratic self-transformation. Its leadership, institutes, personnel policies, and public language still reflected the order created after 1969. This contrast between sudden political acceleration and slow institutional adaptation is crucial. The Academy was not revolutionary in its official form before November 1989, but it contained people, memories, expert communities, and reform needs that would quickly become relevant once the political barrier fell. The breakthrough did not create the need for reform; it released it.

The last phase of the normalised Academy was associated with the leadership of Josef Říman, who served as president from December 1985 until December 1989, after Jaroslav Kožešník and Bohumil Kvasil had presided over the longer consolidation of the post-1969 order. This chronology matters because the final Academy before the breakthrough was still governed by a leadership structure shaped by normalisation. The presidency had become part of the state-party administrative system, not an organ of autonomous scientific self-government in the full

sense. The official list of representatives of the Academy records this succession clearly, showing the continuity of leadership from the normalisation period into the very threshold of political transformation (*Czech Academy of Sciences, n.d.*). The Academy's central bodies still coordinated institutes, research plans, personnel matters, foreign contacts, and official representation within a framework that assumed the leading role of the Communist Party. This did not mean that every leader or administrator acted with the same degree of rigidity. The final years of the 1980s were more complex, and signs of relaxation appeared in several scientific fields. Nevertheless, the institutional grammar remained that of controlled science. The Academy was approaching a democratic rupture through administrative forms inherited from the restoration of political control.

Archival descriptions of the final normalisation leadership suggest an institution that was active, complex, and increasingly aware of its tensions. The Masaryk Institute and Archives of the Czech Academy of Sciences describes the presidential secretariat fonds from the late ČSAV period as containing materials on internal Academy activity, workplaces, contacts with central political and state offices, foreign cooperation, and workplace problems. The fonds of Josef Říman's secretariat are especially significant because they cover the end of normalisation and record signs of change and relaxation in some areas of scientific life (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). Such archival evidence is important because it prevents the late-socialist Academy from being treated as a frozen bureaucratic block. The institution was observing, reporting, adjusting, and managing real problems. Yet the same archival structure also reveals the limits of the period. These problems were still handled through presidential secretariats, centralised reporting, and administrative channels connected to the party-state. The Academy could know that pressures existed, but it could not yet solve them through open democratic debate. It could record change before it could become change. This was the institutional condition immediately before the breakthrough.

One of the Academy's central problems before 1989 was the gap between competence and autonomy. Many institutes contained serious scientists, experienced technical staff, functioning laboratories, and internationally meaningful research traditions. Chemistry, mathematics, physical chemistry, plasma physics, electronics, instrumentation, biology, materials science, and several other fields had preserved strong professional cultures despite political restriction. Yet competence did not equal autonomy. Research groups still depended on administrative approvals, political assessments, travel permissions, planned priorities, and controlled foreign cooperation. The system could support a laboratory while limiting the independence of the people who worked in it. This contradiction became increasingly visible in the 1980s, when global science moved rapidly through computing, molecular biology, biotechnology, advanced materials, environmental science, and international project networks. The Academy had talent and infrastructure, but its institutional environment was too slow, too cautious, and too politically mediated for the next phase of scientific development. Before the breakthrough, it therefore possessed scientific capital that could not fully unfold under the existing order. The political change of 1989 would not magically solve this problem, but it would make the problem speakable.

The humanities and social sciences entered 1989 in an even more complicated condition. They had suffered not only from administrative supervision but from restrictions on memory, language, theory, and public interpretation. Sociology, philosophy, contemporary history, economics, law, literary scholarship, and cultural studies had been narrowed in ways that

affected their inner development. Libora Oates-Indruchová's analysis of the regulatory framework for social sciences and humanities in Czechoslovakia between 1968 and 1989 shows how scholarly thought was limited through institutional, editorial, and self-censorial mechanisms (*Oates-Indruchová, 2008*). This meant that by the late 1980s the Academy's humanistic and social-scientific fields had preserved some competence but had also accumulated absences. Certain topics had been avoided, certain authors excluded, certain émigré works inaccessible, certain theoretical languages treated as suspect, and certain interpretations of recent history replaced by official formulae. The breakthrough would therefore demand more than administrative liberalisation. It would require intellectual restitution. The Academy would have to recover names, questions, debates, and methods that had been suppressed or displaced during normalisation. The condition before 1989 was therefore one of constrained survival rather than normal continuity.

The Academy also approached the breakthrough with a divided scientific community. Some scholars worked inside official institutes and had adapted to normalisation in different ways. Some had protected professional standards under formal loyalty. Some had cooperated actively with the regime. Some had been internally marginalised, dismissed, silenced, or pushed into non-academic work. Others had emigrated and continued their careers abroad. This division was not visible in the official organisational chart, but it shaped the moral reality of the institution. A restored scientific community after 1989 would have to deal with questions of rehabilitation, responsibility, and reintegration. The Academy before the breakthrough therefore contained not only research programmes but unresolved human accounts. Who had been unjustly excluded? Who had benefited from exclusions? Who had preserved science under pressure? Who had used normalisation as a career opportunity? Such questions were largely unanswerable within the late-socialist order, but they were already present as latent institutional problems. The political breakthrough would not create moral complexity; it would expose it.

The existence of the scientific diaspora made the Academy's situation even more complex. Hundreds of Academy workers had left Czechoslovakia during the Communist period, with the most important wave occurring after 1968. Antonín Kostlán's study estimates Academy emigration during Communist rule at roughly 760–790 people, or about 6–7 per cent of Academy workers, with the wave from 1968 to 1970 being especially significant (*Kostlán, 2010*). Those who left carried scientific capital abroad: methods, skills, contacts, memories, and research traditions. By 1989, many had built careers in Western universities, laboratories, and research institutions. The official Academy before the breakthrough could not fully acknowledge them, but their existence mattered. They represented both a loss and a possible future bridge. After political change, some émigré scholars could return symbolically, intellectually, or practically through collaborations, visiting lectures, advisory roles, and renewed citations. Before the breakthrough, however, they remained largely outside the official institutional self-image. The Academy therefore stood at the edge of 1989 as an institution whose true scientific community was larger than the institution itself.

The late-socialist Academy also contained reformist energies in expert form, especially in economic and prognostic research. The Institute for Forecasting of the Czechoslovak Academy of Sciences became one of the most significant spaces where late-socialist expertise approached questions of systemic reform. Vítězslav Sommer's work on prognostika shows that the forecasting project brought together economists and experts who were increasingly concerned with the future of the socialist economy and with possible reform scenarios; the

Forecasting Centre was established within the Academy framework and later transformed into an institute in the mid-1980s (*Sommer, 2015*; *Sommer, 2016*). This was important because it showed that the Academy was not only a passive institution of stagnation. It also housed expertise that could diagnose the crisis of late socialism more deeply than official political language allowed. The Institute for Forecasting did not overthrow the regime, and it operated within a tolerated expert space, but it revealed the widening gap between knowledge and political decision-making. The state needed experts to imagine the future, yet it feared the implications of their analysis. The Academy before the breakthrough therefore included a reform reservoir, even though that reservoir remained constrained by the political order.

The presence of future post-1989 political and economic actors in forecasting circles has sometimes encouraged retrospective simplification, as though the Academy's late-socialist expert spaces were already preparing a democratic transition in a clear and deliberate way. The historical situation was more ambiguous. Prognostic work developed within late-socialist institutions because the system itself was searching for controlled ways to think about long-term crisis, economic modernisation, and technological change. The experts working there were not all dissidents, and their work did not automatically imply liberal democracy or market transformation in its later form. Nevertheless, the very existence of such spaces showed that the old ideological language was no longer sufficient. The Academy could produce forms of knowledge that exceeded normalisation's intellectual closure. Forecasting, modelling, and expert scenario-building opened a window through which systemic alternatives could be imagined before they were politically possible. This was one reason why the Academy mattered before 1989. It did not lead the revolution as an institution, but parts of it helped form the expert language through which the post-revolutionary future would be discussed.

Environmental expertise formed another reform current before the political breakthrough. By the 1980s, environmental degradation had become one of the most visible failures of late-socialist industrial modernisation. Pollution, damaged landscapes, poor air quality, and health concerns could not be fully hidden behind ideological declarations of progress. Academy scientists and experts contributed to measurement, analysis, and technical diagnosis, while environmental concern increasingly connected official research, semi-official expert networks, and civic criticism. Burget, Loučová, and Olšáková have shown how the grey zone functioned as an oppositional communication channel between Czech experts, dissent, and the environmental agenda (*Burget, Loučová, & Olšáková, 2021*). This matters because environmental science challenged the boundary between technical expertise and public truth. Data about pollution were not dissident slogans, but they could become politically uncomfortable because they exposed the cost of the system's economic priorities. The Academy before the breakthrough therefore contained scientific knowledge that pointed beyond the safe language of plan fulfilment. Environmental expertise showed that the need for reform was not only political or economic, but also ecological and civic.

The broader context of Soviet *perestroika* intensified these tensions without resolving them. After 1985, reform language began to circulate from the Soviet Union itself, creating pressure on the more conservative Czechoslovak leadership. Yet Czechoslovak normalisation elites remained reluctant to embrace deep political change. This placed the Academy in an awkward position. It was a scientific institution in a state that needed modernisation but distrusted openness. Researchers could see that international science required mobility, rapid information exchange, flexible funding, and critical debate. Social scientists and economists could see that the planned economy required more than technical correction. Humanists

could see that public memory could not remain indefinitely falsified. Yet the political system still imposed caution. The final years before 1989 were therefore characterised by partial loosening without genuine transformation. The Academy's intellectual atmosphere may have become less rigid in some areas, but the constitutional foundations of control remained. The institution was approaching change while still speaking much of the old language.

The unresolved problem of public speech was central. Many Academy researchers possessed knowledge that could have mattered to society: economic diagnoses, environmental data, demographic trends, historical truths, technological assessments, legal analyses, and cultural interpretations. Yet the official public voice of the Academy remained constrained. It could report achievements, celebrate anniversaries, support socialist development, and participate in approved public discourse, but it could not openly become a critical institution. This was one of the great failures of normalisation. Knowledge existed, but its public circulation was regulated. Experts could advise, but not freely challenge. Scholars could know, but not always say. Before the breakthrough, this separation between knowledge and speech had become increasingly untenable. The Velvet Revolution would turn public speech into one of the central acts of political renewal. For the Academy, the same transformation meant that science had to rediscover its public responsibility. The institution would have to move from controlled expertise to open authority.

The Academy's younger generation was especially affected by this problem. Many younger scientists had been trained within normalisation but were beginning to encounter a world in which the old rules looked increasingly obsolete. They needed modern equipment, better access to foreign literature, open travel, merit-based promotion, and international evaluation. In the humanities and social sciences, they also needed intellectual access to suppressed traditions and contemporary theory. Before the breakthrough, however, their career paths still depended on institutional hierarchies shaped by the previous two decades. Some younger researchers adapted to the system; others became restless; others found reformist spaces in expert institutes, environmental circles, technical fields, or unofficial networks. Their situation showed that generational change alone could not solve the Academy's problems. A younger scholar trained in a restricted institution could reproduce restriction unless the institutional rules changed. The Academy before 1989 therefore needed both generational renewal and structural reform. Without structural reform, succession would merely transfer stagnation from one cohort to another.

The late-socialist Academy was also approaching the end of normalisation with a weakened but not extinguished ethos of scientific truth. This point is important because it prevents the period from being reduced to moral collapse. Many researchers continued to value accuracy, method, evidence, and professional responsibility. Laboratory scientists still had to respect experimental results; mathematicians still had to prove their claims; historians who could not write freely about the present still preserved source criticism in other fields; sociologists and economists maintained methods in applied or internal contexts; editors and librarians kept knowledge circulating where they could. These habits mattered. They meant that when political control collapsed, the Academy still contained people able to rebuild free research. Yet the ethos had been damaged by self-censorship, cautious speech, career compromises, and unequal access to opportunity. The Academy therefore entered 1989 with both moral resources and moral wounds. Its scientific truthfulness had survived in fragments, but its public truthfulness required reconstruction.

The comparison with the Prague Spring remained unavoidable, even when unspoken. The Academy before 1989 still lived in the shadow of 1968. Normalisation had tried to reinterpret the reform period as crisis and deviation, but the memory of the 1960s survived among older scholars, in exile communities, in private conversations, and in the structure of suppressed questions. By 1989, the memory of the Prague Spring had become more than nostalgia. It functioned as a reminder that Czechoslovak socialism had once generated an internal demand for reform, intellectual openness, and public responsibility. The Academy's social-science institutes had been deeply involved in that earlier reform atmosphere, which explains the harshness of subsequent normalisation (*Czech Academy of Sciences, n.d.*). The political breakthrough of 1989 did not simply revive 1968, because the historical context had changed profoundly. Yet for the Academy, 1968 remained an unfinished institutional memory. The question was no longer how to reform socialism from within, but how to reconstruct scientific autonomy after two decades of constrained survival. The past returned not as a programme but as a moral account.

The official institutional structure before 1989 was therefore both a resource and an obstacle. It was a resource because it preserved institutes, laboratories, archives, libraries, technical staff, research traditions, and administrative capacity. It was an obstacle because many of those structures had been shaped by political loyalty, centralised planning, and the habits of normalisation. After the breakthrough, reformers would not be able simply to abolish everything and begin anew. Nor could they simply preserve everything as it stood. The Academy's future required selective continuity: retaining scientific capacity while transforming governance, evaluation, personnel policy, and public responsibility. This is why the late-socialist condition is so important for the later history of the Czech Academy of Sciences. The post-1989 institution would inherit both strength and distortion. The Academy before the breakthrough was not an empty shell to be replaced; it was a living but constrained institution to be reformed. Its complexity made transformation possible and difficult at the same time.

The political breakthrough also forced a reconsideration of the Academy's relationship with society. Under normalisation, the Academy had been expected to serve socialist construction and state priorities. After 1989, it would have to justify itself in a democratic public sphere, under new conditions of funding, evaluation, and accountability. This future shift was already latent before the breakthrough because many of the Academy's problems concerned public legitimacy. Why should society trust an institution that had been politically supervised? How should it distinguish serious science from ideological service? How should it recognise scholars who had been excluded, silenced, or exiled? How should it explain its continuing need for public support? These questions were not only administrative. They concerned the social contract of science. The Academy before 1989 had been a state institution under party control; after 1989, it would have to become a public scientific institution under democratic legitimacy. The need for this transition was already built into the contradictions of the late-socialist period.

The internal diversity of the Academy would shape how it responded to the breakthrough. Natural-scientific institutes with strong laboratory traditions could focus on international reintegration, equipment modernisation, funding reform, and new evaluation mechanisms. Humanities and social-scientific institutes had to do those things too, but also had to recover suppressed intellectual content, reopen recent history, restore banned authors, reconnect with émigré scholarship, and redefine their public role. Economic and prognostic experts moved quickly into national political and policy debates. Environmental researchers found new possibilities for public communication. Archivists and historians faced the enormous task of

documenting the Communist period and normalisation itself. This diversity meant that "reform of the Academy" was never one single process. It would be multiple reforms according to disciplinary damage and disciplinary capacity. Before the breakthrough, these different needs were already present, though not yet fully articulated. The institution's future transformation would have to respond to this uneven inheritance.

The Academy's position before 1989 also illustrates a broader feature of late socialism: systems can remain institutionally stable after they have lost intellectual credibility. The Academy's buildings, plans, meetings, and reports continued, but the larger political narrative that justified control over science was weakening. The claim that party supervision guaranteed socially progressive science had become less convincing in the face of economic stagnation, environmental crisis, technological lag, and the visible success of freer research systems abroad. Many researchers understood this, even if they did not say it publicly. The gap between official confidence and private scepticism widened. Once that gap becomes too large, institutional stability becomes brittle. The Academy was not the cause of the political collapse, but it embodied the contradiction between competence and control that characterised the late-socialist order. It had knowledge, but not enough freedom; expertise, but not enough public authority; continuity, but not enough renewal. This made it vulnerable to the shock and opportunity of 1989.

The events of November 1989 opened a space in which the Academy's hidden questions could become public. Students, theatres, civic movements, intellectuals, workers, and citizens transformed the political atmosphere with extraordinary speed. Scientists were not outside this social movement. Although the Academy as an official institution did not initiate the revolution, many scholars and scientific employees participated as citizens, experts, advisers, or members of emerging public initiatives. The experience was especially visible in the Slovak Academy of Sciences, where later institutional remembrance emphasised the participation of scientists in protests and in Public Against Violence; this broader Czechoslovak context indicates that scientific communities were among the social groups drawn into democratic mobilisation (*Slovak Academy of Sciences, 2024*). For the Czech Academy environment, the same general logic applied: the scientific community could no longer be contained within official forms. Public life suddenly required expert voices, moral clarity, and institutional change. The breakthrough turned the scientist from a managed specialist back into a possible public actor. This was one of the most important symbolic reversals of the period.

The Academy before the breakthrough therefore stood at a threshold between two models of science. The first model was the normalised model: centrally managed, politically supervised, institutionally stable, selectively international, productive in strong fields, and cautious in public speech. The second model, not yet fully formed, would require autonomy, democratic accountability, open international cooperation, competitive evaluation, rehabilitation of excluded scholars, and a renewed relation between science and society. The transition between these models could not be smooth because the first had shaped people, institutions, habits, and careers for 20 years. The Academy did not simply step from darkness into light. It carried old practices into the new period and had to transform them gradually. Yet the breakthrough made transformation unavoidable. The institution could no longer justify itself by normalisation's categories. It had to ask what kind of Academy a democratic Czech and Czechoslovak science required. That question would define the next historical stage.

One of the first symbolic answers came through the rehabilitation of scientific figures associated with autonomy and moral credibility. Otto Wichterle's election as president of the Academy after the democratic breakthrough represented more than a change of office. It restored to public authority a scientist who had been politically marginalised under normalisation despite his international scientific significance. The Academy's historical overview presents Wichterle as one of the major personalities associated with the post-1989 reconstruction of the institution and with the revival of democratic scientific life (*Czech Academy of Sciences, n.d.*). This symbolic reversal helps explain why the Academy's condition before the breakthrough matters. An institution that had marginalised some of its strongest figures now needed them to recover legitimacy. The return of such figures did not erase the lost decades, but it changed the moral direction of the institution. It showed that post-normalisation reform was not only about new laws or funding structures. It was also about restoring the connection between scientific excellence and public trust.

The final condition of the Academy before 1989 can therefore be described as constrained readiness. It was constrained because the party-state still controlled the main institutional channels, public speech remained limited, and many habits of caution had become internalised. It was ready because scientific competence, expert communities, laboratories, archives, younger researchers, reform memories, and international aspirations had survived. The Academy did not know exactly what form the breakthrough would take, but it possessed resources that could be mobilised once political conditions changed. This readiness was uneven and incomplete. Some fields were better prepared for international reintegration; others needed deep intellectual reconstruction. Some institutes had preserved professional ethics; others carried heavier burdens of compromise. Some scholars could move quickly into the new public sphere; others had to confront their past roles. The Academy's threshold condition was therefore one of possibility mixed with unresolved debt. It was ready to change because it had survived, and it needed to change because of how it had survived.

The end of chapter logic is therefore not that normalisation simply failed to destroy the Academy. That would be too weak a conclusion. The deeper point is that normalisation produced a specific kind of Academy: scientifically capable but politically constrained, institutionally stable but intellectually cautious, materially equipped in some fields but morally and generationally damaged, international in selected ways but cut off from normal circulation, productive yet insufficiently self-renewing. This kind of institution could survive late socialism, but it could not flourish indefinitely. By 1989, the contradictions had become too large to be managed through routine. The Academy needed autonomy not as an abstract liberal slogan but as a practical condition for the next phase of scientific development. It needed open history because historical falsification had damaged public trust. It needed internationalisation because scientific isolation had become increasingly costly. It needed personnel reform because normalisation had distorted careers. It needed moral rehabilitation because exile and marginalisation had fractured the scientific community. The political breakthrough did not invent these needs; it made their resolution possible.

Thus, the Czechoslovak Academy of Sciences before the political breakthrough of 1989 was a functioning but deeply unresolved institution. It retained laboratories, institutes, research schools, expert communities, archives, publications, and internationally visible competence, especially in strong natural, mathematical, technical, biomedical, and selected applied fields. At the same time, it carried the accumulated consequences of normalisation: party supervision, constrained public speech, censored humanities and social sciences,

fragmented sociological and historical traditions, emigration, internal marginalisation, distorted career hierarchies, controlled internationalisation, and habits of self-censorship. The final years before the Velvet Revolution showed both the exhaustion of the old model and the survival of capacities needed for renewal. Economic forecasting, environmental expertise, younger scientific ambitions, hidden memories of the Prague Spring, and the existence of a dispersed émigré community all indicated that the Academy's future could not be contained within late-socialist administrative stability. When the political order collapsed in November and December 1989, the Academy did not begin from nothing; it began from a difficult inheritance in which competence and compromise, continuity and rupture, scientific achievement and moral debt were inseparably intertwined. The close of normalisation therefore became the beginning of a new institutional question: how to transform a disciplined socialist academy into a democratic, autonomous, internationally open, and publicly credible academy of science.

References

Associated Press. (2024, January 12). František Janouch, a Czech nuclear physicist who supported dissidents from Sweden, dies at age 92. *AP News*.

Balík, S., Holzer, J., & Kopeček, L. (2008). Czechoslovakia in 1989: A case of successful transition. *Totalitarismus und Demokratie, 5*(1), 19–42.

Bolton, J. (2012). *Worlds of dissent: Charter 77, the Plastic People of the Universe, and Czech culture under communism*. Harvard University Press.

Bren, P. (2010). *The greengrocer and his TV: The culture of communism after the 1968 Prague Spring*. Cornell University Press.

Brno University of Technology. (2025). *100 years since the birth of the father of Czechoslovak electron microscopy*. Brno University of Technology.

Burget, E., Loučová, P., & Olšáková, D. (2021). The gray zone as an oppositional communication channel: Czech experts, dissent and the environmental agenda. *Práce z dějin Akademie věd, 13*(2), 149–178.

Czech Academy of Sciences. (n.d.). *History overview*. CAS.

Czech Academy of Sciences. (n.d.). *Representatives of the CAS and its predecessors*. CAS.

De Clercq, E. (2013). The acyclic nucleoside phosphonates from inception to clinical use: Historical perspective. *Antiviral Research, 98*(2), 135–144.

Dickins, T. (2015). A study of the seminal work, *Poučení z krizového vývoje ve straně a společnosti po XIII. sjezdu KSČ* [Lessons from the crisis development in the party and society after the 13th Congress of the Communist Party of Czechoslovakia]. *The Slavonic and East European Review, 93*(2), 213–236.

ELI Beamlines. (n.d.). *Laser history*. ELI Beamlines.

Faculty of Electrical Engineering and Communication, Brno University of Technology. (2025). *100 years since the birth of the father of Czechoslovak electron microscopy*. Brno University of Technology.

Fialová, A. (2014). Poučení z krizového vývoje: Normalizační interpretace pražského jara [Lessons from the crisis development: The normalisation interpretation of the Prague Spring]. *Soudobé dějiny, 21*(3), 397–420.

Franc, M. (2024). The showcase of Czechoslovak science. In *Czechoslovak science and its institutions in the 20th century*. Springer.

Havel, V. (1985). The power of the powerless. In J. Keane (Ed.), *The power of the powerless: Citizens against the state in Central-Eastern Europe* (pp. 23–96). M. E. Sharpe. Original work published 1978.

Institute of Experimental Botany. (n.d.). *History of IEB*. CAS.

Institute of Macromolecular Chemistry. (n.d.). *Institute history*. Czech Academy of Sciences. https://www.imc.cas.cz/en/about-imc/institute-history

Institute of Organic Chemistry and Biochemistry. (n.d.). *Acyclic nucleoside phosphonates*. CAS.

Institute of Organic Chemistry and Biochemistry. (n.d.). *History*. CAS.

Institute of Photonics and Electronics. (n.d.). *History of the Institute*. CAS.

Institute of Physics of Materials. (n.d.). *History*. CAS.

Institute of Physics. (n.d.). *Brief history of FZU*. CAS.

Institute of Plasma Physics. (n.d.). *Institute of Plasma Physics of the Czech Academy of Sciences*. CAS.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *Brief history of the Institute*. CAS.

Kostlán, A. (2010). Exil vědců a učenců v éře komunistického režimu: Emigrace z Československé akademie věd [Exile of scientists and scholars in the era of the Communist regime: Emigration from the Czechoslovak Academy of Sciences]. *Dějiny věd a techniky / History of Sciences and Technology, 43*(3), 153–181.

Kostlán, A. (Ed.). (2002). *Věda v Československu v období normalizace (1970–1975): Sborník z konference, Praha, 21.–22. listopadu 2001* [Science in Czechoslovakia during normalisation, 1970–1975: Conference proceedings, Prague, 21–22 November 2001]. Výzkumné centrum pro dějiny vědy.

Machonin, P. (2004). K sociologii v období normalizace [Sociology during the period of normalisation]. *Sociologický časopis / Czech Sociological Review, 40*(5), 643–650.

Masaryk Institute and Archives of the Czech Academy of Sciences. (n.d.). *Fondy Československé akademie věd (ČSAV) a Akademie věd ČR (AV ČR)* [Fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences]. https://www.mua.cas.cz/en/fondy-ceskoslovenske-akademie-ved-csav-a-akademie-ved-cr-av-cr

Miklová, M. (2007). Transformations of opposition and dissent in Prague and Brno in the era of "the normalization regime": Resistance to the Communist regime between 1969 and 1989. *Central European Political Studies Review, 9*(4), 333–346.

Míšková, A., Barvíková, H., & Šmidák, M. (1998). *Československá akademie věd 1969–1972: Restaurace komunistické moci ve vědě* [The Czechoslovak Academy of Sciences, 1969–1972: The restoration of communist power in science]. Ústav pro soudobé dějiny AV ČR.

Munk, E. (2011, June 8). Science in exile: Czech scientists reflect on years abroad. *The Prague Post*.

Nisonen-Trnka, R. (2008). The Prague Spring of Science: Czechoslovak natural scientists reconsidering the Iron Curtain. *Europe-Asia Studies, 60*(10), 1749–1766.

Nisonen-Trnka, R. (2012). *Science with a human face: The activity of the Czechoslovak scientists František Šorm and Otto Wichterle during the Cold War* (Doctoral dissertation, University of Tampere). Tampere University Press.

Oates-Indruchová, L. (2008). The limits of thought?: The regulatory framework of social sciences and humanities in Czechoslovakia (1968–1989). *Europe-Asia Studies, 60*(10), 1767–1782.

Oates-Indruchová, L. (2018). Self-censorship and Aesopian language of scholarly texts. *The Slavonic and East European Review, 96*(4), 614–641.

Oates-Indruchová, L. (2020). *Censorship in Czech and Hungarian academic publishing, 1969–89: Snakes and ladders*. Bloomsbury Academic.

Payne, P. (1972). Four years of "normalisation": The academic purge in Czechoslovakia. *Index on Censorship, 1*(2), 33–52.

Pecka, E. (2011). Proces tzv. normalizace v české sociologii [The process of so-called normalisation in Czech sociology]. *Historická sociologie, 2011*(1), 77–94.

Segeth, K. (2002). The Mathematical Institute of the Academy of Sciences of the Czech Republic celebrates its 50th anniversary. *Mathematica Bohemica, 127*(4), 505–507.

Skovajsa, M. (2007). Placing contemporary Czech sociology in a historical context. *Polish Sociological Review, 160*(4), 421–436.

Slavíček, J. (2025). Education, science, and research under the technocratic and ideological prism: A view through the lens of the Central Committee of the Communist Party of Czechoslovakia's conceptual documents during the two "normalisation" decades. *Prispevki za novejšo zgodovino / Contributions to Contemporary History, 65*(2).

Sommer, V. (2015). Making standards work: Expert knowledge and economic reform in late socialist Czechoslovakia. *Zeithistorische Forschungen / Studies in Contemporary History, 12*(3), 476–496.

Sommer, V. (2016). Towards the expert governance: Social scientific expertise and the socialist state in Czechoslovakia, 1950s–1980s. *Serendipities: Journal for the Sociology and History of the Social Sciences, 1*(2), 126–142.

Stibbe, M., & McDermott, K. (2022). Czechoslovakia and Eastern Europe in the era of normalisation. In K. McDermott & M. Stibbe (Eds.), *Czechoslovakia and Eastern Europe in the era of normalisation, 1969–1989* (pp. 1–25). Palgrave Macmillan.

Turnovec, F. (2011). Economics in the Czech Republic. In A. W. Bobek & T. J. Koutek (Eds.), *The development of economics in Central and Eastern Europe* (pp. 50–65). Routledge.

Ústřední výbor Komunistické strany Československa. (1970). *Poučení z krizového vývoje ve straně a společnosti po XIII. sjezdu KSČ* [Lessons from the crisis development in the party and society after the 13th Congress of the Communist Party of Czechoslovakia]. Rudé právo.

Zahradník, R., & Polák, R. (1980). *Elements of quantum chemistry*. Plenum Press.

Zákonné opatření č. 26/1970 Sb., kterým se mění a doplňuje zákon č. 54/1963 Sb., o Československé akademii věd [Statutory measure No. 26/1970 Coll. amending Act No. 54/1963 Coll. on the Czechoslovak Academy of Sciences]. (1970). *Sbírka zákonů Československé socialistické republiky*.

Part Three.

From ČSAV to the Czech Academy of Sciences: Transformation and Institutional Rebirth, 1989–1993

Chapter Six

The Velvet Revolution and the Crisis of the Socialist Research System

1989 as a Political and Scientific Turning Point

1. The Collapse of the Ideological Monopoly in Academic Life

The Velvet Revolution was not only a political event that overthrew the monopoly of the Communist Party of Czechoslovakia; it was also a profound epistemic rupture in the life of Czech and Slovak science. In academic life, the collapse of the regime meant the sudden delegitimation of an entire system of ideological supervision that had shaped appointments, research plans, publication strategies, international contacts, and the public language of scholarship. The Czechoslovak Academy of Sciences, or ČSAV, entered this moment with a double historical burden: it had preserved a considerable part of national scientific capacity, yet it had also functioned for decades inside a state-socialist framework in which formal autonomy was limited by party power. The Academy's official historical overview later emphasised this duality, noting both the heavy ideological pressure that lasted until 1989 and the fact that Czech science nevertheless retained creative energy and international significance in several fields (*Academy of Sciences of the Czech Republic, n.d.*). The end of 1989 therefore did not simply liberate science from an external political shell; it forced the scientific community to ask how deeply political obedience had penetrated academic institutions themselves. In this sense, the collapse of ideological monopoly was the first, most urgent, and most morally charged dimension of the Academy's transformation. It opened the question of what kind of science had been possible under late socialism, what kind of science had been distorted, and what kind of science now had to be rebuilt.

The ideological monopoly in academic life had never been merely a matter of official slogans displayed on walls or ceremonial references to Marxism-Leninism in introductions to collective reports. It operated through a dense institutional ecology: party organisations inside research institutes, cadre files, approval of foreign travel, ideological evaluation of research themes, editorial controls, hierarchical loyalty, and the habit of self-censorship. In the social sciences and humanities this monopoly was especially visible, because questions of society, history, philosophy, law, culture, and politics were treated as matters of ideological security. Yet the natural sciences were not untouched, since careers, institutional leadership, access to equipment, contacts with Western laboratories, and permission to attend conferences could also depend on political reliability. The Academy was consequently both a research organisation and a terrain of political classification. Researchers were not evaluated only by the quality of their scholarship but also by their attitude to 1968, to the Soviet intervention, to normalisation, and to the ruling interpretation of socialism. The collapse of ideological monopoly therefore meant that many hidden mechanisms of academic life suddenly became visible as political mechanisms rather than as neutral administrative procedures. This visibility

was revolutionary because it exposed the gap between science as a universal practice of inquiry and science as a managed sector of a party-state.

The roots of this collapse must be understood against the background of normalisation after the suppression of the Prague Spring. The Academy had been a particularly sensitive institution for the post-1968 regime because several reform-oriented intellectual currents had been connected with academic institutes, especially in the social sciences. The official history of the present Czech Academy explicitly notes that normalisation was especially hard for ČSAV because the leadership of the Communist Party took revenge for the role played by groups from Academy social-science institutes in the reform efforts of 1968 (*Academy of Sciences of the Czech Republic, n.d.*). In practical terms, this meant dismissals, demotions, forced resignations, reorganisation of institutes, restrictions on publication, and a redistribution of authority towards politically reliable figures. The Academy thus carried into 1989 not only the memory of ideological control but also the memory of interrupted intellectual trajectories. Many researchers knew colleagues whose careers had been broken, whose manuscripts had been blocked, or whose names had disappeared from official academic circulation. The revolutionary moment reactivated these memories with unusual speed, because the moral authority of the normalisation order depended precisely on keeping such experiences private, fragmented, and politically unspoken. Once public speech became possible, the old architecture of silence began to collapse.

The first shock of November 1989 came from outside the Academy, but its consequences entered academic life almost immediately. The police repression of the student demonstration on 17 November became a symbolic condensation of several historical memories: the Nazi closure of Czech universities in 1939, the repression after 1968, and the continuing humiliation of civic life under late socialism. Studies of the Velvet Revolution emphasise the rapid escalation from a student commemoration into a mass civic movement, the emergence of Civic Forum, the general strike, and the astonishing speed with which the Communist Party lost its governing monopoly (*Kurtz, n.d.; Suk, 2003*). Within less than two weeks the political centre of the old regime was visibly weakening, and by the end of December Václav Havel had moved from dissident intellectual to president of a democratic Czechoslovakia. For universities and research institutes, this sequence was not an abstract national drama but a direct challenge to the language of obedience that had governed institutional life. Students, actors, dissidents, workers, and intellectuals suddenly appeared in a shared public space, and academic institutions could no longer pretend that their internal routines were separated from the crisis of the state. The Academy was drawn into the revolutionary atmosphere not because every institute acted identically, but because the legitimacy of every institute had depended on a political order that was now disintegrating.

The collapse of the ideological monopoly also altered the meaning of academic speech. Before November 1989, official institutional language had been characterised by a predictable vocabulary: socialist construction, Marxist-Leninist methodology, class position, ideological struggle, anti-socialist forces, and the leading role of the Communist Party. These terms were not merely rhetorical ornaments; they structured the acceptable boundaries of research interpretation. After November, however, words such as freedom, autonomy, democracy, legality, civic responsibility, rehabilitation, pluralism, and truth entered academic discussion with a new force. This linguistic transformation mattered because every regime of knowledge has its permitted grammar. When the old grammar lost authority, academic life could begin to describe its history differently. The Prague Spring could be discussed not as a crisis of right-

wing opportunism but as an attempt at reform and intellectual renewal. Normalisation could be described not as consolidation but as a process of political purification, exclusion, censorship, and forced adaptation. Such a change in vocabulary was already a change in institutional reality.

In the social sciences, the breakdown of ideological monopoly had a particularly dramatic meaning because these disciplines had been subjected to direct regulation of intellectual content. Sociology, philosophy, political science, legal theory, historiography, and parts of economics had all been required to negotiate the boundaries of permissible interpretation. Emanuel Pecka's analysis of normalisation in Czech sociology shows how the post-1968 regime moved against sociological institutions and how the process involved party decisions, purges, and the reclassification of scholarly work as ideologically dangerous (*Pecka, 2011*). The figures he cites for the Sociological Institute and the Institute for Public Opinion Research in 1970 illustrate the depth of political intervention: a large proportion of party members in those workplaces were removed or excluded, while only a minority were recommended for continued party membership. These numbers are important not because party membership itself was identical with scientific quality, but because they reveal how academic institutions were reorganised through political tests. By 1989, the moral and intellectual cost of this system had accumulated for two decades. When the ideological monopoly collapsed, social scientists were not simply gaining freedom to publish new topics; they were confronting the institutional history of how their disciplines had been damaged.

Yet it would be misleading to reduce the collapse of ideological monopoly to the liberation of the social sciences alone. The natural and technical sciences also experienced the regime's fall as a transformation of academic conditions, even when their research objects had been less directly ideological. Laboratories could be internationally respected and politically constrained at the same time. A chemist, physicist, biologist, or mathematician might work on problems whose internal logic was not dictated by Marxism-Leninism, but access to foreign literature, instruments, travel, grants, and positions could still be filtered through political loyalty. The Academy's historical narrative acknowledges this paradox when it records the survival of creative scientific energy under ideological pressure and points to internationally recognised figures such as Jaroslav Heyrovský and Otto Wichterle (*Academy of Sciences of the Czech Republic, n.d.*). The collapse of the regime therefore did not mean that Czech science began from zero. It meant that scientific capital previously forced to operate under political constraint could now seek a new institutional and international form. The liberation of scientific life was thus both negative and positive: negative because it removed ideological barriers, positive because it allowed existing capacities to be reorganised around professional criteria.

The figure of Otto Wichterle became especially symbolic in this transition. Wichterle represented the continuity of high-quality Czech science, the memory of reformist engagement, and the possibility that professional authority could replace ideological obedience. The Academy's historical overview identifies him as the first president of the Academy after the revival of democracy and notes his role in initiating the purposeful reconstruction of the research organisation as a whole (*Academy of Sciences of the Czech Republic, n.d.*). His symbolic value derived partly from his scientific achievement and partly from his biography as a scholar associated with the reformist atmosphere of 1968 and later marginalised by the normalisation order. In this sense, his elevation after 1989 signalled more than a change of personnel. It suggested a reversal of legitimacy: those who had been treated as politically suspect could now embody the moral and professional restoration of the

Academy. The collapse of ideological monopoly was therefore also a collapse of the old hierarchy of academic prestige. Scientific authority could again be grounded in discovery, intellectual courage, and international standing rather than in conformity to the party line.

At the institutional level, the fall of ideological monopoly produced a crisis of leadership. Many directors, deputy directors, editors, members of scientific councils, and administrative officials had been appointed or retained under conditions in which political reliability mattered. This did not automatically mean that every person in a leadership position was intellectually weak or morally compromised, but it did mean that the legitimacy of leadership had become suspect. The revolution forced academic communities to ask whether their leaders represented scholarly trust or political inheritance. In some institutes, demands for resignation, election, or internal review emerged quickly. In others, caution prevailed, because research continuity, laboratories, long-term projects, and international obligations could not simply be suspended. The collapse of ideological monopoly therefore created a tension between moral rupture and institutional pragmatism. This tension would remain central to the Academy's transformation: science needed democracy, but it also needed functioning institutes, archives, instruments, and experienced researchers.

The revolutionary atmosphere made party structures inside academic workplaces look suddenly archaic. For decades, Communist Party organisations had functioned as shadow centres of authority, often more influential than formal academic bodies. They shaped promotions, evaluated political loyalty, watched over institutional discipline, and helped transmit directives from the broader party apparatus into the research environment. After November 1989, such structures lost their aura of inevitability. Their meetings, resolutions, and ideological language could no longer command the same obedience because the political centre that had guaranteed them was itself collapsing. The symbolic power of the Party inside the Academy depended on the assumption that the Party would remain the permanent organiser of social reality. Once that assumption failed, the party cell in a research institute could no longer pretend to be the natural guardian of science. It became what it had always been in essence: a political mechanism inserted into academic life.

This change also transformed the emotional atmosphere of institutes. Under normalisation, many researchers had learned to distinguish between public speech and private judgement. They knew what could be said in reports, what could be said in corridors, what could be said at home, and what could not be said at all. The collapse of ideological monopoly disrupted this divided personality of academic life. Conversations that had previously been private entered meetings, letters, petitions, and public declarations. The moral vocabulary of shame, courage, compromise, exclusion, and responsibility began to circulate alongside discussions of research programmes and institutional reform. This was not always comfortable, because the restoration of freedom also meant the restoration of memory. Academic communities had to face the fact that silence had protected many individuals but had also preserved the regime's internal stability. The first months after November were therefore marked not only by enthusiasm but also by uncertainty, suspicion, and difficult attempts to distinguish adaptation from collaboration.

The public atmosphere of the Velvet Revolution intensified these internal shifts. Jiří Suk's work on the revolutionary transition emphasises the complexity of negotiations between the emerging political elite and representatives of the old regime, as well as the differentiation within Civic Forum and the creation of new centres of power (*Suk, 2003*). This broader political

complexity had an academic equivalent. Research institutions did not simply move from dictatorship to freedom in one clean administrative act. They had to improvise new procedures while the legal and political framework of the state itself was still changing. The removal of the constitutional articles guaranteeing the leading role of the Communist Party, the formation of a government with non-communist participation, and Havel's election as president marked the political dismantling of the old order, but academic transformation had to translate these political events into everyday institutional practice (*Suk, 2003*). The collapse of ideological monopoly therefore occurred in stages: first as a public delegitimation of the Party, then as a crisis of institute governance, then as a redefinition of research priorities, and finally as a legal and organisational reconstruction of the Academy.

The fall of ideological monopoly also meant that scholarly evaluation could begin to detach itself from ideological evaluation. Under the old system, a research project might be judged not only by methodological rigour or originality but also by its compatibility with approved interpretations of society and history. In some fields, this produced direct censorship; in others, it produced more subtle distortions, such as avoidance of sensitive topics, ritual ideological framing, or coded writing. Libora Oates-Indruchová's work on the regulatory framework of Czechoslovak social sciences and humanities under normalisation is important precisely because it shows that control did not operate only through spectacular bans but through institutional routines, policy documents, editorial procedures, and the shaping of what could be thought publicly (*Oates-Indruchová, 2008*). After 1989, these routines did not vanish overnight, because habits of caution and institutional memory survived the formal end of censorship. Nevertheless, the criterion of ideological acceptability ceased to be publicly defensible. This was one of the most decisive changes in academic life. It did not immediately create excellent science, but it removed a central obstacle to scientific honesty.

The collapse also reopened the question of disciplinary pluralism. Marxism-Leninism had not merely claimed to be one theoretical orientation among others; in its official function, it claimed a privileged epistemic position over the interpretation of society, history, economy, culture, and law. This privilege weakened the normal plurality of academic debate. Alternative approaches could exist, but they were often marginalised, disguised, or tolerated only if they did not challenge the ideological centre. After November 1989, Czech academic life could re-enter a broader world of theoretical competition. Historians could work with non-Marxist historiographies, sociologists with Western sociological theory, economists with institutional, liberal, Keynesian, Austrian, and other approaches, and philosophers with traditions previously treated with suspicion. This was not a simple replacement of one doctrine by another. At its best, it meant the recovery of scholarly pluralism itself. The collapse of ideological monopoly therefore had a methodological dimension: research questions could once again be formulated according to the internal logic of inquiry rather than according to the political needs of doctrine.

However, the collapse of ideological monopoly should not be misunderstood as the disappearance of ideology from academic life altogether. No scientific institution exists outside values, assumptions, institutional interests, funding priorities, and broader social expectations. What ended in 1989 was not every form of intellectual commitment but the compulsory subordination of scholarship to a single party-sanctioned worldview. This distinction matters because the post-1989 Academy did not become a neutral machine of knowledge overnight. It entered a new political economy of science, where market reform, European integration, grant competition, public accountability, and national expectations

would all shape academic behaviour. The difference was that these forces could be debated, criticised, and institutionally negotiated in a pluralistic environment. The ideological monopoly of the party-state had claimed final interpretive authority. The democratic transformation did not eliminate conflict over science, but it made such conflict open, procedural, and contestable.

The collapse of the old ideological order also changed the relationship between the Academy and universities. Under state socialism, universities and Academy institutes had different institutional roles, and the Academy often carried a large share of research capacity. The official Academy history observes that, compared with universities, which were sovietised by the Higher Education Act of 1950, ČSAV retained at least a formally greater degree of decision-making autonomy and could even provide refuge to some scholars expelled from universities for ideological reasons (*Academy of Sciences of the Czech Republic, n.d.*). This relative autonomy was real but limited, because the same history also stresses that decision-making mechanisms were ultimately under totalitarian control. After 1989, the relationship between Academy and university science had to be reconsidered in a new environment of academic freedom. The collapse of ideological monopoly therefore affected not only the internal structure of ČSAV but the whole ecology of Czech research and higher education. It raised questions about doctoral training, institute-based research, teaching, mobility, and the distribution of resources between universities and Academy institutes.

Another crucial dimension of the collapse was international reopening. Before 1989, Czech and Slovak researchers were never fully isolated, but their international contacts were politically asymmetrical and administratively controlled. Cooperation with socialist countries was encouraged within the framework of the Eastern bloc, while contacts with Western institutions could be restricted, monitored, or unevenly distributed. The end of ideological monopoly weakened the suspicion attached to Western scholarly networks. It also changed the meaning of international excellence: being recognised abroad no longer had to be balanced by ritual confirmation of socialist loyalty. The Academy's later institutional self-description emphasised integration into the international context through joint projects and exchanges with foreign partners (*ALLEA, 2015*). This post-1989 internationalisation had roots in capacities that had survived under socialism, but it required a new institutional language. Czech science could now present itself not as a national branch of socialist science but as part of a European and global research community.

The symbolic geography of academic life changed with the collapse of ideological monopoly. Moscow, East Berlin, Warsaw, Budapest, and other socialist centres had previously formed part of an official hierarchy of scientific exchange, while Paris, London, Oxford, Cambridge, Vienna, Munich, Heidelberg, Rome, and American universities often represented either prestigious but politically complicated destinations or spaces of exile and intellectual distance. After 1989, this symbolic map was redrawn. Western journals, conferences, foundations, and universities became accessible as legitimate partners rather than politically ambiguous contacts. At the same time, ties with former socialist institutions did not simply disappear; many of them had scholarly value and personal depth. The collapse of ideology did not require the erasure of every Eastern connection, but it did require the removal of political compulsion from scientific cooperation. International relations could increasingly be justified by disciplinary relevance, project quality, and institutional benefit. That shift was essential for the Academy's later integration into European research structures.

The end of ideological monopoly also meant that the Academy's past had to be narrated anew. Every institution lives through official memory, and ČSAV under socialism had possessed a highly selective memory of its origins, achievements, and political role. It celebrated scientific successes but often suppressed the stories of exclusion, censorship, and compromised governance. After 1989, the history of the Academy could no longer be written as a linear story of socialist scientific progress. It had to include the rupture of 1948, the reform hopes of the 1960s, the trauma of 1968, the mechanisms of normalisation, and the ambiguities of late-socialist professionalism. The official history of the present Academy reflects this later need for a more complex narrative, acknowledging both ideological pressure and scientific achievement (*Academy of Sciences of the Czech Republic, n.d.*). Such complexity was necessary because a purely accusatory narrative would have ignored real scientific work, while a purely celebratory narrative would have concealed moral and institutional damage. The collapse of ideological monopoly therefore opened the way to historical self-knowledge.

This self-knowledge was inseparable from the problem of rehabilitation. Many scholars who had been dismissed, demoted, banned from publishing, denied travel, or pushed into marginal positions after 1968 had to be publicly reconsidered. Rehabilitation was not only an administrative act; it was a symbolic restoration of academic dignity. In some cases, it involved returning people to positions or acknowledging that their exclusion had been politically motivated. In other cases, it meant restoring names to bibliographies, renewing contacts, or allowing suppressed intellectual traditions to re-enter public discussion. The process was emotionally and institutionally difficult because the Academy contained both victims of normalisation and people who had benefited from it. The collapse of ideological monopoly did not automatically reconcile these groups. It created the conditions under which the conflict could finally be named.

The Academy's transformation after November also required a new understanding of public responsibility. Under the socialist research system, science had been publicly praised as a productive force and a component of state development, but public accountability was filtered through the party-state. Researchers were expected to serve society as defined by the ruling ideology. After 1989, the meaning of service to society changed. Science had to justify itself before a democratic public, an emerging parliamentary system, new ministries, universities, international partners, and eventually competitive funding bodies. This new accountability could be liberating but also destabilising. Ideological monopoly had restricted science, yet it had also provided stable institutional formulas and predictable budgetary channels. Once the monopoly collapsed, the Academy gained freedom but also entered uncertainty. The crisis of the socialist research system therefore began at the exact point where liberation and insecurity met.

The abolition of the old academic hierarchy of academicians and corresponding members later formed part of this broader transformation. According to the Academy's institutional portrait, political changes after 1989 affected scientific life, and the status of academicians and corresponding members in ČSAV was abolished, while the Learned Society of the Czech Republic was later established as a civic association in 1994 (*ALLEA, 2015*). This change symbolised the move away from a Soviet-style model of academic prestige towards a different arrangement of scientific representation and self-governance. It also showed that the collapse of ideological monopoly had consequences beyond the immediate revolutionary months. The old titles and structures were not merely technical details; they belonged to a system in which recognition, hierarchy, and state authority were closely connected. Reforming them meant

redefining what honour in science should mean. It also helped separate the research-institute function of the Academy from the learned-society function of representing outstanding scholars.

Nevertheless, the first stage of transformation was not driven by fully designed legal reform. It was driven by a sudden change in legitimacy. Legal acts, statutes, new councils, and later institutional reforms followed, but the decisive moment was the loss of moral authority by the old ideological order. Researchers who had remained silent could now speak; those who had been excluded could be remembered; those who had governed through political loyalty could be questioned. In this respect, the collapse of ideological monopoly in academic life was both formal and existential. It changed what institutions were allowed to do, but it also changed what individuals could say about themselves. Academic identity could again be connected with truth-seeking rather than survival inside an official language. This did not mean that every scholar became heroic or every institute democratic overnight. It meant that the central fiction of the old system—that party control and scientific truth were naturally compatible—had lost its power.

The public rituals of the Velvet Revolution reinforced this transformation. The ringing of keys, mass gatherings, student strikes, theatre-based mobilisation, and the language of civic dignity created a symbolic world in which academic freedom appeared not as a narrow professional privilege but as part of national democratic renewal. James Krapfl's interpretation of the revolution as a broad cultural and civic process is helpful here, because it shifts attention from elite negotiations alone to the moral imagination of ordinary citizens and communities (*Krapfl, 2013*). Academic institutions were not outside this moral imagination. Researchers, students, librarians, editors, technicians, and administrative staff were all part of the society that was learning to speak differently. In this atmosphere, the demand for scientific freedom could resonate with demands for free elections, free speech, independent associations, and lawful government. The collapse of ideological monopoly in science was thus one expression of a wider civic revolt against imposed reality. It belonged to the same historical movement that made censorship, police violence, and one-party rule publicly indefensible.

At the same time, the Academy's case was distinctive because science cannot be reconstructed by enthusiasm alone. Laboratories require continuity, research teams require funding, archives require preservation, and long-term projects cannot be restarted every month according to political emotion. This made the Academy's transition more complex than a simple revolutionary purge. The institution had to reject ideological domination while preserving scientific capital accumulated under the previous regime. It had to democratise governance without destroying the technical and intellectual infrastructure of research. It had to invite back excluded voices while avoiding the illusion that every post-1989 problem could be solved by moral reversal. The collapse of ideological monopoly therefore opened a difficult art of institutional discrimination: what had been politically imposed had to be removed, but what had genuine scholarly value had to be retained. This problem would become central to the later question of continuity and discontinuity in the Academy's transformation.

One of the most important effects of the collapse was the re-emergence of professional conscience. In a normal academic environment, professional conscience includes responsibility for method, evidence, argument, peer criticism, and intellectual honesty. Under ideological monopoly, this conscience could not disappear entirely, but it was often forced into compromise. Scholars learned to protect their real questions through coded language,

technical specialisation, postponement, or selective silence. After 1989, the demand for open professional conscience became unavoidable. Researchers had to ask whether their previous work had been distorted by ideology, whether their institutes had excluded better scholars, whether their publications had avoided important questions, and whether their disciplines had lost international time. These were painful questions, but they were also signs of renewal. The collapse of ideological monopoly thus restored not only external freedom but the internal burden of academic responsibility.

The transformation of academic life also affected publication culture. Under normalisation, journals, publishing houses, editorial boards, and review procedures were embedded in systems of ideological caution. Some manuscripts were rejected for explicit political reasons, while others were reshaped by anticipatory self-censorship. Oates-Indruchová's research on academic censorship and regulation makes clear that control over scholarship often functioned through complex interactions between policy, institutions, editors, reviewers, and authors rather than only through a single censorial command (*Oates-Indruchová, 2008*). After 1989, publication became one of the main spaces in which academic freedom had to be practised. Previously suppressed topics could appear, foreign literature could be cited more openly, and journals could redefine their missions. But the habits of the old system did not vanish immediately. Editorial culture had to learn not only to permit new opinions but to cultivate rigorous pluralism.

The collapse of ideological monopoly was also generational. Older researchers remembered the First Republic, the post-war years, Stalinisation, the thaw, Prague Spring, and normalisation with different degrees of personal experience. Middle-generation scholars had often built careers inside the constraints of late socialism, sometimes with compromise and sometimes with quiet resistance. Younger scholars and students experienced 1989 as the opening of a future rather than only the correction of a past. These generational differences shaped expectations about the Academy. Some wanted moral reckoning, others wanted professional normality, and still others wanted rapid integration into Western science. The end of ideological monopoly allowed all these expectations to become visible at once. This visibility was itself a form of democratisation, because institutional debate could no longer be reduced to a single authorised interpretation. Yet it also made transformation unstable, since the Academy had to absorb conflicting memories and ambitions.

The crisis of the socialist research system therefore began as a crisis of authority. The old system could still possess buildings, budgets, archives, and staff, but its language no longer persuaded. Its claim to define the social meaning of science had collapsed. Its mechanisms of promotion and exclusion were exposed to criticism. Its disciplinary hierarchies became historically questionable. Its international orientation no longer matched the aspirations of researchers. Its official memory no longer controlled the interpretation of the past. This is why 1989 was a scientific turning point even before new laws and institutional statutes were completed. The Academy was already changing because the basis on which obedience had rested was disappearing.

Thus, the collapse of the ideological monopoly in academic life was the first and indispensable condition for the transformation of ČSAV after the Velvet Revolution. It delegitimised party supervision, opened the internal history of normalisation to criticism, restored the language of autonomy and truth, and forced the Academy to distinguish between scientific capital and political deformation. The process was not a simple liberation narrative, because the Academy

had preserved real research excellence while also carrying the marks of ideological control. It was precisely this ambiguity that made the post-1989 transformation historically significant. Czech science did not emerge from a vacuum; it emerged from an institution that had been constrained, compromised, resilient, and productive at the same time. The Velvet Revolution made it possible to speak about all these dimensions together. In doing so, it transformed academic freedom from an abstract ideal into an immediate institutional task.

2. The Reopening of Questions of Autonomy, Democracy, and Scientific Freedom

The Velvet Revolution reopened the question of academic autonomy not as a narrow corporative privilege, but as one of the central problems of democratic reconstruction. In late socialist Czechoslovakia, science had possessed institutions, laboratories, archives, journals, and international contacts, yet it lacked the political conditions under which these structures could be fully governed by scholarly judgement. The end of the Communist Party's monopoly therefore placed before the scientific community a question that was at once moral, legal, institutional, and professional: who should have the right to define the purposes of science? This question was especially urgent in the Czechoslovak Academy of Sciences, because ČSAV had been both a producer of genuine research and a component of a state-socialist system of planning, supervision, and ideological selection. The official historical overview of the present Czech Academy later formulated this ambiguity very clearly: Czech science had been under heavy ideological pressure until 1989, yet it had also preserved creative energy and produced internationally recognised achievements (*Academy of Sciences of the Czech Republic, n.d.*). The reopening of autonomy therefore did not mean the simple return to a lost golden age. It meant the beginning of a difficult institutional argument about how to preserve science while freeing it from the political grammar of the previous regime. Autonomy had to be recovered as a living practice, not merely proclaimed as a slogan. Democracy had to be introduced without destroying the specialised character of research. Scientific freedom had to be distinguished both from ideological dependence and from administrative chaos.

The starting point of this reopening was the collapse of the constitutional and symbolic basis of one-party rule. On 29 November 1989, the Federal Parliament removed provisions concerning the leading role of the Communist Party from the Czechoslovak constitution, and this act had immediate significance for every sphere that had previously been subordinated to party authority (*Havel at Columbia, 2006*). For academic life, this constitutional change was more than a political headline. It meant that the claim of the Party to supervise the meaning, direction, and social use of science no longer possessed formal legitimacy. Once the leading role of the Party was abolished, the internal party structures in universities and research institutes lost their ideological foundation. Their influence could not disappear from memory or personnel networks overnight, but their authority was no longer defensible in public language. The Academy could now ask questions that had previously been politically dangerous: whether scientific councils should be elected, whether institute directors should be reviewed, whether researchers excluded after 1968 should be rehabilitated, and whether research priorities should be determined by scholarly communities rather than ideological directives. In this sense, the reopening of autonomy began with the collapse of a political fiction. The fiction had been that a single party could act as the historical representative of truth. After November 1989, academic life could again distinguish truth-seeking from political guardianship.

Autonomy was not an unfamiliar word in Czech scientific history, but after 1989 it acquired a renewed and sharper meaning. The Czech Academy's historical narrative recalls Jan Evangelista Purkyně's 19th-century idea of an autonomous non-university scientific institution that would associate research institutes in the main fields of science (*Academy of Sciences of the Czech Republic, n.d.*). This earlier tradition mattered because the post-1989 debate was not only a reaction against communism. It also reconnected Czech science with older institutional memories: learned societies, national scientific representation, non-university research, and the European idea of science as a self-governing republic of inquiry. Yet the conditions of 1989 were different from those of the 19th century or the First Republic. ČSAV was no longer simply a learned society or a philanthropic national institution. It was a large research organisation with institutes, property, employees, budgets, and long-term obligations. Its autonomy could therefore not be imagined only as the freedom of distinguished scholars to meet, publish, and award prizes. It had to be reconstructed as the autonomy of a complex research system. This made the question of democracy particularly delicate, because democratic governance in science had to coexist with disciplinary competence, peer evaluation, and institutional continuity. The problem was not whether science should be free, but how freedom could be organised.

The post-1989 reopening of democracy in academic life was inseparable from the broader civic atmosphere of the revolution. The Velvet Revolution transformed public speech: students, theatres, civic groups, dissidents, workers, and intellectuals all participated in a shared demand for non-violent political change. Britannica's summary of the revolution records the rapid sequence from the suppressed student demonstration of 17 November 1989 to mass mobilisation, coalition government, and the transition to a multiparty system (*Britannica, 2026*). Academic institutions could not remain outside this atmosphere, because the university and Academy worlds had long been linked with the moral language of national culture and intellectual responsibility. The demand for democracy therefore entered academic life not only as an external political doctrine but as an internal demand for institutional dignity. Researchers wanted to speak without ritual declarations of loyalty. Students wanted to learn without ideological filtration. Formerly marginalised scholars wanted their work and careers to be judged anew. Institute communities wanted a voice in leadership and reform. The Academy, like other institutions, had to learn that democracy was not merely the opposite of dictatorship. It was also a procedure through which conflicts about the past, present, and future of science could be expressed without returning to coercion.

The idea of academic freedom after 1989 had both individual and institutional dimensions. Individually, it meant the right of scholars to formulate research questions, choose methods, publish results, teach, debate, and cooperate internationally without political approval. Institutionally, it meant the right of academic bodies to govern their internal affairs according to scholarly criteria and transparent procedures. These two dimensions were connected but not identical. An individual researcher could not be free if the institute remained controlled by external political power. Conversely, an institution could proclaim autonomy while still suppressing dissenting scholars, younger researchers, inconvenient disciplines, or alternative theoretical orientations. For this reason, the reopening of scientific freedom required more than changing the sign on the door of the Academy. It demanded a transformation of appointments, editorial boards, research planning, evaluation procedures, international exchange, and the moral economy of academic authority. This was especially important after normalisation, because repression had often worked not through open terror but through

career filtering, silence, exclusion, and ritualised conformity. The democratic transformation of science therefore had to penetrate the small mechanisms of everyday academic life. Freedom had to become ordinary, not only ceremonial.

The universities provided an important legal and symbolic reference point for this transformation. The Higher Education Act of 1990 declared universities self-governing institutions, guaranteed members of the academic community freedom of scientific research and publication of results, and recognised the right to elect academic self-governing bodies (*Act No. 172/1990 Coll., 1990*). It also prohibited political parties and political movements from creating organisations on academic ground, a provision that directly reversed the normalised presence of party structures within higher education (*Act No. 172/1990 Coll., 1990*). Although this legislation concerned universities rather than the Academy as such, it expressed the wider post-revolutionary logic of academic renewal. The new democratic order was not content with removing the Communist Party from government. It sought to prevent the return of political party tutelage inside knowledge institutions. This mattered greatly for ČSAV, even before its legal reconstruction was completed, because the Academy and universities belonged to the same national ecology of research and higher learning. The university reform showed the direction in which the academic world was moving: self-government, elected bodies, legal guarantees of freedom, and the removal of party structures from scholarly space. It created a normative horizon for the Academy's reorganisation.

The prohibition of party organisation on academic ground was particularly significant because it addressed the political anatomy of the old system. Under state socialism, the party organisation within a university or institute was not simply one association among many. It functioned as a channel of ideological supervision and personnel influence. It had the capacity to affect appointments, travel, disciplinary legitimacy, and the public standing of researchers. The post-1989 rejection of such structures therefore recognised that academic freedom could not survive if political parties occupied the internal space of research communities. This principle did not mean that scholars should be politically indifferent citizens. On the contrary, many scholars had been among the most important civic actors of the transformation. The point was that political citizenship and institutional party control had to be separated. A scientist could participate in democracy as a citizen, but a research institute could not be governed as an extension of a party apparatus. This distinction was one of the crucial lessons of the Academy's late-socialist experience. It helped redefine academic autonomy as freedom from direct political occupation, not as withdrawal from public life.

The Academy's route to autonomy was more complex than that of the universities, because ČSAV was a large research body inherited from the socialist state. The official CAS historical overview notes that, compared with universities sovietised by the Higher Education Act of 1950, the scientific community at ČSAV retained at least formally a greater degree of decision-making autonomy and could even provide refuge to some scholars expelled from universities for ideological reasons; at the same time, decision-making mechanisms remained fully under totalitarian control (*Academy of Sciences of the Czech Republic, n.d.*). This double character shaped the post-1989 debate. Reformers could not simply say that the Academy had always been only an instrument of oppression. Nor could defenders of continuity claim that its formal autonomy had been sufficient. The institution had to recognise both truths. It had preserved scientific work under difficult conditions, but its autonomy had been limited, conditional, and politically penetrated. The reopening of autonomy therefore required a careful separation of

professional capacity from political subordination. This separation became one of the key tasks of the early transformation.

Otto Wichterle's role in this moment was symbolically powerful because his biography embodied precisely that separation. The CAS historical overview identifies Wichterle as the last chairman of ČSAV after the fall of the Communist regime and notes that the purposeful reconstruction of the research organisation began during his chairmanship (*Academy of Sciences of the Czech Republic, n.d.*). Wichterle was not simply a distinguished chemist associated with the discovery of soft contact lenses. He was also a figure whose career had been affected by the political consequences of 1968, including his association with the manifesto "Two Thousand Words." His leadership therefore marked a reversal of the normalisation hierarchy. The scholar once treated as politically unreliable could now represent the restoration of academic legitimacy. This reversal did not solve every institutional problem, but it gave the transformation a moral centre. It suggested that the Academy's future should be guided by scientific authority, international reputation, civic courage, and professional independence rather than by loyalty to party structures. In a period when many institutions struggled with compromised continuity, such symbolism mattered. It helped translate abstract demands for freedom into a recognisable institutional narrative.

Democracy inside the Academy could not be identical with parliamentary democracy, because science is not governed by majority opinion alone. A scientific institution must preserve peer judgement, disciplinary competence, expert evaluation, and long-term research standards. Yet this did not mean that democratic principles were irrelevant to the Academy. On the contrary, the post-1989 transformation required democratic mechanisms precisely because expert authority had been contaminated by political appointment. If leadership positions had been shaped by ideological reliability, then the restoration of professional legitimacy required elected, consultative, and accountable bodies. Democracy in the Academy therefore meant the creation of procedures through which researchers could participate in institutional governance. It meant that directors and councils should no longer be perceived as executors of directives from above. It meant that research communities should have a voice in defining priorities, evaluating leadership, and defending scholarly standards. In this institutional context, democracy did not abolish expertise. It created the conditions under which expertise could regain trust.

The later legal design of the Czech Academy of Sciences reflected this move towards self-governance. Act No. 283/1992 Coll. established the Czech Academy of Sciences, defined its seat in Prague, and stated that the Academy performs research through its institutes; it also recognised the Academy's and institutes' capacity to conclude agreements on international cooperation in scientific activity and technological development (*Act No. 283/1992 Coll., 1992*). The same act defined the Academy Assembly as the supreme self-governing body of the Academy and included among its members directors of institutes, representatives of universities, outstanding scientists, elected representatives of institutes, and representatives of public and economic life (*Act No. 283/1992 Coll., 1992*). These provisions are later than the immediate revolutionary moment, but they show how the reopened questions of autonomy and democracy were translated into institutional form. The Academy was to remain a public research organisation financed from the state budget, yet its internal governance was to rest on a self-governing assembly rather than a party-state chain of command. The arrangement was not absolute independence from the state. It was a democratic-public model of autonomy.

The Academy would be publicly funded and nationally significant, but its scientific life would be organised through academic bodies and institutional representation.

The same legal framework also illustrates the complexity of autonomy in a public research institution. Act No. 283/1992 Coll. described the Academy as an organisational body of the Czech Republic financed by the state budget, while also giving it the status of a central authority for budgetary purposes and defining its institutes as public research institutions (*Act No. 283/1992 Coll., 1992*). This arrangement reveals a central tension of post-socialist research policy. Scientific autonomy did not mean financial self-sufficiency. The Academy still depended on public resources, national legislation, and government approval of certain frameworks. At the same time, autonomy required protection from direct political management of research content. This balance was fragile, because under socialism state funding had often been linked to ideological control, while after 1989 public funding had to be reconciled with democratic accountability. The Academy had to show that it served society without becoming the intellectual property of any government. It had to demonstrate usefulness without reducing science to immediate political or market demand. This problem would remain important throughout the later transformation of Czech research. The reopening of autonomy thus created a new question: how can publicly funded science remain intellectually independent?

Scientific freedom was also connected with the selection of personnel. Under the late socialist system, research careers were often shaped by informal political vetting, cadre assessment, and restrictions connected with family background, public speech, foreign contacts, or attitudes toward 1968. Post-1989 reform had to replace such practices with professional procedures. The later Academy act stated that posts of staff members with higher education in the institutes should be filled on the basis of competitions announced by institute directors, with rules defined by the Statutes of the Academy (*Act No. 283/1992 Coll., 1992*). This was an important principle because academic freedom cannot exist without fair entry into the profession. If positions are distributed by loyalty, then research is subordinated before it begins. Competition does not automatically guarantee justice or excellence, but it provides a procedural alternative to political selection. In the Academy's post-1989 context, such procedures had a restorative meaning. They helped move institutional legitimacy from ideological biography to scholarly competence. They also signalled that younger researchers should not inherit the closed personnel culture of normalisation.

The reopening of autonomy also demanded a new relationship between the Academy and universities. The old socialist division between institute-based research and university teaching had been shaped by Soviet-style institutional models, even though Czech traditions were more complex and older. After 1989, universities regained academic freedom and self-government, while the Academy had to justify its continuing role as a large non-university research organisation. The later CAS statutes describe the Academy as a democratically organised network of autonomous scientific institutions and identify its mission as enriching human knowledge and serving the welfare of the Czech Republic and its citizens (*Statutes of the Czech Academy of Sciences, 2006*). The same statutes emphasise research across natural, technical, social, and human sciences, cooperation with domestic and foreign partners, education of researchers, and the application of results for culture, competitiveness, and current social problems (*Statutes of the Czech Academy of Sciences, 2006*). Although these statutes belong to a later stage, they preserve the institutional answer to the question reopened in 1989. The Academy was not to disappear into universities, nor was it to remain a closed state

hierarchy. It was to become a public, self-governing, institute-based research network connected with universities, society, and international science. This was a distinctive Czech compromise between continuity and democratic renewal.

The European context gave additional meaning to this reconstruction. The Magna Charta Universitatum, signed in Bologna in 1988, articulated academic freedom and institutional autonomy as principles of good governance and university self-understanding (*Magna Charta Observatory, n.d.*). Although the document referred primarily to universities, its language resonated strongly in Central and Eastern Europe after the fall of communist regimes. The timing is important: the Charta appeared just before the collapse of the Eastern bloc and expressed a broader European expectation that knowledge institutions should be morally and intellectually independent of political authority. For Czech academic life, this European vocabulary helped frame the post-1989 transformation not merely as national decommunisation but as reintegration into a wider European culture of academic freedom. The Academy's reform could therefore be understood in relation to a continental tradition in which autonomy was not isolation but a condition for responsible service to society. This was especially relevant because Czech science had long belonged to Central European, German-language, Slavic, French, British, and international networks. The reopening of autonomy was thus also the reopening of European belonging. The Academy had to free itself from ideological dependence in order to participate fully in the European republic of science.

The social sciences and humanities experienced this reopening with particular intensity. Under normalisation, these fields had been more directly exposed to ideological expectations, because their subject matter concerned society, history, politics, culture, language, law, morality, and collective identity. Libora Oates-Indruchová's study of the regulatory framework of Czechoslovak social sciences and humanities between 1968 and 1989 shows that control operated through policy, institutional mechanisms, and forms of regulation that shaped the limits of academic thought (*Oates-Indruchová, 2008*). The return of scientific freedom after 1989 therefore meant far more than permission to use different terminology. It meant the reopening of entire questions: the interpretation of the Prague Spring, the history of Stalinism, the meaning of civil society, the sociology of inequality, the philosophy of democracy, the legal basis of human rights, and the history of national and European identities. Previously marginalised theoretical traditions could be recovered. Foreign literature could be cited without ritual suspicion. Scholars could examine the socialist period as an object of research rather than as an ideological premise. In these disciplines, academic freedom had a reconstructive force because it altered the very horizon of thinkable problems. The Academy's social-science institutes thus became spaces where the past had to be studied and also overcome.

The natural and technical sciences faced a different but no less important version of the same problem. Their research content had often been less directly ideological, yet their institutional conditions had still been shaped by political power. Travel permissions, foreign collaborations, access to journals, acquisition of instruments, leadership positions, and opportunities for younger researchers could be affected by political reliability. The Academy's history notes that despite ideological pressure, Czech science preserved creative energy and reached the world scientific community in several cases, including Jaroslav Heyrovský's Nobel Prize and Wichterle's international recognition (*Academy of Sciences of the Czech Republic, n.d.*). After 1989, the question for these fields was how to convert surviving scientific capacity into open international competitiveness. Scientific freedom in physics, chemistry, biology,

mathematics, geology, engineering, and medicine therefore meant practical access to international communication as well as formal freedom of thought. It meant conferences, laboratories, joint projects, mobility, equipment, and peer-reviewed publication. It also meant that professional evaluation could be separated from political biography. The natural sciences thus show why autonomy cannot be reduced to ideological rhetoric. It also has material, organisational, and international conditions.

The reopening of publication freedom was one of the clearest signs of transformation. During normalisation, publication could be restricted by censorship, editorial caution, ideological review, and the anticipatory self-censorship of authors who knew the consequences of crossing invisible boundaries. The end of monopoly removed the official legitimacy of these controls, but it did not instantly create a mature culture of open scholarly debate. Journals, publishing houses, editorial boards, and review communities had to relearn pluralism. This was especially important because the old regime had often distorted scholarship by making some questions unsayable rather than by forcing every sentence to repeat doctrine. After 1989, academic publication became a field of recovery. Suppressed topics returned, forbidden authors were republished, and Czech scholars could reconnect their arguments with international debates. Yet the new freedom also required new standards. Open debate could not simply mean polemical reversal or ideological revenge. It had to become rigorous, documented, and capable of tolerating disagreement. In this respect, scientific freedom was not only permission to speak; it was the discipline of speaking responsibly.

Democracy also reopened the question of internal documentation and transparency. Under socialist conditions, many decisions affecting careers and institutes were hidden in personnel files, party records, confidential evaluations, and administrative correspondence. After 1989, academic communities needed access to the institutional memory of their deformation. Without documentation, rehabilitation could become arbitrary, accusation could become personal, and reform could lose historical precision. This is why archives, bulletins, meeting records, and internal reports became politically and scholarly important. They allowed the Academy to reconstruct how decisions had been made and by whom. They also provided material for a more honest institutional history. Democratic renewal therefore required an archival dimension. It demanded not only future-oriented reform but also the recovery of evidence about the past. In the Academy's case, the reopening of scientific freedom was inseparable from the reopening of institutional memory.

Autonomy after 1989 also had to be distinguished from corporatism. Some defenders of academic institutions could interpret autonomy as a shield against any external criticism, budgetary scrutiny, or public responsibility. Yet such an interpretation would have been too narrow for a democratic society emerging from authoritarian rule. The Academy had to defend scientific independence, but it also had to explain its public mission. The later CAS statutes formulate this balance by describing the Academy as a national research centre that enriches human knowledge, serves the welfare of the Czech Republic and its citizens, advances education and culture, and participates in research and development policy at the national and European levels (*Statutes of the Czech Academy of Sciences, 2006*). This language demonstrates that post-1989 autonomy did not mean withdrawal into a closed scholarly estate. It meant responsible self-government within a democratic public order. The Academy was expected to contribute to society precisely because it was free to follow scholarly standards. Public service and independence were not opposites. The transformation had to

show that the best service science could render to society was not obedience but truthful, competent, and internationally credible research.

This balance was particularly important because the early 1990s brought economic and institutional uncertainty. Václav Pačes, writing about the transformation of research in the Czech Republic, described the Academy's transformation as based on democratisation of its life, structural changes, and a redefinition of its place within the national research system (*Pačes, 1995*). The reopening of autonomy therefore occurred at the same time as pressures to restructure, reduce, evaluate, and justify research institutions. Freedom arrived together with financial insecurity and political debate about the future of Academy institutes. This created a paradox. Under socialism, the Academy had been constrained but institutionally protected by the state. After 1989, it became freer but also more exposed to political and economic argument. Autonomy had to be defended not only against ideological control but also against possible underestimation of basic research in a transforming market society. The new democratic order could not simply inherit the socialist research system unchanged. Yet it also risked damaging valuable scientific capacities if reform were driven only by short-term economic logic.

The separation between a research academy and a learned society was another aspect of the post-1989 redefinition of autonomy. The later Act on the Czech Academy of Sciences stated that the Academy supports the Learned Society of the Czech Republic, a civic association contributing to free, self-directed advancement of science, and represents it towards similar foreign scientific institutions (*Act No. 283/1992 Coll., 1992*). This arrangement was significant because the socialist academy model had often combined research institutes, academic hierarchy, and state-recognised scholarly prestige within a single structure. After 1989, it became necessary to clarify what the Academy was. Was it a network of research institutes, a national representation of science, a state authority, a learned society, or all of these at once? The Czech solution gradually separated some of these functions. The Academy remained a major public research organisation, while the Learned Society embodied a civic and honorary dimension of scholarly self-association. This separation helped modernise the meaning of academic authority. It also showed that autonomy could take multiple institutional forms, including public research bodies and voluntary scholarly associations.

The reopening of scientific freedom also affected the relation between expertise and politics. Under the old regime, expertise was often expected to legitimise predetermined political aims. After 1989, scholars could participate in public debate as experts without formally serving a ruling ideology. This was visible in economics, law, sociology, political science, history, environmental sciences, and technical policy. The Prognostic Institute of ČSAV, for example, became associated with several figures who entered post-1989 political and economic debates, showing how Academy-based expertise could move into public transformation. Yet this movement also created new risks. Scientific authority could become politicised in democratic competition just as it had been politicised in authoritarian control, though by different mechanisms. The reopening of autonomy therefore required an ethic of expertise. Scholars could advise governments, parties, civic movements, or ministries, but the credibility of science depended on maintaining the distinction between evidence and political loyalty. The Academy's post-1989 challenge was to become publicly relevant without becoming subordinate to any new political centre.

International cooperation offered one of the most concrete ways in which scientific freedom became visible. Act No. 283/1992 Coll. recognised that the Academy and its institutes could conclude agreements on international cooperation in scientific activities and technological development (*Act No. 283/1992 Coll., 1992*). This legal recognition was important because international exchange had previously been filtered by ideological suspicion and administrative control. After 1989, foreign cooperation could increasingly be justified by research quality, disciplinary relevance, and institutional strategy. For many scholars, this was one of the most tangible forms of freedom: the ability to travel, correspond, publish, invite colleagues, join projects, and participate in conferences without the same political obstacles. Internationalisation also created new standards of evaluation. Czech research could compare itself more directly with Western European and global science. This was demanding, sometimes painful, and not always favourable to inherited structures. Yet it was essential for transforming autonomy from a national declaration into a lived scientific condition. A free Academy had to be internationally open.

The question of democracy inside academic life also required attention to younger scholars and students. The Velvet Revolution itself had begun with student mobilisation, and this fact gave generational renewal special symbolic weight. In universities, the 1990 law recognised the right of members of the academic community to elect self-governing bodies and gave students forms of representation and participation (*Act No. 172/1990 Coll., 1990*). Although Academy institutes were not universities, the broader academic culture after 1989 made it difficult to ignore generational voice. Younger researchers had often suffered from blocked careers, limited international exposure, and dependence on senior patrons shaped by normalisation. Their freedom required more than rhetorical democracy. It required open competitions, mobility, doctoral cooperation with universities, access to foreign literature, and participation in new research programmes. The transformation of the Academy therefore had to be partly generational. It had to prevent the old personnel culture from reproducing itself under new political language. Scientific freedom would remain incomplete if younger scholars were free in principle but trapped in inherited hierarchies in practice.

The reopening of autonomy also brought with it the problem of lustration, moral judgement, and institutional trust. Czechoslovakia's wider post-communist transition involved debates over how to deal with former officials, collaborators, party functionaries, and members of the security apparatus. In academic life, this issue was complicated by the fact that intellectual compromise had many degrees. Some individuals had actively enforced ideological control. Others had adapted silently in order to continue research. Some had joined the Party as a career necessity, while others had used positions to protect colleagues or preserve institutes. Democracy did not remove the need for judgement; it made judgement more public and more contested. The Academy had to distinguish between guilt, adaptation, professional competence, and the practical need for continuity. This was one reason why autonomy and democracy could not be separated from institutional self-reflection. A self-governing academic community had to decide not only how to elect its bodies, but how to remember its behaviour under pressure. Scientific freedom required moral seriousness as well as legal reform.

The reopened question of autonomy was therefore also a question of time. The Academy had to relate to several pasts at once: the learned-society traditions of the 18th and 19th centuries, the First Republic, the Stalinist transformation of science, the reformist promise of the 1960s, the trauma of normalisation, and the institutional inheritance of late socialism. The official CAS

history explicitly claims the legacy not only of ČSAV but also of earlier predecessors, including the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts (*Academy of Sciences of the Czech Republic, n.d.*). This claim of long continuity was important because it prevented the Academy from being reduced to its socialist form. Yet continuity could not become an excuse for ignoring deformation. The post-1989 Academy needed a historical identity broad enough to include both achievement and failure. Autonomy was not simply a future programme. It was also a way of choosing which past should legitimise the institution. The democratic Academy could not ground itself in the party-state. It had to recover deeper scientific and civic traditions.

This temporal complexity explains why the reopening of freedom was not completed in 1989 itself. November and December 1989 destroyed the political monopoly, but institutional democracy required years of legislation, internal reform, evaluation, restructuring, and cultural change. The Czechoslovak Academy of Sciences continued until the end of 1992, when it ceased to exist with the dissolution of Czechoslovakia, and the Czech Academy of Sciences was established as its Czech successor (*Academy of Sciences of the Czech Republic, n.d.*; *Act No. 283/1992 Coll., 1992*). This chronology matters because it shows that the Velvet Revolution opened a process rather than delivered a finished model. The questions of autonomy, democracy, and freedom had to pass from revolutionary demand into institutional architecture. They had to survive the division of the federal state, the restructuring of research, the redefinition of funding, and the changing relationship between Academy institutes and universities. The speed of political change did not remove the slowness of institutional transformation. Scientific freedom had to be rebuilt through statutes, councils, budgets, competitions, and habits of debate. The Academy's transformation was therefore both sudden and gradual.

The later Statutes of the Czech Academy of Sciences preserve the mature language of this transformation. Their preamble refers to constitutionally guaranteed freedom of scientific research, to the long tradition of Czech scientific institutions, and to the Academy as a democratically organised network of autonomous scientific institutions (*Statutes of the Czech Academy of Sciences, 2006*). This wording is important because it combines three elements that had been separated or distorted under socialism: constitutional freedom, historical continuity, and democratic organisation. The Academy's identity after 1989 could not rest on one of these elements alone. Constitutional freedom without institutional self-government would be weak. Historical continuity without democratic reform would be evasive. Democratic organisation without scientific standards would be unstable. The new Academy therefore had to hold all three together. This was the deeper meaning of the reopening of autonomy. It was not merely the removal of ideological commands; it was the creation of a new institutional language in which Czech science could describe itself truthfully.

The reopening of questions of autonomy, democracy, and scientific freedom also changed the public image of the scientist. Under the socialist regime, the scientist was often presented as a builder of socialism, a contributor to planned development, and a participant in the officially defined progress of society. After 1989, the scientist could again appear as a citizen-scholar: independent, responsible, critical, and connected with international knowledge. This change did not abolish social responsibility, but it altered its meaning. Responsibility no longer meant loyalty to a predetermined ideological project. It meant accountability to evidence, society, ethical standards, and the broader community of science. For the Academy, this was a profound cultural shift. Its researchers had to speak not only to ministries and party bodies,

but to the democratic public, universities, foreign partners, students, media, and civil society. Such plurality made academic life more difficult, but also more honest. Scientific freedom became a public virtue rather than a private refuge.

At the same time, the post-1989 recovery of autonomy should not be romanticised. The end of ideological control did not automatically create ideal conditions for research. Institutes faced uncertainty, evaluation, financial pressures, generational tensions, and the need to redefine their place in a rapidly transforming state. Some disciplines had lost time and international contact. Some research fields had to be rebuilt almost from the beginning. Some scholars who had adapted to the previous system found the new environment disorienting. Others who had been excluded expected rapid justice and were disappointed by the compromises of institutional continuity. Democracy brought openness, but openness also brought conflict. Scientific freedom brought opportunity, but also competition and exposure. The Academy's transformation was therefore a demanding test of whether freedom could be converted into durable institutions.

Thus, the reopening of questions of autonomy, democracy, and scientific freedom after the Velvet Revolution was one of the decisive processes through which the Czechoslovak Academy of Sciences began to move beyond the socialist research system. The abolition of the Communist Party's constitutional monopoly removed the political foundation of ideological supervision, but the deeper transformation required institutional reconstruction, legal guarantees, self-governing bodies, open competitions, international cooperation, and a new moral vocabulary of scholarship. The Academy had to recover older Czech and European traditions of autonomous science while acknowledging the distortions of Stalinisation, normalisation, and party control. It had to democratise governance without abandoning expertise, defend public funding without accepting political subordination, and preserve scientific capital without preserving ideological dependence. In this sense, autonomy was not simply independence, democracy was not simply voting, and scientific freedom was not simply the absence of censorship. They were interconnected principles of institutional renewal. Their reopening made it possible for Czech science to transform inherited structures into a new public research order. This transformation did not end the Academy's problems, but it gave them a democratic and scholarly form in which they could finally be argued openly.

3. The Academy in the Public Atmosphere of Transformation

The Czechoslovak Academy of Sciences entered the public atmosphere of the Velvet Revolution as an institution that could neither remain outside the revolutionary drama nor dissolve itself into it. The events of November and December 1989 transformed the meaning of almost every public institution in Czechoslovakia, and the Academy was no exception. It had been a central structure of state-supported research, a custodian of scientific infrastructure, and a place where considerable intellectual work had survived even under political restriction. At the same time, it had been embedded in the socialist order, dependent on state planning, and exposed to ideological mechanisms that had shaped leadership, personnel policy, research priorities, and public language. This double position made the Academy's role in the transformation unusually sensitive. It was not a dissident organisation, yet it contained people whose biographies, research interests, and moral authority were connected with reformist or critical traditions. It was not simply a state bureaucracy, yet it had operated within a bureaucratic and ideological system. The public atmosphere of transformation therefore

forced ČSAV to appear before society not only as a scientific body, but also as a historical actor that had to explain its past and justify its future.

The revolutionary atmosphere was created with remarkable speed after the suppression of the student demonstration in Prague on 17 November 1989. What began as a student commemoration and protest became a nationwide movement that ended more than four decades of communist rule in Czechoslovakia (*Britannica, 2026*). The symbolic power of the event lay not only in the violence used against students, but also in the fact that the demonstration evoked the memory of Czech universities under Nazi repression in 1939. This connection between students, national memory, and civic courage made the academic world morally central from the first days of the revolution. Universities and theatres became early centres of mobilisation, while students and cultural figures helped produce a new public language of responsibility and non-violent pressure. The Academy could not avoid this atmosphere, because science in Czech lands had long been associated with national culture, education, public reason, and intellectual dignity. Researchers, editors, librarians, technicians, and institute staff were citizens of the same society that was filling squares, reading proclamations, forming committees, and demanding truth. Even when Academy institutes were not the visible epicentre of street politics, their internal life was reshaped by the same wave of public speech.

The most important feature of this atmosphere was the collapse of fear as an organising principle of public behaviour. Late-socialist academic life had taught many people to separate what could be said publicly from what could be thought privately. The revolution disrupted this separation almost overnight. Conversations that had previously remained in corridors, kitchens, samizdat circles, trusted friendships, or private correspondence entered meetings, petitions, declarations, and institutional debates. This change was particularly important for the Academy, because research institutes had long contained both official language and unofficial memory. Many scholars knew which colleagues had been excluded after 1968, which themes had been blocked, which institutes had been reorganised for political reasons, and which forms of professional excellence had survived under constraint. In the new public atmosphere, these memories became part of institutional reality. The Academy was no longer able to live only through its official reports and state-approved narratives. It had to confront a society in which moral memory had suddenly become audible.

The broader chronology of the revolution intensified this pressure. The formation of Civic Forum in Prague and Public Against Violence in Slovakia created new public centres of authority outside the Communist Party. The general strike of 27 November 1989 demonstrated that the protest movement had moved beyond students and dissidents into factories, offices, schools, theatres, and public institutions. Contemporary and later accounts emphasise the general strike as one of the decisive demonstrations of nationwide support for political change (*Havel Center, 2019*). The public meaning of the strike was direct: society no longer recognised the old regime as the unquestioned organiser of collective life. For Academy institutes, this meant that the old distinction between “political events” and “scientific work” became impossible to maintain. Researchers could continue laboratory work, archival processing, calculations, and editorial tasks, but the institutional framework that gave official meaning to those activities was changing in front of them. The Academy was drawn into the public transformation not because every scientist became a political activist, but because every scientific workplace had to decide how it understood legitimacy after the old centre of power had lost public trust.

In this atmosphere, the Academy's prestige became both an asset and a burden. Its scientific authority gave weight to any position it took, but its state-socialist inheritance made silence dangerous. A factory, theatre, university, or research institute could not behave as if nothing had happened after the squares had filled and the political language of the country had changed. Public expectation demanded moral orientation. The Academy had to show whether it belonged to the old order of controlled speech or to the emerging order of open civic responsibility. Yet this was not easy, because the Academy was not a single moral subject. It consisted of institutes with different traditions, disciplines, leaderships, internal conflicts, political histories, and levels of exposure to ideological pressure. A laboratory in physics, a historical institute, a biological station, an economic research group, and a philosophical workplace could not experience the revolution in exactly the same way. The public atmosphere simplified the moral landscape, but institutional reality remained complex. This tension between public expectation and internal plurality became one of the defining features of the Academy's transformation.

The social sciences and humanities were especially exposed to public scrutiny because they dealt directly with history, society, ideology, economy, law, philosophy, and culture. Under normalisation, these fields had often been required to reproduce or at least accommodate politically acceptable interpretations. Libora Oates-Indruchová's work on the regulation of social sciences and humanities under normalisation shows that censorship and control were embedded not only in spectacular prohibitions, but also in institutional frameworks, editorial routines, and limits on what could be publicly thought (*Oates-Indruchová, 2008*). After November 1989, these disciplines could not simply continue under new names. They had to participate in explaining the very system from which they were emerging. Historians had to revisit the post-war takeover, Stalinism, 1968, and normalisation. Sociologists had to examine civil society, stratification, public opinion, and the social basis of transformation. Economists had to address the future of planning, ownership, and reform. Philosophers and legal scholars had to return to questions of rights, democracy, citizenship, responsibility, and truth. In this sense, the public atmosphere of transformation demanded not only institutional reform of the Academy, but also intellectual reorientation of its most politically burdened disciplines.

At the same time, the Academy's natural and technical sciences entered the public atmosphere through a different logic. Their research had not always been ideologically legible in the same way as history or sociology, yet their institutional life had still been shaped by political filters. International travel, access to literature, leadership positions, equipment, contacts with Western colleagues, and the distribution of scientific opportunities had all been affected by the socialist order. The public transformation therefore gave natural scientists a new language in which to express professional frustrations that had not always appeared "political" in a narrow sense. Delays in instrumentation, isolation from international networks, bureaucratic planning, and dependence on politically approved channels could now be discussed as part of the same system that had limited public freedom. The Academy's official historical overview later recognised precisely this double picture: despite heavy ideological pressure until 1989, Czech science preserved creative energy and produced internationally recognised achievements (*Academy of Sciences of the Czech Republic, n.d.*). The public atmosphere of transformation therefore did not present the Academy only as a victim or only as a collaborator of the socialist system. It revealed a more complicated institution in which scientific value and political deformation had coexisted for decades.

The figure of Otto Wichterle gave this complicated situation a powerful symbolic centre. Wichterle embodied the possibility that the Academy could recover legitimacy through scientific excellence and moral continuity with the reformist tradition of the 1960s. He was internationally known as the inventor associated with soft contact lenses, and he had also been linked with the political and intellectual atmosphere of the Prague Spring. The Academy's historical overview states that he became the last chairman of the Czechoslovak Academy of Sciences after the fall of the Communist regime and that, during his chairmanship, the purposeful reconstruction of the research organisation as a whole was initiated (*Academy of Sciences of the Czech Republic, n.d.*). This mattered in the public atmosphere of transformation because personalities often carried institutional meaning. Wichterle's elevation suggested that professional authority and civic credibility could replace the compromised authority of normalisation-era hierarchy. The Academy could present itself not only as a structure inherited from socialism, but as a community capable of choosing a different moral and scientific centre. His role therefore helped bridge public expectation and institutional continuity.

The Academy's public situation was also shaped by the unusual cultural character of the Velvet Revolution. The revolution was not only a sequence of negotiations between opposition leaders and representatives of the old regime. It was also a mass civic performance involving theatres, students, writers, musicians, visual symbols, improvised media, public readings, and the ritual occupation of squares. James Krapfl's interpretation of the revolution stresses the importance of ordinary citizens and the attempt to create a new democratic political culture rather than reducing the story to elite bargaining (*Krapfl, 2013*). This cultural atmosphere mattered for the Academy because science, too, was expected to become part of a truthful public culture. The researcher was no longer supposed to be a technical specialist hidden behind institutional walls and official formulations. The researcher was invited, directly or indirectly, to become a responsible citizen within a society redefining itself. Public truth, civic dignity, and scientific truth did not become identical, but they resonated with each other. The Academy's transformation therefore unfolded in an environment where moral language was unusually strong, and where institutions were judged by their willingness to leave behind ritualised falsehood.

This moral atmosphere placed special emphasis on the relationship between science and truth. Václav Havel's broader political vocabulary, especially the contrast between living in truth and living within official falsehood, shaped the symbolic environment of the revolution. Although this vocabulary came from dissident political and philosophical reflection rather than from the Academy itself, it affected the expectations placed on intellectual institutions. If society was rejecting a system of public lies, then academic institutions had to ask how they had participated in, resisted, or survived that system. This question was particularly uncomfortable because scientific truth and public truth had not been equally endangered in every discipline. A mathematical proof or a chemical experiment could remain internally valid even within an unfree society, while historical interpretation or sociological research could be directly reshaped by ideological boundaries. Yet the Academy as a whole had to answer a broader question: could a scientific institution claim public trust if it did not examine the conditions under which it had spoken and remained silent? The atmosphere of transformation made this question unavoidable. It converted the moral language of the revolution into a demand for institutional self-knowledge.

The public atmosphere also changed the meaning of silence. During normalisation, silence could be a survival strategy, a form of passive resistance, an accommodation, or a sign of fear. After November 1989, silence increasingly looked like evasion. Institutions were expected to issue statements, hold meetings, elect new representatives, distance themselves from compromised forms of authority, and support democratic reform. For the Academy, this created a difficult problem because premature declarations could be seen as opportunistic, while hesitation could be seen as loyalty to the old order. Some researchers wanted immediate and public condemnation of ideological control. Others feared that revolutionary judgement could damage institutes, careers, and research continuity. Still others were uncertain where legitimate adaptation ended and culpable collaboration began. The public atmosphere compressed these differences and demanded clarity faster than institutional reflection could always provide it. This compression was one of the reasons why the first phase of transformation was emotionally intense.

The Academy's relationship with Civic Forum and the wider revolutionary movement should be understood in this context. Civic Forum was not a political party in the traditional sense during the first weeks of the revolution; it was a broad civic movement that gathered dissidents, intellectuals, reform communists, students, artists, professionals, and citizens demanding political change. Scholarship on the transition emphasises the movement's rapid emergence as a negotiating force and its role in channelling public pressure into political transformation (*Balík, Hloušek, Holzer, & Šedo, 2008*). Academy researchers could participate in this atmosphere as citizens, experts, advisers, local activists, or members of workplace initiatives. The public authority of scientific expertise became newly relevant, especially as the country moved towards reform of law, economy, administration, education, media, and international policy. However, this relevance also exposed the Academy to new forms of politicisation. Expertise that had previously served or survived the socialist state now entered a democratic field full of competing programmes. The Academy had to learn how to contribute to public transformation without becoming merely an auxiliary of any new political camp.

The Prognostic Institute of ČSAV illustrates this ambiguity particularly well, even though it was only one part of the broader Academy. In the late socialist period, prognostics had occupied a space where economic analysis, planning, reform thinking, and future-oriented policy language intersected. Several figures associated with this milieu later entered post-1989 public life and economic transformation. This fact shows that the Academy was not only an institution being transformed from outside. It also contained expert communities that helped provide language, personnel, and analytical frameworks for the transformation itself. Yet this role was ambivalent. On the one hand, it demonstrated that even under late socialism certain expert spaces had accumulated knowledge relevant to reform. On the other hand, it raised questions about continuity between socialist technocracy and post-socialist governance. The public atmosphere of transformation did not resolve this ambiguity; it made it politically visible. The Academy became both an object of reform and a supplier of reform expertise.

The revolutionary public sphere also created a new relationship between the Academy and the media. Under late socialism, official media were controlled and often reproduced the language of the regime. During the Velvet Revolution, the struggle over information became one of the most important elements of political change. Students, theatres, posters, leaflets, foreign broadcasting, public readings, and gradually changing television coverage helped break the monopoly of official interpretation. In this environment, academic voices could gain new importance as sources of credibility. Scholars could explain historical events, legal

possibilities, economic options, and social dynamics to a public hungry for interpretation. Yet the Academy had to move from an institutional culture of cautious publication into a much faster and more open communicative environment. This was not merely a technical change. It affected the public identity of science. Research could no longer remain enclosed within reports prepared for ministries or specialised journals; it had to justify itself in a society rediscovering public debate.

The atmosphere of transformation also redefined the Academy's relation to students and universities. The revolution was visibly student-driven in its early phase, and this placed moral pressure on all academic institutions. Universities became symbols of civic awakening, while the Academy represented accumulated research capacity and older scholarly authority. The two worlds were connected but not identical. Many Academy researchers had teaching links, supervised students, collaborated with university departments, or had themselves been affected by earlier university purges. After 1989, the public atmosphere pushed towards a renewed relationship between research and higher education. The university reforms of 1990, which restored self-governance and academic freedoms in higher education, formed part of the same transformation that later required the Academy to redefine its role (*Act No. 172/1990 Coll., 1990*). The Academy could not remain a separate island of institute-based science untouched by the democratic renewal of universities. Its public legitimacy now depended partly on how it related to education, young researchers, doctoral training, and the circulation of knowledge across institutional boundaries.

The Academy's public position was further complicated by the problem of rehabilitation. Society expected that people damaged by normalisation would be recognised, but institutions had to decide how this recognition could be made practical. Rehabilitation involved moral acknowledgement, personnel decisions, correction of records, renewed publication, and sometimes return to institutional life. It also involved difficult encounters between those who had been excluded and those who had remained inside the system. In the public atmosphere of 1989–1990, the demand for justice could be strong and immediate, but institutional mechanisms were still uncertain. The Academy had to deal with cases that differed in character: dismissed reformers, scholars forced into less visible work, researchers denied promotion, authors blocked from publication, and emigrants or internal exiles whose intellectual influence had been suppressed. Public transformation made these cases visible, but visibility did not automatically solve them. The Academy needed procedures that could prevent both moral amnesia and arbitrary accusation. This was one of the first practical tests of democratic institutional culture.

The public atmosphere also intensified the question of generational change. Younger researchers and students had experienced the late-socialist system differently from older scholars who remembered 1948, the thaw, Prague Spring, and normalisation. For younger people, 1989 could appear primarily as an opening of possibilities: travel, foreign study, free publication, new theoretical approaches, and participation in international research. For older reform-oriented scholars, it could also mean delayed vindication after years of exclusion or marginalisation. For those who had built careers under normalisation, it could produce anxiety, defensiveness, or a desire for pragmatic continuity. These generational experiences met inside Academy institutes and shaped the public mood of reform. Transformation was not only a conflict between communists and anti-communists. It was also a negotiation between different memories of scientific life. The public atmosphere made these memories politically

charged because each generation could claim a different relationship to the past and future of Czech science.

The Academy's public role had to be negotiated in relation to the state that was itself being reconstructed. In December 1989, Czechoslovakia moved rapidly towards a government no longer dominated by the Communist Party, and Václav Havel was elected president at the end of that month. The removal of the constitutional provision on the leading role of the Communist Party had already destroyed the legal-symbolic foundation of party rule (*Havel at Columbia, 2006*). For the Academy, this meant that the institutional environment was changing faster than long-term research organisations normally change. Ministries, parliament, universities, media, civic movements, and political leadership were all being reconfigured. The Academy therefore had to reform itself while the rules of the broader public order were still unsettled. This gave the transformation an improvisational quality. Many decisions had to be made before the final legal shape of the post-socialist research system was clear. The Academy lived through the revolution not as a spectator of state reform, but as one of the institutions whose future depended on how that reform would be defined.

A crucial feature of the public atmosphere was the combination of euphoria and uncertainty. The end of ideological control generated hope, but hope did not answer questions about budgets, institute structures, personnel, international competitiveness, or the future of large state-supported research organisations. Researchers could celebrate freedom while also fearing institutional collapse. Laboratories still needed funding, equipment, maintenance, and long-term planning. Archives and collections had to be protected. International obligations had to be maintained. Large research projects could not be remade by revolutionary enthusiasm alone. The Academy's public transformation therefore required an argument against two opposite dangers: the danger of preserving the old system under new language, and the danger of destroying scientific capacity in the name of rupture. The public atmosphere of 1989 made the first danger highly visible, but the second danger became increasingly important as institutional and economic reforms advanced.

The Academy's later development shows that preservation of scientific capacity became one of the decisive concerns of transformation. The Czech Academy's institutional history stresses that after 1989 the purposeful reconstruction of the research organisation began under Wichterle, and that the Czech Academy of Sciences was later established by Act No. 283/1992 Coll. as the Czech successor of the former Czechoslovak Academy of Sciences (*Academy of Sciences of the Czech Republic, n.d.; ALLEA, 2015*). This succession was important because it indicates that the solution was not abolition of institute-based academic science. The Academy had to be transformed, democratised, and reoriented, but its research infrastructure remained valuable. Public atmosphere alone could not produce scientific continuity; legal and organisational decisions had to do so. Yet those decisions were shaped by the atmosphere of the revolution, which demanded that continuity be justified by scholarly value rather than by bureaucratic inertia. The Academy survived the transformation because it could present itself as more than a relic of socialism. It could claim deeper historical roots, real scientific achievements, and future relevance in democratic society.

This claim to deeper history was especially important in public discourse. The Academy could connect itself not only to ČSAV, founded in the socialist period, but also to older Czech learned traditions. Its official historical overview identifies earlier predecessors such as the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts, thereby placing the

modern Academy within a much longer history of Czech scientific institutionalisation (*Academy of Sciences of the Czech Republic, n.d.*). Such historical framing mattered because the public atmosphere after 1989 was full of attempts to recover pre-communist, democratic, national, and European continuities. The Academy needed to show that it was not merely an institution born of Stalinist restructuring. At the same time, this historical claim had to avoid becoming an escape from responsibility for the socialist period. The Academy's legitimacy depended on both memory and honesty. It had to say, in effect, that its history was older than communism, but that the communist period had left real institutional marks. This balance between long continuity and critical self-reflection was central to its public rehabilitation.

The international dimension of the public atmosphere should also be emphasised. The Velvet Revolution unfolded in a Europe already transformed by events in Poland, Hungary, East Germany, and the Soviet bloc more broadly. Czechoslovakia's revolution was watched abroad as part of the wider collapse of communist power in Central and Eastern Europe. For the Academy, this meant that transformation was not only domestic. Foreign academies, universities, foundations, publishers, and research organisations were potential partners in the reintegration of Czech science into open international networks. The public mood of "return to Europe" had scientific consequences. It encouraged researchers to renew contacts, publish internationally, attend conferences, and participate in collaborative projects without the previous ideological suspicion. Yet internationalisation also brought comparison, competition, and exposure to standards that could be demanding. The Academy had to present itself to the world not simply as newly free, but as scientifically credible. Public transformation thus connected civic liberation with the professional challenge of re-entering global science.

The public atmosphere of transformation also affected the Academy's internal language of purpose. Under socialism, scientific work was often justified through the vocabulary of planned development, socialist progress, productive forces, and service to the state. After 1989, these formulas quickly lost authority. The Academy needed new ways to describe why society should support basic research, long-term inquiry, humanities scholarship, and specialised institutes. It could no longer rely on party-state ideology, but neither could it reduce science only to immediate commercial utility. This was a difficult rhetorical and institutional shift. Researchers had to explain that free science served society precisely because it was not directly subordinated to political instruction. They had to defend curiosity, expertise, archives, laboratories, and slow research in a society preoccupied with rapid political and economic reform. The public atmosphere of transformation therefore required a new social contract for science. The Academy had to become publicly accountable without surrendering the autonomy that made serious research possible.

The public also expected the Academy to participate in the reinterpretation of recent history. The revolutionary moment did not only look forward to democracy; it also looked backwards to Stalinism, political trials, 1968, emigration, censorship, and normalisation. Institutes concerned with history, sociology, law, philosophy, literature, and political thought had to help society understand these experiences. This was not merely a scholarly task. It had civic urgency because democratic society needed knowledge of the mechanisms that had distorted public life. The Academy's researchers could contribute archival work, documentary editions, analytical studies, public lectures, and expert commentary. Yet they also had to be aware that their institution had been part of the system being studied. This gave their work a reflexive character. To analyse normalisation was also, in many cases, to analyse the environment in

which one's institute had functioned. The public atmosphere made such self-reflection necessary and often painful.

One of the subtler changes produced by the public atmosphere was the revaluation of expertise. In late socialism, expertise had often been valued when it served planning, production, administration, or ideological legitimation. After 1989, expertise was needed for constitutional reform, economic transformation, federal questions, environmental policy, education reform, legal rehabilitation, and international reintegration. Academy-based specialists could therefore acquire renewed public importance. However, the meaning of expertise changed. It could no longer derive authority from proximity to the state apparatus. It had to derive authority from evidence, professional reputation, openness to criticism, and the ability to speak clearly to a democratic public. This change was demanding because many experts had been trained in institutions where public accountability was weak and political caution was habitual. The Academy had to adapt from a system in which expertise often moved vertically through administrative channels to one in which expertise circulated horizontally through media, public debate, policy discussion, and international peer communities.

The emotional atmosphere inside the Academy must not be imagined as uniform enthusiasm. Liberation can produce joy, but it can also produce unease, exhaustion, resentment, and fear. Some researchers felt vindicated after years of exclusion or silence. Others feared exposure or loss of position. Many were simply uncertain how to behave in a situation where old rules had collapsed and new ones were not yet stable. Institute meetings could become arenas of moral judgement, practical anxiety, and strategic calculation. People had to speak with colleagues whom they had distrusted for years. They had to reconsider directors, editorial boards, party histories, personnel files, and research programmes. The public atmosphere of transformation entered these rooms, but it did not erase personal histories. For that reason, the Academy's transformation was not only institutional and legal. It was also interpersonal, emotional, and ethical.

The problem of continuity and discontinuity was already present in this public atmosphere, even before it became a fully elaborated institutional question. Society demanded discontinuity from ideological monopoly, censorship, and political supervision. Science required continuity of knowledge, equipment, archives, collections, laboratories, and trained personnel. The Academy stood exactly at the point where these two demands intersected. If it changed too little, it would look like a survival of the old order. If it changed recklessly, it could lose accumulated scientific capital. The public atmosphere of 1989 made both options visible but did not provide a ready formula for balancing them. This is why the Academy's subsequent restructuring had to proceed through assessment, leadership change, legal reform, and redefinition of mission rather than through pure revolutionary destruction. The public mood created the imperative; institutional work had to find the method.

The Academy's public transformation was also linked with the reappearance of civil society. Civic Forum, student committees, professional associations, independent publications, and public meetings created spaces outside the party-state. For decades, official organisations had claimed to represent society, but their representativeness had been politically managed. After November 1989, society began to represent itself through improvised and plural forms. The Academy had to relate to this new civil society, not simply to the state. Researchers could join associations, speak at public meetings, contribute to independent media, and advise civic initiatives. This widened the social role of science. It also reduced the distance between

scholarly institutions and public life. The Academy's authority had to be earned in a society where citizens were no longer only recipients of official knowledge but participants in public interpretation.

The public atmosphere of transformation also revealed the importance of institutional trust. Trust had been damaged by decades of ideological language, censorship, and political selection. Restoring trust required more than replacing a few leaders. It required visible change in procedures, openness, communication, and moral orientation. The Academy had to show that its institutes could operate according to scholarly rather than party criteria. It had to demonstrate that research priorities could be discussed professionally, that excluded scholars could be acknowledged, that younger researchers could have opportunities, and that international cooperation could be opened. Trust was not restored immediately. It had to be built through repeated acts of transparency and competence. The public atmosphere after 1989 made trust both urgent and fragile. It was urgent because society needed credible institutions; it was fragile because every compromised continuity could be interpreted as betrayal.

The Academy's position during the transformation was therefore different from that of purely political institutions. A parliament, party committee, or ministry could be visibly reconstituted by law, resignation, election, or appointment. A research academy required slower forms of transformation because scientific value is embedded in long-term work. A laboratory cannot be democratised in the same way as a political assembly, and an archive cannot be reformed by rhetoric alone. Yet the Academy could not use the complexity of science as an excuse to avoid public accountability. Its transformation had to be both slower and deeper. It needed to change its governance, but also its assumptions about public speech, professional legitimacy, disciplinary openness, and social responsibility. This is why the Academy's experience is historically important. It shows how a knowledge institution passes through revolution not as a crowd, not as a party, and not as a ministry, but as a dense community of people, instruments, memories, and methods.

The end of 1989 therefore placed the Academy in a liminal condition. It was still ČSAV, an institution formed and shaped within the socialist research system, but it was already being pushed towards a different identity. The old ideological language no longer worked, but the new legal structure had not yet been fully established. The old leaders could be challenged, but new authority still had to be constructed. Public enthusiasm was strong, but research life required continuity. International doors were opening, but institutional resources were uncertain. Moral judgement was necessary, but institutional fairness was difficult. This liminality explains why the Academy's transformation cannot be reduced to a single administrative decision. It was a process in which public atmosphere, moral pressure, scientific self-interest, civic responsibility, and legal reform interacted over several years.

Thus, the Academy in the public atmosphere of transformation stood at the intersection of civic revolution and institutional reconstruction. The Velvet Revolution made it impossible for ČSAV to continue as if science were separated from public freedom, moral memory, and democratic legitimacy. The Academy had to respond to the same atmosphere that had mobilised students, theatres, workers, dissidents, professionals, and ordinary citizens, but it had to do so while preserving the long-term conditions of scientific work. Its public role was therefore marked by a double imperative: to reject ideological subordination and to protect genuine scientific capital. The symbolic leadership of Otto Wichterle, the recovery of older Czech scientific

traditions, the pressure for rehabilitation, the reopening of international contacts, and the demand for truthful public language all formed part of this transformation. The Academy was not merely carried along by the revolution; it became one of the institutions through which the revolution had to become durable, organised, and intellectually serious. Its experience shows that political transformation is incomplete unless knowledge institutions learn to speak freely, remember honestly, govern themselves responsibly, and serve society without surrendering scholarly autonomy.

Internal Reassessment of ČSAV

1. Re-evaluating Leadership, Institutes, and Research Priorities

The internal reassessment of the Czechoslovak Academy of Sciences after November 1989 began with a fundamental question of legitimacy. It was not enough to say that the political regime had fallen and that science was now free in principle. The Academy had to ask whether its leadership, institutes, research programmes, internal hierarchies, and financial mechanisms could still be justified in a democratic and intellectually plural environment. ČSAV had accumulated a vast body of scientific capital, but it had also been governed through structures shaped by the socialist state, the Communist Party's influence, and the legacy of normalisation. The task was therefore not simple abolition, but critical sorting. Certain arrangements had to be rejected because they represented ideological control, administrative rigidity, or personnel dependence on political loyalty. Other arrangements had to be preserved because they contained real scientific expertise, irreplaceable laboratories, archival collections, international reputations, and trained research communities. This made the reassessment of ČSAV one of the most delicate institutional exercises of the early transformation. It was not a purely moral purge, not a purely bureaucratic reform, and not a purely economic rationalisation. It was a combined process of democratisation, professional evaluation, structural redesign, and symbolic cleansing. The Academy had to discover how much of itself belonged to science and how much belonged to the political order that had just collapsed.

The first object of reassessment was leadership. Under late socialism, leadership inside ČSAV had not been reducible to scholarly distinction, although scientific distinction could certainly coexist with administrative authority. Directors, vice-presidents, scientific secretaries, presidium members, and heads of departments operated in an environment where political acceptability shaped institutional careers. After the Velvet Revolution, this situation immediately became unstable. The old leadership could no longer rely on the authority of the party-state, and academic communities increasingly demanded elected representation, transparency, and professional accountability. The official history of the present Czech Academy notes that decision-making mechanisms under the previous regime had been under totalitarian control, and that normalisation was especially severe for ČSAV because the party leadership took revenge for the role played by Academy social-science groups in the Prague Spring reform efforts (*Academy of Sciences of the Czech Republic, n.d.*). That statement is

essential for understanding why leadership reassessment after 1989 was not merely administrative. It concerned the moral origin of authority itself. A director who had once appeared as a normal functionary could suddenly appear as a representative of a compromised order. A scholar once marginalised as politically unreliable could suddenly embody the restored legitimacy of scientific judgement.

The speed of the first leadership changes shows how quickly internal reassessment began. According to the later reconstruction of the transformation of ČSAV into the Czech Academy of Sciences, soon after 17 November 1989 there were strong activities within the scientific community directed towards transforming ČSAV. These activities were coordinated by a group of young workers who established the Coordinating Centre of Civic Activities of ČSAV, and from this initiative there emerged in the second half of December 1989 the Chamber of Elected Representatives of ČSAV workplaces. The same account records that an extraordinary general assembly of ČSAV on 12 December 1989 took note that the Presidium of ČSAV had resigned on 6 December 1989 and that the Chamber of Elected Representatives had been constituted (*Blažka et al., 2014*). This was a decisive gesture because it broke the impression that transformation would be conducted only from the top. The resignation of the Presidium indicated that the old form of central leadership could not simply continue by inertia. The emergence of elected workplace representatives suggested that institutes themselves were becoming political and professional actors. The reassessment of leadership therefore began as a movement from appointed authority towards representative authority. It did not yet create a fully stable democratic structure, but it opened the institutional space in which such a structure could be imagined.

The Chamber of Elected Representatives was important because it expressed the new principle that the Academy's workplaces should speak through their representatives. This was a profound change after decades in which institute life had been shaped by hierarchical command, party organisation, and administrative dependence. The Chamber did not merely symbolise protest; it became an instrument for coordinating demands from individual institutes. It also worked with a group composed of members of the existing Presidium and several academicians loosely connected with the Circle of Independent Intelligentsia, which suggests that the transformation involved both younger activists and figures from older scholarly authority (*Blažka et al., 2014*). This mixture was historically significant. The transformation could not be conducted only by those who had been outside official structures, because the Academy's institutional memory and administrative complexity required experienced actors. Yet it also could not be entrusted only to those who had governed under the previous system, because that would have reproduced precisely the problem of legitimacy. The Chamber therefore represented a transitional mechanism between revolution and administration. It allowed reform pressure from below to enter the formal management of the Academy. In doing so, it began the practical re-evaluation of leadership as something that had to be earned through representation, not inherited from the normalisation hierarchy.

The Smolenice Colloquium of February 1990 broadened this internal reassessment into a debate about the future system of research and higher education. Representatives of universities, ČSAV workplaces, departmental institutes, and ministries participated in this meeting, where basic principles of a new system of research and higher education were formulated. The so-called Smolenice model was general, but its language was revealing: it called for the recovery of science and education, treated science as part of national culture, and imagined science as an autonomous, open, and temporally variable system (*Blažka et al.,*

2014). These principles affected the reassessment of ČSAV because they displaced the old understanding of research as a planned sector of socialist development. The Academy's institutes could no longer be evaluated simply as units within a state plan. They had to be assessed as parts of a wider cultural, educational, and scientific ecology. This meant that research priorities had to be judged not only by administrative continuation, but by intellectual openness, disciplinary relevance, international standards, and public value. The very vocabulary of the Smolenice debate shows that the Academy's transformation was not merely about personnel. It was about the conceptual foundation of scientific organisation.

The creation of the twelve-member Committee for the Management of ČSAV Workplaces in May 1990 marked a further step from revolutionary discussion to operational control. At the plenary session of the Chamber of Elected Representatives of ČSAV workplaces on 7 May 1990, this committee was established, and from 1 June 1990 it took over decision-making on all important questions that had been within the competence of the Presidium and concerned the management of institutes and other workplaces. The same reconstruction records that, as of 1 June 1990, new directors were appointed in 36 institutes and workplaces of ČSAV (*Blažka et al., 2014*). These changes were not marginal. They show that the reassessment of leadership had become a concrete institutional practice. The appointment of new directors was a direct intervention into the everyday life of research institutes. It meant that the Academy was attempting to replace compromised or outdated authority with leadership more compatible with the post-revolutionary order. At the same time, such changes had to preserve the operational continuity of research. A laboratory, archive, or long-term project could not be governed by revolutionary feeling alone. Leadership reform therefore had to combine moral renewal with practical competence.

The election of Otto Wichterle as chairman gave the reassessment of leadership a powerful symbolic and practical form. At the 59th General Assembly of ČSAV on 27–28 June 1990, a new 26-member Presidium was elected, with Otto Wichterle as chairman, and with Vladislav Hančil, Miroslav Katětov, Viktor Knapp, Petr Lukáš, Ladislav Macho, and Milan Straškraba among the vice-chairmen, while Pavel Vlasák became scientific secretary (*Blažka et al., 2014*). Wichterle's leadership was significant not only because he was an internationally recognised scientist. His biography carried the memory of Prague Spring reformism, the political consequences of normalisation, and the possibility of moral rehabilitation through scientific authority. The official history of the Academy also identifies him as the last chairman of ČSAV after the fall of the Communist regime and states that the purposeful reconstruction of the research organisation as a whole began during his chairmanship (*Academy of Sciences of the Czech Republic, n.d.*). The choice of Wichterle therefore expressed a reversal of the normalisation order. A person associated with intellectual independence now stood at the head of an institution that had previously been filtered through ideological reliability. The reassessment of leadership was thus not only procedural, but also symbolic. It told the scientific community and the public that the Academy wished to ground authority in scholarship, civic credibility, and reformist memory.

The reassessment of institutes was even more complex than the reassessment of central leadership. ČSAV consisted of many workplaces with different histories, disciplines, equipment, archives, personnel structures, and degrees of political exposure. Some institutes had been directly damaged by normalisation, especially in the social sciences and humanities. Others had preserved strong scientific communities despite political pressure. Some possessed unique laboratories or collections that could not be easily transferred elsewhere.

Others appeared oversized, duplicated, methodologically outdated, or too closely connected with socialist planning mechanisms. The Academy therefore had to avoid two opposite errors. It could not treat all institutes as guilty simply because they had existed under socialism. It also could not treat institutional survival as proof of scientific necessity. The re-evaluation of institutes had to ask what each workplace actually contributed to science, society, education, and international cooperation. This was a more demanding criterion than political loyalty, and it required evidence rather than slogans.

The archive description of Otto Wichterle's presidential secretariat confirms the range of issues involved in this reassessment. The Masaryk Institute and Archives of the Czech Academy of Sciences describe the Secretariat of Academician Otto Wichterle, ČSAV President, covering the period 1989/1990–1992, as a primary documentation source for the operation of ČSAV in the turning-point period after November 1989. The same archival description lists materials concerning the transformation of ČSAV, matters relating to ČSAV members, correspondence with central authorities, foreign agendas, and problems of individual workplaces (*Masaryk Institute and Archives of the CAS, n.d.*). This archival inventory is valuable because it shows that transformation was not an abstract discourse. It generated correspondence, reports, negotiations, workplace problems, foreign contacts, and documentary traces. The reassessment of institutes had to be conducted through files, meetings, letters, statistics, and arguments. It involved questions of property, staff, finance, scientific performance, discipline-specific necessity, and political inheritance. It also shows why the transformation of ČSAV cannot be reduced to one public declaration or one law. It was an archive-producing process because it was an institution-changing process.

Research priorities had to be reconsidered at the same time as leadership and institutes. Under socialism, research planning had been shaped by state priorities, ideological expectations, sectoral needs, Comecon cooperation, and the internal logic of Academy disciplines. After 1989, priorities could no longer be justified by the same planning vocabulary. The Academy had to ask which fields deserved continued support because of their scientific excellence, which needed renewal because they had been ideologically distorted, and which should be reduced or reorganised because their old rationale had disappeared. In the humanities and social sciences, the problem was often conceptual and methodological. Disciplines such as history, sociology, law, philosophy, economics, and political thought had to reopen questions suppressed or distorted during normalisation. In the natural and technical sciences, the problem was often one of international competitiveness, infrastructure, and the shift from insulated or administratively planned work towards open collaboration and peer evaluation. Across the Academy, the redefinition of priorities required a new balance between basic research, applied relevance, education, and public responsibility. It also required new funding mechanisms capable of supporting excellence rather than merely preserving inherited structures.

The introduction of an internal grant system was one of the most important early instruments for changing research priorities. In August 1990 provisional statutes of ČSAV were approved, and on 3 September 1990 the Committee of the Presidium for the Management of ČSAV Workplaces discussed a detailed proposal for an internal grant system for ČSAV workplaces in 1991. The proposal envisaged that fifteen per cent of the total material non-investment budget of all scientific workplaces and seven per cent of wage funds would be reserved in the form of grants for supporting scientific tasks. It also stated that ČSAV would introduce its Grant Agency of ČSAV before the establishment of a nationwide grant system, after which the content of the

Academy agency would be transferred to the national level and the Academy agency would end its activity (*Blažka et al., 2014*). This was a major shift because it moved at least part of research funding away from automatic institutional allocation. Grant funding introduced competition, project formulation, evaluation, and justification. It encouraged researchers and institutes to think in terms of tasks, outcomes, and peer judgement. The system was provisional, but it anticipated a broader post-socialist transformation of Czech research funding.

The grant principle also had a deeper institutional meaning. It challenged the inherited assumption that an institute's budget should follow from its position in an administrative hierarchy. Under the old system, stability could become a mechanism of stagnation because an institute might continue receiving resources even if its research agenda had lost vitality. Competitive or semi-competitive funding did not automatically solve this problem, but it forced institutes to articulate scientific claims more clearly. It also created space for younger researchers, new topics, interdisciplinary work, and research groups that might not have held strong positions in the old hierarchy. At the same time, grant funding carried risks. It could encourage short-term project thinking, weaken long-term programmes, and create insecurity in fields where results required many years of investment. The early internal grant system therefore reveals the ambivalence of post-1989 reform. It was a necessary instrument for breaking bureaucratic inertia, but it had to be balanced against the need to preserve institutional conditions for fundamental research. This balance became one of the continuing dilemmas of Czech research policy.

The reassessment of institutes soon became connected with evaluation of scientific performance. In 1991, the 60th General Assembly of ČSAV instructed the Committee of the Presidium for the Management of ČSAV Workplaces, in cooperation with a working group of the Chamber of Elected Representatives, to ensure an objective and justified evaluation of the scientific activity and performance of ČSAV workplaces for 1991 and to use the results in distributing institutional resources for 1992. The same resolution called for an assessment of the scientific performance of Academy workplaces by an independent group of foreign experts and recommended that comparable foreign expertise be carried out across the entire scientific base of Czechoslovakia (*Blažka et al., 2014*). This was a decisive change in the internal logic of the Academy. Evaluation was no longer to be only administrative or ideological. It was to become professional, comparative, and potentially international. The appeal to foreign experts was especially significant because it recognised that Czech science had to be judged by standards extending beyond national and post-socialist self-description. It also reflected the desire to escape from internal factionalism. Foreign evaluation could provide distance, although it could never fully remove disciplinary and institutional disagreements.

The use of evaluation results for budget distribution shows how the reassessment of research priorities became material. It is one thing to declare that science must be excellent and autonomous; it is another to redistribute money accordingly. The Academy had to decide whether institutional funding should preserve all workplaces equally, protect historically important fields, reward internationally competitive research, or support socially urgent transformation topics. No solution could satisfy all these aims at once. Evaluation linked scientific judgement with financial consequence, and therefore made internal debate more serious. Institutes could no longer treat reform as a matter of language alone. Their future depended on whether their work could be defended before evaluators, foreign experts, elected representatives, and Academy bodies. This introduced a new culture of institutional accountability. It also produced anxiety because evaluation in a transforming environment

could be experienced as both professional scrutiny and existential threat. The Academy was learning that democracy and autonomy did not remove judgement; they changed who could judge, by what criteria, and with what evidence.

The reassessment of economic research demonstrates how disciplinary priorities could lead to institutional rupture. In August 1991, the Committee of the Presidium for the Management of ČSAV Workplaces discussed a detailed report by a commission evaluating the results and future organisation of economic research in ČSAV. It proposed abolishing the Economics Institute, the Prognostic Institute, and the Social-Economic Institute as of 31 December 1991; after objections from those institutes were considered, the decision was made to abolish them and establish instead the National Economic Institute of ČSAV (*Blažka et al., 2014*). This case was especially sensitive because economics had become central to the public transformation of the country. The reform of economic research could not be separated from the broader debate about economic transition, market reform, privatisation, and the role of expert knowledge in politics. František Turnovec later observed that the original idea of returning research fully to universities failed, that the Academy survived in reduced and more democratic form, and that the change significantly reduced the infrastructure of economic research (*Turnovec, 2002*). This example shows that reassessment could produce genuine renewal and genuine loss at the same time. Institutional change did not always preserve all forms of expertise that had accumulated under late socialism.

The economic-institute case also reveals the difference between political relevance and scientific legitimacy. The Prognostic Institute and related economic workplaces had produced personnel and analyses relevant to the transition, but that did not automatically guarantee their continuation in inherited form. Post-1989 economics had to reconnect with international standards, new teaching structures, publication in competitive journals, and methodological pluralism. Turnovec described the early 1990s as a moment in which Czech economics had to overcome isolation from world standards, enter the international academic market, and reopen topics and methodological approaches after restrictions and censorship disappeared (*Turnovec, 2002*). This disciplinary transformation was not merely academic; it was connected with the economic transformation of the country. Yet the Academy's reassessment raised the question of whether a research institute should primarily monitor the national economy, advise policy, publish internationally, train doctoral students, or combine these tasks. Different answers implied different institutional designs. The dissolution and reorganisation of economic institutes therefore reflected a broader uncertainty about the proper place of expertise in a democratic and market-oriented society. It also foreshadowed tensions that would recur in other fields between public service, scholarly publication, and institutional survival.

The social sciences and humanities more generally faced a special burden in the re-evaluation of research priorities. These fields had to recover intellectual pluralism after decades in which Marxist-Leninist frameworks, censorship, and ideological caution had shaped acceptable discourse. However, recovery could not mean simple replacement of one doctrine by another. It required reconstruction of methods, access to foreign literature, renewed publication culture, archival openness, and re-engagement with international debates. Institutes concerned with history, sociology, philosophy, law, literature, linguistics, economics, and political thought had to demonstrate that they could produce scholarship suitable for democratic society. They also had to examine the very period through which they had lived. This made their reassessment reflexive. A historian of normalisation might be working in an

institute whose personnel history had been marked by normalisation. A sociologist of transformation might be analysing social change while the sociological profession itself was undergoing transformation. The reassessment of priorities in these fields therefore required intellectual courage as well as organisational reform.

In the natural sciences, the reassessment was different but no less demanding. Strong institutes in chemistry, physics, biology, mathematics, geology, and related fields could point to achievements that had survived the socialist period and sometimes gained international recognition. The official Academy history cites Jaroslav Heyrovský's Nobel Prize and Otto Wichterle's worldwide recognition as evidence that Czech science reached the international community even under pressure (*Academy of Sciences of the Czech Republic, n.d.*). Yet survival of excellence did not exempt these fields from reassessment. Many institutes had to renew equipment, expand international cooperation, open career structures, and compare their output with global standards. Some research areas were tied to industrial or state priorities that changed rapidly after 1989. Others needed protection because basic research could be threatened by short-term economic reform. The Academy therefore had to distinguish between genuine scientific continuity and administrative inertia. It had to support fields that were internationally strong, revive fields harmed by isolation, and reconsider areas whose socialist rationale had disappeared. This required not only political liberation but strategic judgement.

The re-evaluation of institutes was also shaped by the federal structure of Czechoslovakia and the approaching dissolution of the state. Between 1989 and 1992, research and development governance involved federal and republic-level decision-making, and the future of ČSAV was inseparable from the future of the federation. The appendix on the transformation of ČSAV records that in 1992 the Presidium discussed the preparation of laws in the research and development field, including laws concerning the Czech Academy, the Learned Society, and science and technology; it also notes that the Czech National Council approved the law on the Czech Academy of Sciences on 6 May 1992, while its effectiveness was tied to the transfer of property and obligations from ČSAV to the Czech Republic from 1 January 1993 (*Blažka et al., 2014*). This legal-political context affected institutional reassessment because institutes had to be placed within a future Czech research system rather than an existing federal structure. The end of ČSAV was therefore not simply a consequence of internal reform. It was connected with the constitutional transformation of the state itself. The Academy had to prepare for legal succession, property transfer, budgetary relocation, and new governance. This made the evaluation of institutes even more urgent because the future Czech Academy could not inherit every structure without question.

The legal design of the Czech Academy of Sciences institutionalised some of the outcomes of this reassessment. Act No. 283/1992 Coll. established the Czech Academy of Sciences with its seat in Prague and stated that the Academy performs research through its institutes. It also provided that the Academy and its institutes may conclude agreements on international cooperation in scientific activity and technological development. The act defined the Academy as an organisational body of the Czech Republic financed from the state budget, and gave it, for budgetary purposes, the status of a central authority establishing its institutes as public research institutions (*Act No. 283/1992 Coll., 1992*). These provisions were not merely technical. They confirmed that the institute-based model would survive, but in a new legal and political form. The Academy would not become only a learned society, nor would all research be transferred to universities. At the same time, the institutes would exist within a legal

framework requiring self-government, public accountability, and state-budget responsibility. The reassessment of ČSAV therefore ended neither in liquidation nor in simple continuation. It produced a reconstituted public research organisation.

The self-governing bodies defined in the new legal framework also reflected lessons from the reassessment of leadership. Act No. 283/1992 Coll. identified the Academy Assembly, the Academy Council and its Presidium, the President of the Academy, and the Council for Sciences as the bodies of the Academy. It described the Assembly as the supreme self-governing body and included among its members institute directors, university representatives, outstanding domestic and foreign scientists, elected representatives of institutes, and representatives of state administration, industry, commercial circles, and banks (*Act No. 283/1992 Coll., 1992*). This composition reveals the attempted balance between professional self-government and public connection. The Academy was to be governed by scientific actors, but not as a closed estate. It would include universities and representatives of wider society, thereby acknowledging that science belonged to a broader national research and innovation system. The inclusion of elected institute representatives was especially important after the experience of the Chamber of Elected Representatives. It translated revolutionary workplace representation into a more stable institutional form. The leadership crisis of 1989 thus contributed to the later architecture of Academy governance.

The later statutes of the Czech Academy of Sciences preserve this institutional philosophy in more mature form. Their preamble describes the Academy as following a tradition of more than two hundred years of Czech scientific institutions and as a democratically organised network of autonomous scientific institutions with an irreplaceable role in the Czech system of research, development, and education. The statutes also state that the Academy is engaged through its institutes in research across natural, technical, social, and human sciences, advances understanding at the international level, educates researchers, and applies research results for education, culture, competitiveness, and current social problems (*Statutes of the Czech Academy of Sciences, 2006*). This later formulation helps interpret the early reassessment of ČSAV. Leadership, institutes, and priorities were not being evaluated only to reduce expenditure or remove compromised figures. They were being evaluated in order to create a new model of a democratic, autonomous, institute-based research academy. The long-term result was a concept of the Academy as a national research centre rather than as a Soviet-style learned corporation. It was a network rather than a monolith. It was autonomous but publicly accountable.

The question of workplace numbers and staffing gave the reassessment a difficult material edge. By 31 December 1991, ČSAV had 88 scientific and common workplaces and 9,729 employees (*Blažka et al., 2014*). Those figures show why transformation could not be a purely symbolic exercise. An organisation of this size required budgets, property, personnel policy, equipment maintenance, and long-term planning. It also faced pressure from government, universities, and public finance. The later overview of Czech research support records that in the preparation of the law establishing the Czech Academy of Sciences there were opinions that ČSAV should be abolished without replacement and that some universities considered which Academy institutes might be assigned to them (*Blažka et al., 2014*). This makes clear that the Academy's survival was not guaranteed. Its leadership had to defend the value of institute-based science while accepting the need for reduction and reform. The reassessment of institutes therefore unfolded under external pressure as well as internal conviction. It was a struggle over the institutional future of Czech research.

The financial pressure after the creation of the Czech Academy of Sciences confirms that reassessment was linked with austerity and state policy. The same overview notes that the Czech Academy was established by Act No. 283/1992 Coll., that the act became effective with the dissolution of the federation on 31 December 1992, and that budgetary decisions in 1993 led to a significant reduction of Academy expenditure by about one third, approximately 400 million Czech crowns. It also records that the first Academy Assembly of the Czech Academy took place on 24 February 1993, elected Rudolf Zahradník as president and Otto Wichterle as honorary president, elected other bodies, abolished 21 workplaces, merged or reorganised others, and approved the Statutes and further measures (*Blažka et al., 2014*). Although these events belong to the immediate post-ČSAV period, they illuminate the direction of reassessment that had begun earlier. The evaluation of leadership, institutes, and priorities was moving towards structural reduction. Reform was not only democratic and intellectual; it was also fiscal. This produced tension because financial pressure could accelerate necessary restructuring, but it could also threaten scientific continuity. The Academy's leadership had to negotiate this tension while still defending its core mission.

In comparative perspective, this combination of democratisation, reduction, and restructuring was characteristic of post-socialist science systems. Werner Meske's comparative analysis of science and technology systems in European transition economies describes an initial phase in which socialist science and technology systems were dissolved and fragmented through both top-down and bottom-up processes, accompanied by personnel reductions to roughly 20 to 50 per cent of former peak levels in Central and Eastern European countries (*Meske, 1998*). The Czech case belonged to this broader pattern, but it had its institutional balance. The Academy was reduced and transformed, yet not dismantled. Its institute-based research capacity was preserved as a public non-university system. Evaluation, self-government, and legal reconstitution became the tools through which survival was justified. This comparison helps explain why internal reassessment was unavoidable. A socialist research system could not simply pass into democracy unchanged because its funding, hierarchy, and institutional environment had been part of a different political economy. Yet the most successful transformations were those that avoided destroying valuable scientific capacity in the name of rupture. The Czech Academy's experience belongs precisely to this middle path.

The reassessment of research priorities also meant reconsidering the relationship between basic and applied research. Under socialism, applied research was often organised through sectoral institutes, industrial research bodies, and planned-economy priorities, while the Academy concentrated heavily on basic research but also maintained fields with applied significance. After 1989, the institutional landscape of applied research changed dramatically, and many departmental or industrial research institutes faced privatisation, decline, or dissolution. The Academy therefore had to define its role in relation to universities, industry, government policy, and emerging grant agencies. The later information handbook of the Academy states that Academy workplaces focus primarily on basic research but also participate intensively in applied research and practical use of results; it also stresses openness to international cooperation and demanding international evaluation (*Academy of Sciences of the Czech Republic, 2017*). This later self-description reflects a post-transformation settlement that began with early reassessment. The Academy could not become only a service provider for immediate economic transformation. Nor could it ignore social and technological needs. Its research priorities had to preserve fundamental inquiry while demonstrating relevance to education, culture, competitiveness, and public problems.

International evaluation and international cooperation played a central role in this redefinition. After decades of controlled contacts, the Academy's institutes had to re-enter a world where research quality was judged by publication, collaboration, peer review, citations, equipment standards, and participation in international projects. The early call for independent foreign expert evaluation of workplaces shows that the Academy recognised this need from the beginning of restructuring (*Blažka et al., 2014*). Act No. 283/1992 Coll. also explicitly recognised the possibility for the Academy and its institutes to conclude agreements on international cooperation in scientific activity and technological development (*Act No. 283/1992 Coll., 1992*). These two facts belong together. Internationalisation was not only a diplomatic opportunity; it was a mechanism of internal reform. It allowed institutes to compare themselves with external standards and to escape the provincialism produced by ideological isolation. It also created pressure on research priorities. Fields that could connect to international networks gained new opportunities, while fields that had remained methodologically closed had to change or decline. The reassessment of priorities therefore had a strongly European and global dimension.

The re-evaluation of leadership and institutes inevitably involved conflicts over memory and responsibility. Some senior figures could argue that they had preserved science under difficult conditions and should not be treated simply as representatives of the regime. Others could reply that preservation had too often required silence, compromise, or exclusion of colleagues. Some younger researchers demanded faster renewal, while some older researchers feared the loss of institutional continuity. Some institutes interpreted evaluation as professional necessity, while others experienced it as a threat from central authorities or rival disciplines. The Academy's reassessment was therefore not a smooth technocratic process. It was a series of arguments about justice, competence, memory, and future orientation. Such arguments were inevitable because the Academy was not merely a building or legal entity. It was a community of people who had lived through different moral positions under the same regime. Reassessment meant that these positions now had to be discussed in public or semi-public institutional language.

The evaluation of research priorities was also affected by the changing relationship between the Academy and universities. The early post-revolutionary debate included the idea that research should be transferred fully or largely to universities, but this idea did not ultimately prevail. Turnovec observed in relation to economics that the original idea of returning research institutions fully to universities failed and that the Academy survived, although in a reduced and more democratic form (*Turnovec, 2002*). The later legal and statutory model confirmed a continuing role for the Academy as an institute-based research organisation, while also building connections with universities through representation and cooperation. This compromise was historically important. Czech science had long possessed both university and non-university traditions, including learned societies and specialised institutes. The socialist period had distorted this balance, but it had not invented the need for non-university research. Post-1989 reassessment therefore had to distinguish between the Soviet-style features of ČSAV and the broader legitimacy of institute-based science. The survival of the Academy showed that the second could be preserved while the first was rejected.

The reassessment of institutes also required decisions about archives, collections, libraries, field stations, instruments, and accumulated data. These elements often do not appear as dramatically as leadership changes, but they form the material memory of science. A research institute is not only a group of employees; it is also a structured environment of knowledge. If

an institute is dissolved, merged, or reorganised, its collections, documentation, laboratories, and intellectual traditions must be protected or consciously transferred. The archival description of Wichterle's secretariat, with its references to transformation materials, foreign agenda, and problems of individual workplaces, reminds us that institutional reform produced many such practical questions (*Masaryk Institute and Archives of the CAS, n.d.*). The Academy had to decide what to do with documents, property, international agreements, equipment, and unfinished projects. These decisions were not secondary to scientific policy. They determined whether accumulated knowledge would survive the political transition. Reassessment could therefore not be only about evaluating the past. It had to be about safeguarding the usable scientific future contained in inherited institutions.

The Academy's internal reassessment also changed the meaning of institutional planning. Under the socialist system, planning had often been associated with ideological and economic centralisation. After 1989, planning could no longer mean obedience to a party-state plan, but it could not disappear altogether. Large research organisations need strategy, infrastructure management, personnel development, international cooperation, and financial forecasting. The early transformation documents show this shift from command planning to strategic reorganisation. The Chamber, the Committee for the Management of Workplaces, the new Presidium, internal grant proposals, evaluation rules, and legal preparations were all forms of planning, but of a different kind. They were attempts to organise autonomy rather than suppress it. This distinction is important because post-1989 reform was not simply anti-institutional. It did not reject organisation as such. It rejected the form of organisation that had subordinated science to ideological and administrative command. The new task was to create institutions strong enough to support free research.

By 1992, the reassessment of ČSAV had become inseparable from the preparation of a new Academy. The Chamber of Elected Representatives discussed workplace evaluations and called for conditions to be created for a system of expert evaluation of the scientific level of institutes at longer intervals, based on comprehensive analysis by independent external experts, as was customary in developed countries (*Blažka et al., 2014*). This statement is revealing because it shows that the reformers did not imagine evaluation as a one-time purge. They wanted recurring expert assessment as a normal feature of Academy life. The same year, the Czech National Council approved Act No. 283/1992 Coll., and the Presidium of ČSAV later adopted measures for terminating the activity of ČSAV at the end of 1992 (*Blažka et al., 2014*). Thus, reassessment moved from crisis response to institutional design. The Academy was no longer only asking who should lead and which institutes should survive. It was asking what permanent mechanisms should govern scientific quality in the future. This was the mature form of the internal reassessment that began in December 1989.

The internal reassessment of ČSAV was therefore both retrospective and prospective. Retrospectively, it examined leadership formed under normalisation, institutes shaped by socialist planning, and research priorities influenced by ideology or administrative inertia. Prospectively, it created new leadership, elected representation, provisional statutes, grant mechanisms, expert evaluation, restructuring plans, and legal continuity into the Czech Academy of Sciences. The process was neither linear nor free of conflict. It involved moral judgement, professional assessment, financial pressure, political negotiation, and disciplinary disagreement. Yet it is precisely this mixture that made the transformation historically serious. A purely moral process would have risked destroying scientific capacity. A purely technical process would have risked preserving compromised structures. A purely fiscal process would

have risked reducing the Academy without renewing it. The actual reassessment combined all three dimensions, sometimes awkwardly, but often productively. It marked the point at which the Academy began to convert revolutionary legitimacy into institutional reform.

Thus, the re-evaluation of leadership, institutes, and research priorities after 1989 was the central internal mechanism through which ČSAV began to separate scientific value from socialist institutional deformation. The resignation of the old Presidium, the emergence of elected workplace representation, the establishment of management committees, the appointment of new directors, the election of Otto Wichterle, the introduction of internal grant principles, and the development of expert evaluation all formed part of one transformation logic. That logic aimed to replace ideological and administrative legitimacy with professional, democratic, and internationally comparable legitimacy. The reassessment did not mean that the Academy rejected its whole past, because many institutes preserved real scientific capital and many researchers had maintained high-quality work under constraint. Nor did it mean that continuity could be accepted without criticism, because normalisation had damaged careers, distorted priorities, and compromised leadership structures. The Academy's task was to preserve what belonged to science and remove what belonged to the party-state. This was why the transformation of ČSAV was so difficult and so important. It became a test of whether a large research organisation formed in socialism could become a democratic, autonomous, and internationally oriented institution without losing its accumulated intellectual substance.

2. Rehabilitation, Criticism, and Institutional Self-Reflection

The internal reassessment of ČSAV after the Velvet Revolution could not be limited to changing leaders, renaming bodies, or adjusting budgets. It also had to confront a more uncomfortable problem: how should a scientific institution remember the people whom it had excluded, marginalised, silenced, or morally compromised under political pressure? This was the problem of rehabilitation in its broadest sense. Rehabilitation did not mean only formal restoration of employment status or correction of administrative records. It also meant the recovery of intellectual dignity, the return of names to disciplinary memory, the public recognition of distorted careers, and the moral reclassification of earlier exclusions. Under normalisation, political decisions had often been presented as professional or organisational necessity. After 1989, the Academy had to ask whether many such "professional" decisions had in fact been ideological acts. This was especially difficult because ČSAV had been both a damaged institution and an institution that had participated in damage. Its self-reflection therefore had to include both grievance and responsibility. It had to acknowledge that many scholars had suffered because of the regime, but also that the Academy's structures had helped transmit the regime's power into scientific life. This dual perspective made rehabilitation inseparable from criticism and institutional self-knowledge.

The need for rehabilitation arose directly from the history of normalisation. After the suppression of the Prague Spring, ČSAV was treated by the new political leadership as one of the places where reformist tendencies had been concentrated. The Academy's later historical overview acknowledges that normalisation was especially hard for ČSAV because the Communist Party leadership took revenge for the role played by groups from Academy social-science institutes in the reform efforts of 1968 (*Academy of Sciences of the Czech Republic, n.d.*). This meant that the post-1989 Academy inherited not only laboratories and institutes, but also a memory of expulsions, demotions, forced resignations, publication bans, blocked

travel, and interrupted research biographies. The issue was therefore not abstract justice. It concerned identifiable people, workplaces, manuscripts, disciplinary projects, and lost opportunities. Rehabilitation became necessary because the normalisation regime had not merely suppressed political opposition; it had changed the social composition and intellectual direction of academic life. Once the ideological monopoly collapsed, those changes could no longer be treated as normal institutional history. They became objects of criticism. The Academy had to reopen the question of who had been removed, who had been promoted, who had been silenced, and who had benefited from the silence.

The most visible symbol of this reversal was Otto Wichterle. His election as the President of ČSAV after the Velvet Revolution signalled that the institution was willing to recognise the moral authority of scholars associated with the reformist memory of 1968. Historians of science have noted that the ideas of academic freedom expressed in the late 1960s were shelved during the two decades of normalisation, but survived at the level of individual scientists, with Wichterle's post-1989 presidency serving as a symbolic confirmation of that survival (*Lommi, 2012*). This symbolism mattered because rehabilitation required more than reviewing files. It needed figures through whom the Academy could publicly demonstrate that the hierarchy of values had changed. Wichterle's authority rested on scientific achievement, international reputation, and political-moral credibility. His presidency suggested that scholars once marginalised by normalisation could now become representatives of institutional renewal. Yet this also created expectations that the Academy would go beyond symbolism. If Wichterle represented moral recovery at the top, then research workplaces had to confront the many less famous cases of exclusion and distortion below.

Rehabilitation in ČSAV therefore had several layers. The first was personal: individual researchers had to be reconsidered in relation to dismissals, demotions, blocked promotions, travel restrictions, and publication prohibitions. The second was disciplinary: research fields damaged by ideological control had to be re-opened, especially in the humanities and social sciences. The third was institutional: workplaces had to examine their histories, including the role of directors, party organisations, editorial boards, personnel committees, and scientific councils. The 4th was symbolic: the public language of the Academy had to change from avoidance to acknowledgement. These layers were connected but not identical. A scholar could be personally rehabilitated while the institute that had excluded him or her remained slow to admit its role. A discipline could recover new theoretical pluralism while still neglecting the biographies of those who had carried the older traditions. A workplace could change leadership without fully examining how its internal culture had normalised silence. The post-1989 reassessment was difficult precisely because rehabilitation required action on all these levels. It was not a single administrative procedure, but a long process of institutional moral learning.

Criticism of the normalisation past was especially necessary in the social sciences. These disciplines had been more directly exposed to ideological surveillance because their objects of research included society, politics, history, economy, law, culture, and human values. One study of Czech sociology notes that, in the period of normalisation, Czech social sciences were subject to close surveillance from the ideological committee of the Communist Party, which remained vigilant until the late 1980s (*Skovajsa, 2007*). This meant that disciplinary deformation could not be reduced to a few personnel decisions. It shaped the permissible vocabulary, theoretical frameworks, research topics, publication channels, and international contacts of entire fields. After 1989, sociologists, historians, philosophers, economists, and

legal scholars had to ask not only who had been excluded, but what kinds of knowledge had been made difficult or impossible. The rehabilitation of scholars therefore had to be accompanied by the rehabilitation of questions. The question of civil society, the history of political repression, the sociology of inequality, independent legal theory, pluralist historiography, and non-Marxist philosophy all re-entered academic life as part of this broader recovery. Criticism of normalisation was thus not only retrospective; it created the conditions for new research agendas.

At the same time, it would be misleading to imagine rehabilitation as an easy division between victims and perpetrators. The moral landscape of late-socialist academic life was more complicated. Some researchers had been openly punished, while others had adapted in order to continue work. Some party members had enforced ideological control, while others had tried to protect colleagues or preserve institutes. Some scholars who remained inside the system produced valuable research under compromise. Others used the system for career advancement despite weak scientific credentials. After 1989, this ambiguity made institutional criticism both necessary and dangerous. If criticism was avoided, the Academy risked moral amnesia. If criticism became indiscriminate, it risked replacing historical judgement with revenge. The difficulty was to recognise differences between ideological enforcement, pragmatic survival, passive conformity, quiet resistance, and professional excellence under constraint. True self-reflection required precisely this discrimination. It had to be severe enough to expose injustice and careful enough not to flatten human behaviour into simple categories.

The documentary basis of this self-reflection was crucial. The Masaryk Institute and Archives of the Czech Academy of Sciences preserve fonds relating to ČSAV and the Czech Academy, including materials on the normalisation period. The archive description refers to correspondence, reports, information concerning all areas of ČSAV activity in internal and external spheres, matters concerning members of ČSAV, contacts with the Central Committee of the Communist Party and central authorities, foreign cooperation, and problems of workplaces (*Masaryk Institute and Archives of the CAS, n.d.*). Such documentation is central because institutional memory cannot be reconstructed only through recollection or moral impression. Personnel decisions, correspondence with party organs, travel approvals, publication decisions, and reports about institutes provide evidence of how ideological control was actually transmitted. They also make it possible to distinguish between general atmosphere and specific responsibility. After 1989, the Academy's self-reflection needed precisely this evidentiary foundation. Without documents, rehabilitation could become symbolic but shallow. With documents, it could become historically grounded, even when painful.

The problem of documentation also reveals why criticism after 1989 was not merely a political act but a scholarly task. Historians of contemporary Czechoslovakia later noted that research after November 1989 initially concentrated strongly on uncovering the power mechanisms of communist rule, especially politically motivated persecution (*Ústav pro studium totalitních režimů, 2017*). This orientation was understandable because public society needed to know how monopoly power had functioned. The Academy, as both object and producer of knowledge, occupied a special position in this process. Its archives could help historians reconstruct mechanisms of control, but its institutes also needed to be examined through those mechanisms. The boundary between historical research and institutional self-analysis was therefore porous. When scholars studied normalisation, they were often studying the

political environment that had shaped their disciplines. When they examined censorship, purges, and ideological surveillance, they were also examining the conditions under which academic knowledge had been produced. This gave post-1989 research on communism a reflexive dimension. The Academy had to become both archive and subject of critique.

The first wave of post-revolutionary self-reflection was driven partly from below. Younger researchers, workplace civic forums, and elected representatives pushed for changes in leadership and institutional procedures. A retrospective account of the transformation of ČSAV notes that in individual institutes Civic Forums emerged and that younger workers increasingly spoke about the need for changes in workplace leadership, the leadership of the Academy, and the whole structure of ČSAV, which did not meet basic democratic criteria (*Živa, 2016*). This bottom-up pressure was important because rehabilitation could not be credible if it was controlled only by the same senior structures that had existed under normalisation. The creation of the Chamber of Elected Representatives of ČSAV workplaces gave this pressure an institutional form. It allowed workplace communities to articulate reform demands and challenge inherited authority. The process was not simply a rebellion of youth against age, because several older scholars with reformist credibility also played key roles. Yet generational pressure mattered because younger researchers were less willing to accept the habits of silence and hierarchy that had become normal after 1968. They helped transform private dissatisfaction into institutional criticism.

The consultation group formed around figures such as Miroslav Katětov, Viktor Knapp, Josef Macek, Pavel Oliva, and Otto Wichterle also had a rehabilitative dimension. These were not merely technical advisers for a transitional administration. They represented, in different ways, scholarly authority that had been pushed aside or constrained after 1968. Their involvement at the end of November and beginning of December 1989 showed that the Academy's self-reflection was connected with the return of voices displaced by normalisation (*Živa, 2016*). The resignation of Josef Říman and the previous Presidium in December 1989 opened space for this reconfiguration. It indicated that the Academy could not rebuild legitimacy without addressing the moral deficit of its existing leadership. The participation of formerly marginalised or reform-associated scholars therefore functioned as a kind of institutional rehabilitation before any detailed personnel review had been completed. It restored symbolic continuity with the interrupted reformist aspirations of the 1960s. At the same time, it also reminded the Academy that rehabilitation was not only about honouring individuals. It was about restoring a lost direction of scientific autonomy and democratic self-government.

The implementation of open competitions for directors at all workplaces was another practical expression of criticism and rehabilitation. According to the retrospective account in *Živa*, competitions for directors were held at all workplaces, making possible long-delayed personnel changes at this level (*Živa, 2016*). This mattered because leadership positions had been one of the main channels through which political control entered institutional life. A director could protect or damage researchers, encourage or block topics, open or close foreign contacts, and shape workplace atmosphere. Replacing directors through more open procedures was therefore not merely a matter of managerial efficiency. It was a way of challenging the personnel legacy of normalisation. Such competitions could not automatically repair damaged careers, but they created conditions under which new leadership could support rehabilitation and reform. They also gave workplace communities an opportunity to express trust or mistrust in those who governed them. Personnel change, in this sense, was a form of institutional criticism. It made the past actionable.

Still, the Academy's self-reflection had to go deeper than changing directors. Normalisation had affected everyday academic culture: who spoke at meetings, who remained silent, who was allowed to travel, who could publish, whose work was cited, whose name was avoided, and which theoretical languages were permitted. These small mechanisms often left fewer dramatic traces than dismissals, but they shaped scientific life over decades. Rehabilitation therefore needed to include the restoration of intellectual lineages. A scholar whose career had been blocked might have lost not only a position but students, research continuity, access to journals, and a place in collective memory. A manuscript that could not be published might have broken the development of an entire subfield. A blocked foreign contact might have delayed a laboratory programme or an international collaboration. The Academy had to recognise that normalisation had produced both visible and invisible damage. Institutional self-reflection was the attempt to make the invisible damage legible.

The humanities and social sciences carried a particularly heavy burden of such invisible damage. Censorship in academic publishing rarely operated only as a single final prohibition. It could work through self-censorship, editorial caution, peer pressure, pre-publication negotiation, ideological review, and the expectation that authors would know the limits before crossing them. Oates-Indruchová's work on the regulatory framework of Czechoslovak social sciences and humanities shows that the limits of academic thought under normalisation were shaped by institutions, procedures, and publication practices, not only by explicit bans (*Oates-Indruchová, 2008*). After 1989, criticism of this system required analysis of the whole path by which knowledge moved from researcher to reader. Which ideas had been delayed? Which authors had been excluded from bibliographies? Which theoretical traditions had been presented as hostile or obsolete? Which compromises had become so habitual that they looked like normal scholarship? Rehabilitation meant reopening this chain of intellectual production and asking where it had been bent by power. This was a difficult but necessary task for disciplines that wished to regain credibility.

In the natural sciences, the structure of rehabilitation was different but still real. Political exclusion could damage a chemist, physicist, biologist, mathematician, or engineer even when the content of the research was not directly ideological. Travel restrictions, denial of access to literature, exclusion from leadership, loss of laboratory position, or forced marginalisation could be professionally devastating. The *Živa* retrospective notes that after 1968, some of the most capable scientists emigrated and found work at prestigious universities and leading research institutes, while contacts with Western countries were frozen for several years and foreign travel became especially difficult for people excluded or removed from the Communist Party and for non-party scholars (*Živa, 2016*). This shows that rehabilitation was not only about restoring the intellectual freedom of politically sensitive fields. It was also about recognising how political classification damaged scientific careers in experimental and technical disciplines. A researcher denied travel might miss the crucial international conference, method, instrument, or collaboration that defines a career. A laboratory cut off from Western contacts might lose years of development. Post-1989 criticism therefore had to include the material and international consequences of ideological control.

The question of émigré scholars was especially difficult. Many researchers left Czechoslovakia after 1968 because they saw no future under normalisation or because they faced direct political consequences. Their absence weakened domestic science, but their success abroad also demonstrated the quality of the scientific capital that the regime had driven away. After 1989, the Academy had to decide how to relate to these scholars. Some could return

physically, others could renew cooperation, and still others could be restored symbolically through invitations, publications, conferences, and recognition. Rehabilitation in this case could not always mean reintegration into a former workplace. Lives had moved elsewhere, foreign careers had developed, and institutional conditions in Czechoslovakia had changed. Yet the Academy needed to acknowledge that emigration was not simply a personal decision detached from politics. In many cases it was an effect of a system that made free scientific life impossible. The recovery of émigré connections became part of the broader reopening of Czech science to the international world. It also helped repair the intellectual fractures created by normalisation.

Institutional criticism also required examining the privileges and weaknesses of the academic membership system. Before 1989, the General Assembly of Academy members possessed considerable authority, but the body had become senior, conservative, and often distant from the reality of contemporary institutes. The *Živa* account notes that the General Assembly consisted largely of genuinely meritorious scientists, but mostly of senior age and with conservative ideas, and that many were far removed from the daily reality of Academy workplaces (*Živa, 2016*). This was not the same as saying that the Academy's members lacked scientific merit. The problem was that an inherited corporative structure could no longer serve as the sole source of legitimacy for a transforming research organisation. Criticism of the membership system therefore became part of institutional self-reflection. It raised the question of whether authority should rest on past honour, current workplace representation, elected bodies, international evaluation, or some combination of these. The eventual disappearance of the old corps of ČSAV members and the later separation of research-institute functions from learned-society functions reflected this debate. In this sense, self-reflection concerned not only political guilt, but the institutional architecture of authority.

The formation of the Chamber of Elected Representatives was therefore not only a mechanism of reform; it was also an institutional critique of the old Academy. It challenged the idea that the fate of workplaces should be determined primarily by a senior and largely inherited academic body. It introduced a new principle: the institutes themselves had to be represented in the transformation of the institution to which they belonged. This principle had rehabilitative significance because it gave voice to people who had been subordinated to hierarchical decisions during normalisation. It also helped make workplace problems visible. Repression, stagnation, poor leadership, hidden conflicts, and delayed reforms could now be discussed through representative channels. The Chamber's activity contributed to new models of governance and financing, including the grant system, according to the *Živa* retrospective (*Živa, 2016*). Such reforms were not separate from criticism. They were the institutional form that criticism took when it moved from accusation to redesign.

The self-reflection of ČSAV was complicated by the fact that the Academy had also preserved valuable science under the previous regime. A purely accusatory narrative would have been false. Even during normalisation, many institutes continued serious research, trained specialists, maintained collections, developed instruments, and contributed to international science where possible. The *Živa* retrospective explicitly notes that scientific work continued normally in many workplaces during the 1970s and 1980s, even while political and material conditions were deeply problematic (*Živa, 2016*). This meant that criticism had to avoid destroying the very scientific capital it was trying to liberate. A serious institution had to distinguish between the political deformation of the Academy and the genuine work done by researchers inside it. That distinction was morally difficult because professional excellence

could coexist with compromise, and compromise could coexist with attempts to protect science. Institutional self-reflection therefore required a language more complex than denunciation. It had to say that the Academy had been damaged, that it had damaged some of its members, and that it had nevertheless preserved forms of knowledge that democratic society needed.

The criticism of normalisation also intersected with broader post-1989 public research on the communist past. The Institute of Contemporary History of the Academy of Sciences became one of the key institutional spaces for studying the most recent history of Czechoslovakia, and its creation shortly after the fall of the previous regime provided a new base for contemporary historiography. This was significant because institutional self-reflection needed scholarly institutions capable of investigating the period without being bound by the old ideological framework. The post-1989 concentration on mechanisms of power and political persecution was therefore not accidental; it corresponded to an urgent public and scholarly need (*Ústav pro studium totalitních režimů, 2017*). For the Academy, however, this development also had a reflexive dimension. An Academy institute could study normalisation as history while the Academy itself was still processing the consequences of normalisation. This placed historians in a delicate position. They had to investigate the system with scholarly rigour, not merely provide moral confirmation of public expectations. Yet their work also helped the Academy and society understand the structures that had shaped academic life.

Rehabilitation also had a bibliographic and intellectual-memory dimension. During normalisation, the suppression of authors could take the form of silence rather than explicit prohibition. Names disappeared from syllabi, citations, editorial boards, conference programmes, and collective histories. A post-1989 academic community therefore had to rebuild bibliographies as well as careers. It had to restore authors to the history of disciplines and recognise work produced in exile, samizdat, internal circulation, or foreign publication. This mattered deeply for the social sciences and humanities, where intellectual continuity depends heavily on citation, debate, and school formation. If a historian, sociologist, philosopher, or legal scholar was removed from public academic circulation, the damage extended to students and later researchers who could not encounter that work properly. Rehabilitation thus included the recovery of texts. It also included the correction of disciplinary narratives that had been written without the excluded. In this sense, institutional self-reflection was inseparable from the reconstruction of scholarly memory.

The process was also affected by the wider language of civic justice after the Velvet Revolution. Society expected that those who had been persecuted should be acknowledged and that the mechanisms of repression should be named. Yet academic rehabilitation differed from judicial rehabilitation. Courts could examine legal guilt or illegality, while academic institutions had to examine subtler forms of professional harm. A scholar might not have been imprisoned or formally condemned, but could still have been deprived of a research career. A person might not have been explicitly banned, but could have been denied promotion, foreign travel, or publication opportunities because of political unreliability. A workplace might not have issued a public denunciation, but could have quietly excluded someone from projects and committees. These forms of harm were difficult to document and repair. The Academy's self-reflection therefore had to recognise a spectrum of injustice. It had to avoid limiting rehabilitation only to the most spectacular cases.

The role of criticism was not only to expose the past, but to prevent its reproduction under new conditions. The Academy's transformation introduced democratic procedures, director competitions, elected representation, internal grants, and expert evaluation. These instruments were partly designed to replace the opaque personnel and priority-setting mechanisms of the old system. If leadership could be selected through competition, if workplaces could be represented, if projects could be evaluated by scientific criteria, and if international standards could be used, then ideological loyalty would lose its old institutional function. The 1990–1992 reforms thus had a preventive meaning. They were not only responses to what had happened; they were safeguards against similar patterns of arbitrary authority. Of course, no procedure can eliminate all hierarchy, favouritism, or institutional politics. But procedures can make power more visible and contestable. In the context of ČSAV, this visibility was itself a form of rehabilitation, because normalisation had depended heavily on the invisibility of coercive routines.

The Academy's self-reflection also had to deal with the relation between criticism and public attacks from outside. In the early 1990s, ČSAV and then the Czech Academy faced strong criticism as a supposedly outdated or Stalinist institution, and there were voices calling for its abolition or merger with universities. The *Živa* retrospective notes that the Academy became a target of harsh attacks as allegedly hopelessly obsolete and Stalinist, and that numerous voices argued it should be abolished or joined to universities and higher education institutions (*Živa, 2016*). This external criticism complicated internal self-reflection. On the one hand, the Academy needed to be honest about its socialist deformation. On the other hand, it had to defend the scientific value of its institutes against simplistic political denunciation. If the Academy admitted too little, it risked losing moral credibility. If it admitted only guilt, it risked strengthening arguments for its destruction. The institution therefore had to construct a balanced public self-interpretation: it had to recognise normalisation damage while showing that the institute-based research system remained valuable for democratic society.

This balance was also necessary because criticism could be instrumentalised by economic reform. The early 1990s were marked by budgetary pressure, restructuring, and a strong emphasis on economic transformation. Under these conditions, accusations against the Academy could serve not only moral renewal but also fiscal reduction. The *Živa* retrospective states that the Academy suffered a dramatic budget reduction and that restrictions reduced staff from roughly twelve thousand to about eight and a half thousand, while some workplaces were abolished (*Živa, 2016*). Such reductions may have been partly unavoidable, but they also show why institutional self-reflection could not be separated from material survival. Rehabilitation of scholars and disciplines required resources, not only words. Reopening international contacts, modernising equipment, publishing suppressed work, and supporting new research agendas all needed funding. A financially weakened Academy could proclaim freedom while struggling to make freedom practically effective. Criticism therefore had to be linked with reconstruction. Otherwise, moral cleansing could become institutional decline.

The rehabilitation of disciplines also required new international contacts. After 1989, Czechoslovakia rapidly re-established academic contacts with Western scientific communities, and at least at the level of freedom of movement, the hopes of the Prague Spring reformers of science were finally fulfilled (*Lommi, 2012*). This reopening had rehabilitative importance because many disciplines had been cut off from normal international debate. Scholars could now attend conferences, invite colleagues, access literature, publish abroad, and compare methods with international peers. For those whose careers had been blocked,

renewed contacts could partially restore lost professional time. For younger researchers, they created opportunities that normalisation had denied. For institutes, international cooperation helped replace ideological evaluation with peer evaluation. Rehabilitation was therefore not only domestic. It involved reconnecting Czech science with the international networks from which it had been partially isolated. In this sense, criticism of the past and internationalisation of the future were two sides of the same transformation.

The institutional memory of ČSAV also required attention to those who had remained inside and tried to preserve research under difficult conditions. A fair self-reflection could not treat all adaptation as moral failure. In many institutes, scholars maintained experiments, collections, archives, teaching links, and international contacts wherever possible. Some may have used official language in order to protect substantive work. Others may have accepted limited compromise to keep a laboratory or research group alive. After 1989, these forms of survival had to be evaluated without romanticising them. The Academy needed to distinguish between preservation under pressure and active participation in repression. This distinction was essential for continuity. If everyone who had stayed inside were treated as compromised, the Academy would have lost much of its accumulated expertise. If survival were used to excuse everything, the moral meaning of rehabilitation would disappear. Institutional self-reflection had to hold both truths together.

The archival record becomes especially important here because it allows researchers to study not only spectacular repression but ordinary institutional life. Correspondence with central authorities, reports on workplace problems, foreign cooperation files, and documents concerning ČSAV members can reveal how decisions were made, how pressure circulated, and how people negotiated constraints (*Masaryk Institute and Archives of the CAS, n.d.*). Such materials help avoid both myth and simplification. They show that normalisation was not only a political label but a system of practical decisions. They also show that institutions are made not only by presidents and ministers, but by secretariats, committees, editors, directors, reviewers, and personnel officers. Post-1989 self-reflection therefore required an archival ethics. The Academy had to preserve and open evidence even when that evidence was uncomfortable. Without such evidence, later generations would inherit only slogans. With it, they could reconstruct the real anatomy of academic unfreedom.

The criticism of the past also changed the meaning of academic honour. Under the socialist Academy model, honour was connected with titles, membership, state recognition, medals, and proximity to institutional hierarchy. After 1989, the moral value of such honours had to be reconsidered. Some distinctions remained scientifically legitimate, while others were associated with political loyalty or compromised prestige. The later disappearance of the old corps of ČSAV members and the reconstitution of the Academy as a network of research institutes reflected this shift. It separated, at least more clearly than before, research organisation from honorary learned status. Rehabilitation also meant that honour could return to those whose official status had been denied or reduced. In this way, the Academy's self-reflection affected not only personnel and archives but symbolic capital. It asked who deserved to be remembered as a builder of science. It also asked whether official honours under normalisation had always corresponded to real scholarly merit. Such questions were sensitive, but unavoidable.

In institutional terms, self-reflection was incomplete if it remained only retrospective. The Academy had to transform its procedures so that criticism could become a continuing norm

rather than a one-time revolutionary episode. Expert evaluation, open competitions, elected representation, and international cooperation created mechanisms through which future criticism could be institutionalised. The 1991 and 1992 discussions on evaluation of ČSAV workplaces, including the role of independent external experts, show that reformers wanted assessment to become a regular feature of Academy life rather than only a purge of the past (*Blažka et al., 2014*). This was an important distinction. A democratic research institution must be able to criticise itself without waiting for political revolution. It must examine quality, leadership, ethics, and social relevance through stable procedures. The post-1989 Academy began to build such procedures because it had learned how dangerous unaccountable authority could be. Rehabilitation and criticism therefore pointed toward a new institutional culture. They were not only about repairing injustice; they were about changing the future conditions of scientific authority.

The Academy's self-reflection also had to preserve the dignity of science itself. The revelation of ideological control could easily lead the public to distrust academic institutions as merely another component of the old regime. Yet such distrust, if total, would be historically inaccurate and socially damaging. The Academy had preserved expertise, collections, laboratories, and international reputations that democratic Czechoslovakia and later the Czech Republic needed. Its task was to show that criticism of the socialist Academy did not require contempt for science. On the contrary, criticism was necessary because science mattered. If research had been insignificant, its deformation would not have required such careful attention. Rehabilitation was a defence of the scientific vocation against political misuse. Institutional self-reflection was therefore not self-destruction. It was an attempt to restore the conditions under which science could again be trusted.

Thus, rehabilitation, criticism, and institutional self-reflection formed the moral centre of ČSAV's post-1989 transformation. Rehabilitation restored attention to scholars whose careers, publications, travel, reputations, or intellectual lineages had been damaged by normalisation. Criticism exposed the mechanisms through which ideological authority had entered leadership, publishing, personnel policy, international cooperation, and disciplinary development. Institutional self-reflection made it possible to distinguish scientific capital from political deformation, survival from complicity, and continuity from inertia. This process was difficult because the Academy had been neither only a victim nor only an instrument of the regime. It had preserved serious science while also bearing responsibility for structures that had excluded or silenced researchers. The post-revolutionary Academy therefore had to remember honestly, reform procedurally, and defend its scientific future without concealing its damaged past. Its renewal depended on precisely this combination. Without rehabilitation, freedom would have remained abstract. Without criticism, reform would have remained superficial. Without self-reflection, continuity would have become morally empty.

3. The Role of Academic Bulletins and Internal Documentation

The transformation of ČSAV after the Velvet Revolution was not only enacted in public squares, formal resignations, newly elected bodies, or legislative acts. It was also enacted in texts: bulletins, reports, minutes, resolutions, internal circulars, archival files, workplace correspondence, evaluation documents, and later retrospective publications. These forms of documentation may appear secondary when compared with political events, but in a large research institution they were among the main instruments by which change became visible, communicable, and governable. The Academy could not reform itself only through oral declarations or symbolic gestures, because it was a complex organisation of institutes, councils, scientific fields, administrative offices, budgets, collections, and international obligations. Every significant transformation therefore needed documentary form. Documents recorded who spoke, who resigned, who was elected, which workplaces were questioned, which priorities were defended, which procedures were proposed, and which arguments became institutionally legitimate. In this sense, bulletins and internal documentation were not passive mirrors of transformation. They were part of the transformation itself. They converted revolutionary energy into institutional memory, and they gave dispersed workplaces a common informational space in which the crisis of the old research system could be discussed.

The importance of documentation becomes clearer when one remembers the character of late-socialist academic administration. ČSAV had long been governed through reports, presidium files, secretariat correspondence, workplace submissions, foreign-agenda documents, and communications with party and state authorities. The Masaryk Institute and Archives of the Czech Academy of Sciences describe the preserved fonds of ČSAV as covering the entire period of the Academy's existence from 1952 to 1992 and classify them by the type of institutional creator, including central organs, workplaces, scientific societies, national committees, personal fonds, collections, and later AV ČR materials (*Masaryk Institute and Archives of the CAS, n.d.*). This means that the socialist Academy was already a deeply documentary institution before 1989. The difference after the Velvet Revolution was not that documents suddenly appeared, but that their meaning changed. Under normalisation, documentation had often served supervision, reporting, administrative control, and political communication. After 1989, the same documentary culture could be redirected towards transparency, accountability, reconstruction, and self-reflection. The old paper machinery of the Academy became a field of critical evidence. Files that had once supported hierarchical authority could now help reveal how that authority had operated.

Academic bulletins occupied a distinctive position within this documentary transformation. They stood between internal administration and public communication. A bulletin could inform researchers about institutional changes, publish speeches or resolutions, report on meetings, register debates, and create a shared chronology of reform. Unlike confidential files, bulletins were designed for circulation and collective reading. Unlike newspapers, they were addressed primarily to an academic community with specific institutional interests. This intermediate position made them especially important in the early 1990s, when ČSAV needed to communicate rapidly with its workplaces while also building a new public image. The bibliographic record for *Bulletin Československé akademie věd* shows that it was a monthly Czech-language periodical with ISSN 0322-8010, published by the Office of the Presidium of ČSAV from 1955 to 1990 and by Academia from 1990 to 1992, after which its successor title became *Akademický bulletin* (*Czech ISSN National Centre, n.d.*). The publication therefore crossed the boundary between the late socialist Academy and its post-revolutionary

reconstitution. Its continuity and later transformation illustrate the broader problem of ČSAV itself: some inherited channels had to be criticised, yet some were useful precisely because they could carry the new language of reform.

The transition from *Bulletin Československé akademie věd* to *Akademický bulletin* was not a merely editorial detail. It reflected the broader change from an Academy shaped by the Czechoslovak socialist state to the new Czech Academy of Sciences after the dissolution of the federation. The periodical record indicates that *Bulletin Československé akademie věd* ran from 1955 to 1992 and that *Akademický bulletin* became the succeeding title (*Czech ISSN National Centre, n.d.*). The change in title marked a change in institutional identity. It also signalled that the Academy still needed a central communicative instrument even as its legal, political, and intellectual foundations were being reworked. A research academy cannot function without shared channels of information, because individual institutes otherwise experience reform as isolated pressure. Bulletins provided a common institutional surface on which transformation could be narrated. They helped turn dispersed events into a recognisable story. In this respect, the bulletin was not only a source for historians; it was also a technology of institutional cohesion.

The historical online archive of *Akademický bulletin* for 1990–1998 is particularly revealing. Its introductory description notes that the publication played a significant role in the life of the Academy and contributed substantially to its transformation, while also noting that issue 15–16 of 1990 summarised in a series of articles the main results of the transformation of ČSAV and Czech scientific life during the first half of 1990 (*Akademický bulletin, n.d.*). This is an important piece of evidence because it confirms that the bulletin was consciously understood as part of institutional transformation, not simply as a newsletter. It also shows that, within months of the Velvet Revolution, the Academy was already trying to summarise and narrate the results of its transformation. Such summaries were necessary because reform was fast, multi-centred, and easily confusing. Researchers in one institute needed to understand what had happened in the Presidium, in elected representative bodies, in evaluation debates, and in other workplaces. The bulletin could therefore function as a kind of internal chronicle. It gave the Academy a medium through which it could interpret its acceleration.

The public role of the bulletin became especially significant because transformation generated competing narratives. Some voices outside the Academy saw ČSAV as a Stalinist or outdated institution that should be abolished, merged with universities, or radically reduced. Many inside the Academy argued that although ideological deformation had to be rejected, the institute-based research system contained valuable scientific capital. The bulletin gave Academy actors a space in which to defend that second interpretation. It could publish arguments about research quality, institutional continuity, international cooperation, evaluation, and the social role of science. It could also register criticism and self-criticism without allowing external polemic to define the Academy entirely. This was important because documentary communication shapes legitimacy. If the Academy had remained silent, others would have written its transformation for it. By producing bulletins, reports, and internal texts, it could participate actively in the construction of its public and internal identity. The bulletin therefore worked as a defensive, explanatory, and reflective medium at the same time.

The first issues after 1989 carried symbolic weight. A later *Akademický bulletin* retrospective notes that *Bulletin ČSAV* 1/1990 had on its cover Jiří Hájek and Ota Šik, two figures closely associated with the reformist and exilic memory of the Prague Spring and post-1968

Czechoslovak intellectual life (*Akademický bulletin, 2011*). This visual and editorial choice mattered because covers, names, and photographs are also documents. They tell the reader whose memory is being restored and what kind of legitimacy the institution wishes to claim. By foregrounding figures connected with reform, exile, and intellectual independence, the bulletin helped reorient the Academy's symbolic universe away from normalisation. The bulletin thus participated in rehabilitation even before it presented detailed archival or administrative materials. It placed previously marginalised names back into the visible space of academic communication. Such symbolic gestures did not replace institutional reform, but they prepared the emotional and moral language in which reform could be understood. They also helped connect the Academy's post-1989 transformation with the interrupted reformist currents of the 1960s.

The documentary landscape of ČSAV included not only bulletins but also *Věstník Československé akademie věd*. This periodical functioned differently from the more bulletin-like communicative format and contained articles, reports, and notices connected with the Academy's scholarly and institutional life. The bibliographic record for Pavel Oliva's 1990 article "K aktuálním otázkám společenských věd" places it in *Věstník Československé akademie věd*, volume 99, 1990, pages 92–93, and identifies it under subjects connected with historiography and reports (*Oliva, 1990*). This small bibliographic detail is significant because it illustrates how the official Academy periodical space was used to register questions facing the social sciences at the very moment of transformation. The social sciences had been especially compromised and constrained under normalisation, so the appearance of such texts in Academy periodicals helped create a record of intellectual reorientation. It also shows that internal documentation did not deal only with administration. It also carried disciplinary self-questioning. In the early 1990s, the boundary between institutional reform and disciplinary renewal was often porous.

The role of bulletins and internal documentation can be understood through three interconnected functions: information, legitimation, and memory. The informational function was immediate. Researchers needed to know what decisions had been made, which committees had been created, what procedures were changing, and how the Academy's relation to state authorities was being redefined. The legitimating function was more subtle. By publishing decisions and debates, the Academy could show that reform was not arbitrary but discussed, recorded, and institutionally authorised. The memory function was longer-term. Bulletins preserved the chronology, vocabulary, and emotional atmosphere of the transformation for later historians. A revolutionary meeting without a record can become a legend; a recorded debate becomes a source. ČSAV's documentary culture therefore helped prevent transformation from disappearing into anecdote. It created materials through which later scholarship could reconstruct both the logic and the tensions of the period.

Internal documentation also mattered because post-1989 reform required evidence-based judgement. Leadership changes, institute evaluations, rehabilitation procedures, budgetary reallocations, and legal succession could not be justified solely by moral rhetoric. They required records of past decisions, personnel histories, correspondence, scientific outputs, workplace problems, and international contacts. The Masaryk Institute and Archives describe the fonds of the late-normalisation Secretariat of Josef Říman as containing correspondence, reports, information on all areas of ČSAV activity, members' affairs, contacts with the Central Committee of the Communist Party and central authorities, foreign cooperation, and workplace problems (*Masaryk Institute and Archives of the CAS, n.d.*). These materials were

essential because they recorded the institutional environment immediately preceding the revolution. They could help show where control had been exercised, where limited liberalisation had appeared, and where institutional problems had accumulated. The post-revolutionary Academy needed such evidence to avoid both amnesia and indiscriminate accusation. Documentation allowed criticism to become historical rather than merely emotional.

The Secretariat of Otto Wichterle became especially important as a documentary node of the transition. The Masaryk Institute and Archives identify the fonds of the Secretariat of Academician Otto Wichterle, ČSAV President, as covering the years 1989/1990–1992 and describe it as first-rate documentation for the functioning of ČSAV in the turning-point period after November 1989. The same archival description notes that the fonds contain materials concerning the transformation of ČSAV, members' affairs, correspondence with central authorities, foreign agenda, and problems of individual workplaces (*Masaryk Institute and Archives of the CAS, n.d.*). This description captures the practical breadth of transformation. It was not simply a matter of a new president or a new statute. It involved daily exchanges with ministries, workplace negotiations, foreign relations, questions of membership, and administrative problems at the level of institutes. Wichterle's presidency therefore left not only symbolic memory but a dense documentary trace. For historians, that trace is crucial because it records the conversion of revolutionary legitimacy into institutional work.

The contrast between the Říman and Wichterle secretariat fonds is historically instructive. The former covers the end of normalisation, with signs of change and limited relaxation in some fields, but still within the administrative world of late socialism. The latter covers the transition after November 1989, when the Academy was being reconstituted under a new political logic. Both fonds include correspondence, reports, workplace questions, and relations with state authorities, but the meaning of these materials changed. Under Říman, such files documented an Academy still embedded in the party-state order. Under Wichterle, they documented an Academy negotiating its release from that order and its survival in a democratic environment. This continuity of documentary form with discontinuity of political meaning is one of the most revealing features of institutional transformation. The same categories—correspondence, reports, foreign agenda, workplace problems—remained necessary. What changed was the framework in which they were produced and interpreted. Documentation therefore allows historians to see both continuity and rupture without reducing one to the other.

Bulletins also helped create an internal public sphere within the Academy. In a democratic transformation, institutional members need more than instructions; they need reasons, narratives, and spaces of recognition. The bulletin gave researchers a way to follow discussions beyond their institute and to perceive themselves as part of a wider academic community. This mattered because ČSAV was not a small scholarly society but a large system of workplaces with varied disciplinary cultures. Without shared communication, each institute might have experienced reform as isolated pressure from Prague or as local improvisation. Bulletins could collect events, publish reflections, and create an institutional vocabulary common to physicists, historians, chemists, biologists, mathematicians, engineers, economists, and philologists. They were therefore not only informative but integrative. They made the Academy visible to itself. This self-visibility was a prerequisite for democratic self-government.

The bulletin format also changed the style of institutional language. Late-socialist official texts had often been formulaic, cautious, and ideologically coded. The post-1989 bulletin could introduce a more direct language of transformation, autonomy, reform, evaluation, foreign cooperation, and responsibility. This was not a trivial stylistic change. Institutional language shapes what can be thought and done. When a bulletin begins to speak about transformation rather than fulfilment of socialist tasks, it helps alter the horizon of legitimate action. When it reports elected representatives, open discussion, or evaluation, it normalises new institutional practices. When it recalls reformist or exilic figures, it helps rewrite the Academy's moral genealogy. Language in such publications thus functioned as a soft but powerful instrument of institutional change. The bulletin did not command transformation in the manner of a decree, but it made transformation readable and repeatable.

Internal documentation also played a role in the rehabilitation of excluded or marginalised scholars. Rehabilitation required names, dates, decisions, signatures, publication histories, employment records, and correspondence. Without documents, personal memories could be dismissed as subjective or politically motivated. With documents, claims about exclusion, blocked travel, demotion, censorship, or workplace pressure could be examined more precisely. The Academy's archival fonds, especially those concerning presidium secretariats and workplace files, contained the kind of evidence needed for such reconstruction. They also preserved traces of how the Academy interacted with the Central Committee of the Communist Party, ministries, universities, and foreign partners (*Masaryk Institute and Archives of the CAS, n.d.*). This is why archives were not external to rehabilitation. They were part of the moral infrastructure through which rehabilitation could become credible. Documentation turned suppressed biographies into verifiable institutional histories.

At the same time, documentation could be uncomfortable precisely because it preserved ambiguity. A file might show that a director transmitted political pressure, but it might also show that he tried to soften it. A travel document might reveal discrimination, but also informal negotiations to permit a journey. A report might contain ideological language while also protecting genuine research. A personnel file might show both compromise and professional merit. This complexity made documentation more valuable, not less. It prevented the post-1989 Academy from relying only on simple moral categories. Bulletins and archives could expose injustice, but they could also show how people navigated the grey zones of normalisation. For institutional self-reflection, such nuance was essential. A serious history of ČSAV had to distinguish active ideological enforcement from survival, adaptation, partial resistance, professional continuity, and administrative inertia.

The role of internal documentation was also connected with the redesign of evaluation. The early transformation of ČSAV required assessment of institutes, leadership, research priorities, and budgetary needs. Such assessment could not proceed without reports, workplace submissions, publication records, data on staff, foreign cooperation, equipment, grants, and scientific results. Bulletins could summarise and circulate the larger narrative of evaluation, while internal documents carried the detailed evidence. This division of labour between communicative and administrative documentation was typical of institutional reform. Public or semi-public bulletins made the reform process intelligible. Internal files made it operational. Together, they allowed the Academy to move from moral protest to structured assessment. This is one of the reasons why the documentary record of 1989–1992 is so important for understanding the later establishment of the Czech Academy of Sciences.

The preservation of periodicals themselves is also part of the story. The digital library records for *Bulletin Československé akademie věd* and *Věstník Československé akademie věd* show that these periodicals have become accessible as historical serials, with issues from 1990 and 1991 registered in digital library systems (*Kramerius Digital Library, n.d.*). Such accessibility changes the historian's relation to the Academy's transformation. What was once an internal or specialised circulation object becomes a public source. The bulletin can now be read not only as a periodical of its time, but as evidence of institutional self-description. The digital preservation of these materials also reflects a broader shift in the Academy's treatment of memory. Sources that once served administration or communication can later serve historical research, public education, and critical analysis. The documentary life of the Academy therefore extends beyond the moment of production. The same bulletin may first inform a researcher, then legitimise a reform, then become an archival source.

The broader archival framework of the Academy reinforces this point. The Masaryk Institute and Archives note that the overview of fonds covers not only ČSAV organs and workplaces but also older scientific societies, personal fonds, collections, and the archive of the T. G. Masaryk Institute (*Masaryk Institute and Archives of the CAS, n.d.*). This matters because the post-1989 Academy did not seek legitimacy only from ČSAV itself. It also looked back to older Czech learned traditions, including pre-socialist institutions and personalities. Documentation made that wider genealogy possible. The Academy could situate its transformation within a long history of Czech science rather than treat itself only as a reformed socialist organisation. At the same time, the ČSAV fonds prevented such a long genealogy from becoming evasive. They preserved the records of the socialist period and required the Academy to confront that history directly. In this way, archives supported both continuity and critique.

The later programme "Memory in the Digital Age" of the Masaryk Institute and Archives provides a useful retrospective perspective on this documentary problem. The programme description states that its projects work with new methods, seek ways to process, connect, and preserve historical data effectively, and contribute to internal discussions about the future orientation of individual fields (*Masaryk Institute and Archives of the CAS, n.d.*). Although this programme belongs to a later period, its logic helps explain the significance of the 1989–1992 documentation. The transformation of the Academy generated historical data that later required preservation, connection, and interpretation. It also showed that memory was not only a cultural matter but an institutional and methodological task. The Academy's history became a field in which archival practice, digital access, and disciplinary self-understanding intersected. Internal documentation was therefore not only a residue of administration. It became raw material for future research and for the continuing discussion of what Czech science had been and should become.

The same programme description emphasises critical editions of sources, databases, encyclopaedias, and works intended for specialists, students, teachers, public administration, and wider audiences (*Masaryk Institute and Archives of the CAS, n.d.*). This later archival culture illuminates a central feature of post-1989 academic transformation: the Academy increasingly had to make its knowledge and memory communicable beyond closed institutional circles. Bulletins in the early 1990s performed this role in a transitional way. They addressed an academic public that was internal but also increasingly open. Later digital and editorial projects extended that communicative logic to broader publics. The direction is consistent: documentation moves from control to access, from hierarchy to interpretation, from institutional secrecy to shared memory. This does not mean that all archives become

simple or fully transparent. But it does mean that the democratic Academy had to rethink documentation as a public good. Historical sources could no longer be treated only as administrative property.

Internal documentation also helped establish the legal continuity between ČSAV and the Czech Academy of Sciences. The transition at the end of 1992 required transfer of property, obligations, institutes, and institutional responsibilities. Such processes are impossible without inventories, legal documents, correspondence, financial records, workplace lists, and decisions of Academy bodies. Act No. 283/1992 Coll. established the Czech Academy of Sciences and defined its research activity through institutes, its public budgetary position, and its self-governing bodies (*Act No. 283/1992 Coll., 1992*). Yet a law alone could not physically transfer an institution. The documentary apparatus of ČSAV made the legal transition administratively possible. Bulletins and internal records helped explain and operationalise what the law defined. In this sense, documentation linked political decision to organisational reality. It made institutional succession practicable rather than merely declarative.

The role of bulletins and documents was also pedagogical. They taught researchers how the new Academy would speak about itself. Repetition of terms such as autonomy, evaluation, democracy, grant competition, foreign cooperation, and responsibility helped stabilise a new institutional vocabulary. The Academy's later statutes describe it as a democratically organised network of autonomous scientific institutions and a national research centre with an irreplaceable role in the Czech system of research, development, and education (*Statutes of the Czech Academy of Sciences, 2006*). This later language did not appear from nowhere. It was prepared through years of internal debate, documentation, bulletins, legal texts, and public explanations. The early 1990s were therefore a formative linguistic period. The Academy had to learn how to describe itself without the formulas of socialist planning and without reducing itself to a market utility. Bulletins helped rehearse this new self-description before it hardened into statutory language.

Academic documentation also served as a bridge between immediate transformation and later historiography. Scholars such as Antonín Kostlán, whose professional profile includes the history of science and scientific institutions and work in ČSAV/AV ČR bodies during the transformation period, later contributed to the historiographical interpretation of these processes (*Institute of Contemporary History of the CAS, n.d.*). His listed work includes publications in *Akademický bulletin* on the origins and development of ČSAV, the November 1989 moment and the Academy, and later reflections on the history of scientific institutions (*Institute of Contemporary History of the CAS, n.d.*). This illustrates how the Academy's communicative channels became venues for historical interpretation. The bulletin did not disappear after the immediate crisis; it continued to publish reflections on institutional history. In this way, documentation and historiography reinforced each other. Former participants and later historians used Academy media to interpret the transformation for new generations. The bulletin thus became not only a contemporary record but a space for retrospective institutional memory.

The internal documentation of ČSAV is also valuable because it helps overcome a common weakness in narratives of 1989. Political histories often focus on national leaders, opposition movements, constitutional changes, and mass demonstrations. These are indispensable, but they do not show how a research institution actually changed. To understand the Academy, one must read workplace files, bulletins, evaluations, internal correspondence, and records of

committees. These materials reveal slower and less visible processes: how directors were replaced, how institutes argued for survival, how foreign contacts were renewed, how budgets were negotiated, and how research priorities were reformulated. They show that the Velvet Revolution did not end when the old regime fell. Inside institutions, it continued as documentation, procedure, and administrative struggle. The Academy's transformation was therefore a documentary revolution as well as a political one. It changed the records through which science governed itself.

The existence of multiple documentary genres also allowed different kinds of truth to emerge. Bulletins captured public institutional self-description. Minutes recorded decisions. Correspondence preserved negotiation and conflict. Archival fonds retained administrative traces. Periodicals such as *Věstník* carried disciplinary and scholarly reflection. Legal documents defined new frameworks. Retrospective articles later reinterpreted what had happened. None of these genres is sufficient alone. A bulletin may be too self-conscious, a legal act too formal, a private letter too partial, and a minute too condensed. Together, however, they allow a multi-layered reconstruction of institutional transformation. The historian can compare what the Academy said publicly with what it recorded internally, and what it later remembered with what it decided at the time. This comparative use of documentation is essential for avoiding both nostalgia and condemnation without evidence.

The role of documentation also raises a broader question about trust. After decades of ideological language, public trust in official texts was damaged. Many people had learned to read institutional language sceptically, looking for what was omitted rather than what was declared. After 1989, the Academy had to rebuild trust in its documents. This required not only new content but new credibility. A bulletin could not simply replace Marxist-Leninist phrases with democratic phrases and expect belief. It had to provide real information, acknowledge problems, and show that debate was possible. Internal documents had to support procedures that researchers could recognise as fairer than the old ones. Trust in documentation therefore had to be earned through accuracy and openness. The transformation of the Academy was partly a transformation of the relation between text and belief.

Academic bulletins also helped manage the emotional tempo of transformation. Revolutionary events create urgency, but scientific institutions require continuity. Bulletins could slow the pace of rumour by providing dated records and summarised decisions. They could also accelerate reform by making examples from one workplace visible to others. In this way, they mediated between immediacy and institutional time. A researcher who could not attend a meeting could still read about it. A workplace uncertain about the direction of reform could compare its experience with broader Academy discussions. This communicative function reduced isolation and helped create a sense that transformation was collective. It also allowed the Academy to maintain a certain continuity of scholarly life while undergoing political and administrative upheaval. Documentation did not eliminate conflict, but it made conflict more legible.

The documentary traces of the transformation also show that the Academy did not simply pass from secrecy to transparency in one step. Some materials remained internal, some public, some archival, some retrospective, and some accessible only later. This layered accessibility is normal for a complex institution. What changed after 1989 was the direction of movement. Documentation increasingly served accountability, historical reconstruction, and public communication rather than ideological supervision. The existence of digital catalogues,

periodical records, and archival descriptions today allows researchers to reconstruct that movement with far greater precision than would have been possible from memory alone. The preservation of *Bulletin Československé akademie věd*, *Věstník Československé akademie věd*, and the fonds of the Wichterle secretariat makes the transformation empirically studyable. It also shows that the Academy's memory became one of its research problems. The institution had to preserve evidence about itself in order to understand itself.

Thus, academic bulletins and internal documentation played an indispensable role in the transformation of ČSAV because they converted political rupture into institutional memory, communication, and procedure. The bulletins informed researchers, created an internal public sphere, helped restore reformist and excluded memories, and allowed the Academy to narrate its transformation rather than be defined only from outside. Internal documentation preserved the evidence needed for rehabilitation, leadership change, institute evaluation, foreign cooperation, legal succession, and later historiography. The archival fonds of presidium secretariats, especially those of Josef Říman and Otto Wichterle, show the passage from late-normalisation administration to post-revolutionary reconstruction. Periodicals such as *Věstník* and *Bulletin ČSAV* reveal how intellectual and institutional debates entered the Academy's communicative record. Later digital preservation and archival programmes demonstrate that these documents became not only administrative residues but historical sources and public cultural assets. In this sense, the documentary life of the Academy was one of the main arenas in which the crisis of the socialist research system was understood, managed, and remembered. Without bulletins and internal documentation, the transformation of ČSAV would have remained a sequence of events; through them, it became an institutionally legible history.

The Problem of Continuity and Discontinuity

1. What Had to Be Rejected from the Socialist Academy

The transformation of the Czechoslovak Academy of Sciences after the Velvet Revolution required not only preservation, adaptation, and legal reconstitution, but also a deliberate act of rejection. The problem of continuity and discontinuity could not be solved by keeping everything that functioned and renaming everything that looked compromised. Certain elements of the socialist Academy belonged so deeply to the political and ideological architecture of state socialism that they could not be corrected by minor reform. They had to be abandoned as principles of organisation, governance, evaluation, and scholarly life. This did not mean that ČSAV as a whole had to be treated as a worthless or illegitimate institution. On the contrary, the very difficulty of the transformation came from the fact that genuine scientific value had survived inside structures of political dependence. The Academy's historical overview later recognised both sides of this inheritance: Czech science endured heavy ideological pressure until 1989, while also preserving creative energy and producing internationally recognised achievements (*Academy of Sciences of the Czech Republic, n.d.*). The post-1989 question was therefore not whether the socialist Academy had produced

science, because it clearly had. The question was which features of the socialist Academy had prevented science from being governed by truth, peer judgement, openness, and freedom. These were the features that had to be rejected rather than simply modernised.

The first and most fundamental element to be rejected was the subordination of science to the ideological monopoly of the Communist Party. Under the socialist model, academic life could not fully define its intellectual purposes because it was placed within a political order that claimed the right to interpret history, society, culture, economy, and even the social function of scientific knowledge. This monopoly operated most visibly in the humanities and social sciences, but it also affected the natural and technical sciences through personnel decisions, international mobility, access to resources, leadership appointments, and the hierarchy of institutional trust. The Academy could not become a democratic scientific institution while preserving the assumption that one party or one official worldview had the authority to supervise scholarship. The post-1989 transformation therefore had to reject not only explicit ideological slogans, but the deeper institutional habit that treated political reliability as a condition of scholarly legitimacy. This was a structural rejection, not merely a rhetorical one. The Academy had to abandon the idea that scientific truth could be administratively certified by ideological authority. It also had to reject the more subtle idea that scholarship was acceptable only insofar as it did not disturb the approved image of socialist society. Without this rejection, freedom would have remained decorative.

The second element to be rejected was the presence of party control inside academic workplaces. The Communist Party's organisations in research institutes were not ordinary political clubs in a pluralist environment. They were embedded channels through which political loyalty, ideological discipline, and personnel oversight entered the daily life of research. They affected careers, appointments, travel, publication, and leadership in ways that were often informal but deeply consequential. After 1989, the Academy had to remove this internal political anatomy of control. It was not enough for the state to abolish the constitutional monopoly of the Communist Party if party structures continued to function as shadow authorities inside research institutes. Academic workplaces had to become spaces governed by professional bodies, not party cells. This rejection did not mean that scholars should be politically passive as citizens. It meant that no political party could be allowed to occupy the institutional interior of science. The boundary between civic political freedom and party tutelage over research had to be restored. The socialist Academy had blurred that boundary, and democratic science had to redraw it.

The third element to be rejected was cadre policy as a substitute for scholarly evaluation. In the socialist Academy, researchers were not judged only by their publications, discoveries, methodological competence, teaching capacity, or contribution to collective projects. They could also be judged by class background, political history, attitude to 1968, party membership, family connections, religious or civic behaviour, contacts abroad, and perceived ideological reliability. Such criteria damaged science because they corrupted the meaning of merit. A weak researcher could be protected by political conformity, while a strong researcher could be marginalised by political suspicion. The post-1989 Academy had to reject this entire logic of personnel assessment. It had to replace cadre trust with open competitions, professional evaluation, elected or accountable leadership, and international standards. This was not merely an ethical matter; it was also a practical condition for scientific renewal. A research institution that selects people by loyalty will gradually damage its intellectual

capacity. The socialist Academy's personnel mechanisms therefore belonged among the first things that had to be dismantled.

The 4th element to be rejected was the normalisation-era practice of purging, demoting, and silencing scholars because of political disagreement or civic integrity. The official Academy history notes that normalisation was especially severe for ČSAV because the Communist Party leadership took revenge for the role played by Academy social-science groups in the Prague Spring reform efforts (*Academy of Sciences of the Czech Republic, n.d.*). This revenge was not only a political episode; it reshaped research communities for decades. It removed or weakened reformist intellectual currents, interrupted careers, and taught institutes that survival required obedience or silence. After 1989, the Academy could not preserve the moral structure that had made such actions possible. It had to reject the legitimacy of punitive personnel policy and recognise that many normalisation-era exclusions had been political acts disguised as institutional necessity. This rejection was essential for rehabilitation. It also mattered for the future, because an Academy unable to name past injustice would be unable to protect future freedom. The break with normalisation therefore had to be explicit, not implied.

The 5th element to be rejected was censorship and the broader regulation of thought. In the socialist system, control over scholarship rarely operated only through direct prohibition. It worked through editorial caution, self-censorship, ideological review, institutional pressure, and the internalised knowledge of what could not be said. Oates-Indruchová's study of social sciences and humanities under normalisation is important because it shows how the regulatory framework shaped the limits of academic thought itself, especially after 1968 (*Oates-Indruchová, 2008*). The post-1989 Academy therefore had to reject not only visible censorship but also the habits produced by censorship. Scholars had to stop writing for imagined ideological inspectors. Editors had to stop anticipating political consequences before judging scholarly quality. Institutes had to stop avoiding difficult topics because they might disturb institutional comfort. The rejection of censorship was therefore a rejection of a whole intellectual psychology. It was a demand that research questions be formed by evidence, method, and disciplinary debate rather than fear.

The 6th element to be rejected was the compulsory privilege of Marxism-Leninism as an official interpretive framework. This rejection was particularly important in the social sciences and humanities, where official Marxist-Leninist language had often functioned as the authorised grammar of social explanation. The problem was not that Marxist thought as such could never be part of academic inquiry. In a free academic environment, Marxism may be studied, used, criticised, revised, and compared with other traditions. The problem was that under the socialist Academy, one ideological version of Marxism-Leninism possessed institutional privilege and often served as a test of orthodoxy. This destroyed theoretical pluralism. It made certain conclusions predictable before research began. It also pushed alternative traditions into marginal, coded, or forbidden positions. After 1989, the Academy had to reject not intellectual engagement with Marxist theory, but the monopoly of a state-sanctioned doctrine. The difference was crucial: scholarship could include Marxism only after it ceased to be compulsory.

The 7th element to be rejected was the fusion of scientific authority with political obedience. The socialist Academy often presented itself as a body of distinguished science, yet distinction was inseparable from a hierarchy formed within the party-state. Titles, presidium membership,

institute leadership, and public honours could carry genuine scientific merit, but they could also reflect political reliability or strategic usefulness to the regime. After 1989, the Academy had to separate honour in science from loyalty to power. This separation affected the old system of academicians and corresponding members, which was later abolished in the transformation process; the ALLEA institutional portrait notes that political changes after 1989 affected scientific life and that the status of academicians and corresponding members at ČSAV was abolished (*ALLEA, 2015*). This change should not be read as a rejection of learned distinction itself. It was a rejection of a Soviet-style fusion of scholarly hierarchy, state recognition, and political status. The later development of the Learned Society of the Czech Republic reflected the need to reconstruct academic honour on a different civic and scholarly basis.

The 8th element to be rejected was centralised command over research priorities. In the socialist Academy, research themes were often placed within state plans, ideological programmes, sectoral expectations, and administrative classifications. Some planning was necessary for any large research organisation, especially one with laboratories, field stations, archives, and expensive equipment. The problem was not planning as coordination. The problem was command planning as intellectual control. It encouraged institutes to justify themselves through official priorities rather than genuine research questions. It could preserve obsolete fields because they were administratively protected, while suppressing or delaying emerging fields because they did not fit inherited categories. After 1989, the Academy had to reject this model of priority formation. Research priorities needed to be shaped by scientific quality, social relevance, international comparison, and transparent evaluation. The later legal model of the Czech Academy, established by Act No. 283/1992 Coll., retained institute-based research but placed it within a new public and self-governing framework rather than the old party-state chain of command (*Act No. 283/1992 Coll., 1992*).

The 9th element to be rejected was administrative secrecy as a normal condition of academic governance. Socialist institutions often governed through files, confidential evaluations, internal reports, restricted correspondence, and selective access to information. Some documentation is necessary in any institution, but under ideological rule documentation could become a technology of surveillance and control. It could determine careers without open discussion, circulate suspicions without accountability, and shape decisions in spaces inaccessible to those affected by them. After 1989, the Academy had to reject secrecy as the ordinary atmosphere of governance. This did not mean that every document could instantly become public, because personnel matters, diplomatic exchanges, and institutional negotiations sometimes require confidentiality. It meant that decisions affecting science had to become reasoned, recorded, contestable, and as transparent as possible. The preservation and later use of ČSAV archival fonds became important precisely because they made it possible to reconstruct how power had worked. The democratic Academy had to transform documentation from an instrument of control into an instrument of accountability.

The 10th element to be rejected was the isolation of Czech science from open international exchange. Czechoslovak researchers were never completely cut off from the world, and some institutes maintained significant international reputations even under difficult conditions. Yet foreign travel, correspondence, access to Western literature, conference participation, and cooperation with non-socialist institutions were often politically filtered. Lommi's study of Czechoslovak science stresses that after 1989 Czechoslovakia rapidly re-established academic contacts with Western scientific communities and that, at least in terms of freedom

of movement, hopes associated with the Prague Spring reforms were finally realised (*Lommi, 2012*). The socialist Academy's politically controlled internationalism had to be rejected because science depends on open circulation of people, methods, publications, and criticism. The Academy needed to abandon the suspicion attached to Western cooperation and the privileged ideological framing of Eastern-bloc exchange. This did not mean rejecting all scientific ties with former socialist countries. It meant rejecting political compulsion as the basis of international cooperation. Scientific exchange had to become disciplinary, project-based, and peer-oriented.

The 11th element to be rejected was the use of science as a legitimising ornament of the regime. Socialist states often celebrated science as proof of modernity, progress, industrial power, and historical superiority. The Academy benefited from this prestige, but it also paid for it by being drawn into the symbolic economy of the party-state. Scientists were presented as builders of socialism, and research achievements were often publicly framed as achievements of the political order. After 1989, the Academy had to reject this instrumentalisation. Scientific achievement could no longer be treated as political decoration. A discovery in chemistry, a linguistic edition, an archaeological find, a mathematical result, or a sociological analysis had to belong first to knowledge, not to regime propaganda. This distinction was essential for public trust. If society believed that science had served mainly as a ceremonial mask for power, it would become easier to dismiss the Academy altogether. The post-1989 defence of the Academy required a clear rejection of propaganda science. It had to show that scientific value had survived precisely where it exceeded ideological use.

The 12th element to be rejected was the normalisation habit of institutional self-censorship. This was subtler than formal censorship and therefore harder to dismantle. Many researchers and editors had learned to avoid dangerous topics, soften conclusions, use protective terminology, or delay publication without being directly ordered to do so. Such habits often survived the political structures that produced them. After 1989, it was not enough to declare that censorship had ended. Academic communities had to learn again how to argue openly, disagree publicly, cite previously excluded authors, and name politically sensitive facts. This required a change in academic character. The old system had trained caution as a survival skill. Democratic science had to cultivate intellectual courage as a professional virtue. The Academy therefore had to reject not only external restrictions but internalised fear. This was one of the most difficult discontinuities because it could not be legislated into existence. It had to be practised through publication, debate, peer criticism, and institutional protection of dissent.

The 13th element to be rejected was the politicisation of evaluation. Under socialism, evaluation of institutes and researchers could involve political reliability, ideological suitability, administrative compliance, and service to state priorities. Professional quality mattered, but it was not always decisive. After 1989, the Academy had to replace this mixed and often opaque evaluation culture with scientific assessment. That meant publications, projects, international recognition, peer judgement, originality, disciplinary relevance, and public value where appropriate. In the broader post-socialist region, the transformation of research systems involved the dissolution or fragmentation of socialist science-and-technology structures and the creation of new mechanisms of evaluation and funding (*Meske, 1998*). The Czech Academy's move towards expert assessment and later self-governing structures belonged to this wider process. The crucial point was that evaluation had to stop being an ideological filter. If the Academy preserved politicised evaluation under new labels, it

would reproduce one of the essential defects of the socialist model. The rejection of politicised evaluation was therefore a precondition for both scientific quality and moral credibility.

The 14th element to be rejected was the protected incompetence that ideological systems can create. This phrase must be used carefully, because many scholars who worked inside ČSAV under socialism were highly competent and sometimes internationally distinguished. The problem was that ideological protection could allow weak leadership, stagnant research groups, or administratively useful institutes to survive without adequate professional scrutiny. A system that rewards loyalty and predictability will often tolerate mediocrity if mediocrity is politically safe. After 1989, the Academy had to reject this tolerance. It had to ask which institutes were scientifically strong, which were recoverable, and which had been maintained primarily by inertia. This was a painful process because institutional communities are made of people, not abstract categories. Yet without such reassessment, the new Academy would have carried into democracy the dead weight of the old order. The rejection of protected incompetence was not hostility towards continuity. It was an attempt to ensure that continuity served science rather than bureaucracy.

The 15th element to be rejected was the punishment of interdisciplinarity and intellectual experimentation when these threatened ideological order. The socialist Academy could support certain interdisciplinary projects, especially when they served planning, technology, economy, or officially approved social analysis. Yet interdisciplinary work that crossed into political interpretation, social critique, religious thought, cultural memory, or non-orthodox theory could be treated with suspicion. After 1989, the Academy had to reject the idea that intellectual boundaries should be policed by ideology. It needed to allow research questions to cross disciplines according to scholarly necessity. This was important for studying the socialist period itself, because understanding normalisation required history, sociology, political science, law, philosophy, archival science, economics, and cultural studies. It was also important for natural and technical sciences, where international research increasingly depended on interdisciplinary cooperation. The socialist Academy's administrative divisions could not simply dictate the future map of knowledge. A democratic research institution had to be more flexible, porous, and intellectually adventurous.

The 16th element to be rejected was the subordination of universities to a distorted division of labour that weakened academic life as a whole. The Academy had carried much of the country's research capacity, while universities under socialism were heavily controlled and often deprived of full research autonomy. The post-1989 transformation did not require abolishing the Academy's institute-based model, but it did require rejecting any structure that isolated research from higher education or treated universities as secondary sites of knowledge. The Czech Academy's historical overview notes that ČSAV had possessed at least a formally greater degree of decision-making autonomy than universities after their sovietisation in 1950, while still being ultimately controlled by totalitarian mechanisms (*Academy of Sciences of the Czech Republic, n.d.*). The democratic reconstruction of Czech science therefore had to reconnect Academy institutes with universities, doctoral training, teaching, and scholarly mobility. What had to be rejected was not non-university research, but the rigid socialist separation that had placed different parts of academic life under different forms of control. The future Academy needed to cooperate with universities rather than stand above or apart from them.

The 17th element to be rejected was the culture of bureaucratic dependence. Under the socialist research system, many decisions passed through administrative chains that encouraged waiting for approval, avoiding responsibility, and treating initiative as risky. This bureaucratic culture could survive even after ideological language disappeared. A democratic Academy needed directors, councils, researchers, and institutes capable of initiative, not merely compliance. It had to reject the learned passivity of command institutions. This did not mean replacing public responsibility with individual arbitrariness. It meant building procedures in which people could propose projects, compete for grants, form collaborations, criticise leadership, and take responsibility for results. The later structure of the Czech Academy, with the Academy Assembly as its supreme self-governing body and research conducted through institutes, reflected a move towards a different model of responsibility (*Act No. 283/1992 Coll., 1992*). The rejection of bureaucratic dependence was therefore one of the deeper cultural transformations of the Academy. It required people to stop asking only what was permitted and to begin asking what was scientifically necessary.

The 18th element to be rejected was the conflation of public funding with political ownership. The socialist Academy was financed by the state, and this fact had often helped justify political supervision. After 1989, the Academy did not cease to be publicly funded; indeed, Act No. 283/1992 Coll. established the Czech Academy as an organisational body of the Czech Republic financed from the state budget (*Act No. 283/1992 Coll., 1992*). The difference was that public funding in a democratic order had to be separated from political command over research content. This separation was indispensable. A democratic state may set broad policy frameworks, allocate resources, and demand accountability, but it cannot legitimately dictate scholarly conclusions. The socialist Academy's model had blurred this distinction. The new Academy had to reject the idea that because society funds science, political authorities scientific truth. This remains a central issue for public research institutions in every democracy. In the Czech case, it was sharpened by the memory of ideological rule.

The 19th element to be rejected was the moral hierarchy created by 1968 and normalisation. For two decades, researchers were often classified by their relationship to the Prague Spring, the Soviet-led invasion, party purges, and the public rituals of normalisation. Those who rejected the official interpretation of 1968 could face exclusion, while those who accepted it could gain security. After 1989, the Academy had to reverse this hierarchy not by creating a mirror-image ideology, but by rejecting political obedience as a source of academic worth. This required rehabilitation of many damaged scholars, but it also required more than rehabilitation. It demanded that the Academy stop treating the normalisation settlement as a legitimate basis for institutional memory. The reformist and critical currents of the 1960s had to be restored to the history of Czech science. The trauma of exclusion had to be acknowledged. Yet the purpose of rejection was not revenge. It was to make sure that the Academy's future would not be built on the moral categories of the normalisation regime.

The 20th element to be rejected was the concealment of institutional responsibility behind the abstraction of "the regime." It would have been tempting after 1989 to blame everything on the Communist Party, ministries, or state authorities and thereby absolve the Academy as an institution. Such a simplification would have been historically inadequate. Ideological control operated through concrete academic structures: presidia, institute managements, personnel committees, editorial boards, party organisations, travel approvals, and research plans. The Academy had to reject the evasive narrative that all wrong came from outside. Of course, external political pressure was decisive, and many people inside ČSAV were themselves

constrained. But institutions are not only victims of systems; they also transmit systems. A serious transformation required acknowledgement that parts of the Academy had helped implement exclusion and silence. This was one reason why internal documentation and archives became so important. They made institutional responsibility traceable rather than rhetorical.

The 21st element to be rejected was the doctrine that scientific value should be measured primarily by usefulness to a state-defined project. Socialist science was often justified as a productive force, a tool of national economic planning, or a contributor to the construction of socialism. Some research was genuinely useful, and democratic societies also need applied research. The problem was the reduction of scientific legitimacy to service of an official project. After 1989, the Academy had to defend basic research, humanities scholarship, theoretical inquiry, and long-term scientific work in a new way. It had to reject both ideological utilitarianism and the later temptation to replace it with crude market utilitarianism. This distinction was essential. The rejection of socialist instrumentalisation did not mean science should be socially irresponsible. It meant that the social value of science had to be understood through truth, discovery, critical reflection, culture, education, innovation, and long-term public benefit. The Academy's later statutes described it as a democratically organised network of autonomous scientific institutions advancing knowledge and serving society, which indicates how the old utilitarian language was replaced by a broader democratic mission (*Statutes of the Czech Academy of Sciences, 2006*).

The 22nd element to be rejected was the idea that the Academy could be reformed only internally, without public accountability. This may seem contrary to the rejection of political control, but the two points belong together. The socialist Academy had been internally controlled by party-state mechanisms, yet not publicly accountable in a democratic sense. After 1989, it had to reject both political subordination and closed corporatism. A public research organisation had to explain itself to society, parliament, universities, ministries, international partners, and citizens. The ALLEA portrait of the Czech Academy later described it as a public non-university research institution established as the Czech successor of ČSAV, with integration into international research promoted through projects and scientist exchange (*ALLEA, 2015*). This public and international identity required openness. The Academy could not simply retreat into self-defence and claim that only insiders had the right to judge it. It had to accept transparent evaluation while defending the autonomy of scholarly judgement. Rejecting the socialist model therefore included rejecting institutional closure as well as political interference.

The 23rd element to be rejected was the inheritance of artificial disciplinary prestige created by ideology. Some fields had been elevated because they served official interpretations, while others had been marginalised because they disturbed them. This was especially visible in history, philosophy, sociology, law, economics, and cultural studies, but it could also affect applied and technical fields through state priorities. After 1989, the Academy had to ask which disciplines had genuine scholarly strength and which had been inflated by ideological need. It also had to support fields that had been weakened by political suspicion. This was a delicate process because no discipline should be punished simply because it had existed under socialism. Yet the Academy could not preserve ideological disciplinary hierarchies as if they were natural. Research priorities had to be reconstructed through intellectual necessity, professional standards, and social relevance in a democratic sense. This required pluralism in theory and method. It also required openness to fields previously treated as bourgeois,

revisionist, religious, nationalist, formalist, or otherwise suspect. The rejection of artificial prestige was part of the recovery of a normal scholarly ecology.

The 24th element to be rejected was the late-socialist habit of international comparison only when politically convenient. Socialist institutions often compared themselves with the West selectively: they celebrated achievements when useful, explained weaknesses by external hostility, and avoided open benchmarking where it threatened prestige. After 1989, the Academy had to accept more demanding comparison with foreign academies, universities, research institutes, and publication standards. This was difficult because decades of isolation had created uneven development across disciplines. Some institutes were internationally strong; others had fallen behind. A democratic Academy could not hide this unevenness behind official optimism. It had to reject defensive self-description and invite real evaluation. The broader literature on post-socialist research-system transformation shows that Central and Eastern European scientific institutions faced severe restructuring, reduced resources, and the need to adapt to new international standards after 1989 (*Meske, 1998*). The Czech Academy's survival depended partly on its willingness to enter this comparative environment. Rejection of false comparison was therefore linked to the acceptance of difficult truth.

The 25th element to be rejected was the belief that institutional continuity itself could legitimise the future. ČSAV had buildings, institutes, researchers, archives, equipment, periodicals, international contacts, and achievements. These mattered greatly and could not be casually destroyed. But their existence did not automatically justify the preservation of the socialist Academy's structures. After 1989, continuity had to be earned. Each institute, procedure, title, funding mechanism, and research priority had to be reconsidered in light of democratic autonomy and scientific quality. Act No. 283/1992 Coll. did not simply continue ČSAV under another name; it established the Czech Academy of Sciences as the Czech successor of the former Czechoslovak Academy, with a defined public legal status and self-governing bodies (*Act No. 283/1992 Coll., 1992*). Succession therefore involved discontinuity. The Academy could inherit scientific capital only by rejecting the political architecture that had contained it. This was the central paradox of the transformation. Preservation required rupture.

The 26th element to be rejected was the reduction of ethical questions to private conscience. Under normalisation, many scholars privately disagreed with the system, but public institutional life often remained shaped by accommodation. After 1989, the Academy had to recognise that ethics in science is not only a matter of individual conscience. It is also institutional: how people are appointed, how criticism is protected, how conflicts of interest are handled, how archives are preserved, how authorship is recognised, how evaluation is conducted, and how public responsibility is understood. The socialist Academy had allowed moral compromise to become administratively normal. The democratic Academy had to reject this normalisation of ethical ambiguity. That did not mean judging every individual with equal severity. It meant building institutions in which ethical conduct no longer depended only on personal courage against the system. Freedom required procedures, not only brave individuals. This rejection of private-only ethics was essential for making scientific autonomy durable.

The 27th element to be rejected was the old language of inevitability. Socialist institutions often justified themselves through historical necessity, the leading role of the Party, objective laws of development, and the supposed inevitability of socialist progress. Such language made alternatives appear irrational or hostile. After 1989, the Academy had to recover the possibility

of alternatives. Its future became open: abolition, merger with universities, radical reduction, reform, or reconstitution were all debated possibilities. This openness was unsettling but necessary. A scientific institution should not fear contingency, because inquiry itself depends on openness to evidence and revision. The socialist Academy's language of inevitability had narrowed institutional imagination. The post-1989 Academy had to reject that closure and learn to justify itself through argument rather than destiny. This was why public debate, internal bulletins, elected bodies, expert evaluations, and legal reform mattered. They replaced historical inevitability with institutional reasoning.

Thus, what had to be rejected from the socialist Academy was not science itself, nor institute-based research, nor public support for knowledge, nor the accumulated intellectual labour of generations of Czech and Slovak scholars. What had to be rejected was the political architecture that had subordinated science to ideology, party control, cadre policy, censorship, secrecy, bureaucratic dependence, and normalisation-era moral hierarchy. The post-1989 Academy had to separate scientific capital from socialist deformation and preserve the former by abandoning the latter. This required the rejection of compulsory Marxism-Leninism, party structures in academic workplaces, politicised evaluation, punitive personnel practices, controlled international exchange, and the use of science as regime legitimation. It also required rejecting institutional evasions: the idea that responsibility belonged only to "the regime," that continuity itself was enough, or that public funding gave political power the right to command truth. The transformation of ČSAV was therefore not a simple break and not a simple continuation. It was a selective discontinuity. Its purpose was to make possible a Czech Academy that could inherit laboratories, archives, disciplines, and human expertise without inheriting the ideological mechanisms that had constrained them.

2. What Had to Be Preserved from ČSAV

The transformation of the Czechoslovak Academy of Sciences after 1989 required rejection, but it also required preservation. If the socialist Academy had been reduced only to its ideological deformations, the easiest answer would have been abolition. Yet such an answer would have been historically false and scientifically destructive, because ČSAV contained a large part of the country's accumulated research capacity. It preserved laboratories, archives, institutes, field stations, specialist libraries, scholarly periodicals, expert communities, international contacts, and forms of disciplinary memory that could not be recreated quickly. The Academy's historical overview later expressed this dual inheritance by acknowledging heavy ideological pressure under communism while also stressing that Czech science retained creative energy and reached the world scientific community in a number of cases (*Academy of Sciences of the Czech Republic, n.d.*). The problem after 1989 was therefore not whether ČSAV should be continued unchanged, but how to distinguish what belonged to science from what belonged to ideological domination. Preservation was not conservatism. It was a necessary condition of meaningful transformation.

The first thing that had to be preserved was the idea of a strong non-university research institution. ČSAV had been created in 1952 under socialist political conditions, but the institute-based form of Czech research did not begin with Stalinisation. The Academy's historical overview shows that specialised research institutes had earlier roots in the Czech Academy of Sciences and Arts, the Royal Czech Society of Sciences, autonomous state institutes, the Oriental Institute, the Archaeological Institute, the Institute of Slavonic Studies,

the Czech Language Institute, the Nuclear Physics Institute, the Mathematical Research Institute, and other pre-1952 or transitional institutions (*Academy of Sciences of the Czech Republic, n.d.*). This genealogy mattered because post-1989 critics could easily treat ČSAV as a purely Soviet-style creation. In reality, the socialist Academy had absorbed and reorganised older Czech research traditions. To abolish the institute system wholesale would have meant destroying not only a socialist structure, but also much older scholarly infrastructures. The democratic transformation therefore had to preserve the institute-based principle while freeing it from party-state command. The future Czech Academy could be a successor to ČSAV precisely because it was also heir to earlier Czech learned and research traditions.

The second thing that had to be preserved was the material infrastructure of research. Scientific knowledge is not produced by ideas alone; it also depends on buildings, instruments, collections, laboratories, observatories, archives, databases, libraries, field sites, and long-term technical support. ČSAV possessed many such resources, often accumulated over decades and sometimes inherited from older institutions. If transformation had destroyed them, democratic Czech science would have lost irreplaceable material capital at the very moment when it needed to reconnect with international research. The Academy's later mission statement describes the present CAS as a complex of public research institutions, with thousands of employees and a broad spectrum of natural, technical, social-scientific, and humanistic research (*Czech Academy of Sciences, n.d.*). That present structure did not arise from nothing after 1992. It depended on the selective preservation of institutes and infrastructure from ČSAV. The continuity of material conditions made it possible for the new Academy to become a reformed institution rather than a merely symbolic legal successor.

The third thing to preserve was human capital. ČSAV employed researchers, technicians, editors, librarians, archivists, laboratory assistants, engineers, administrators, and other specialists whose skills were not easily replaceable. Some had suffered under the previous regime, some had adapted, some had remained silent, and some had worked within compromised structures. Yet the scientific competence accumulated in the Academy could not be dismissed as politically contaminated simply because it had developed under socialism. The Academy's transformation had to distinguish between political responsibility and professional expertise. In the early 1990s, this was especially important because the country was undergoing political, economic, and educational change at the same time. Universities needed renewal, ministries needed expertise, industry needed scientific support, and society needed interpretation of its recent past. Losing the Academy's human capital would have weakened all these processes. Preservation of people did not mean preservation of all positions or hierarchies; it meant keeping the intellectual and technical capacities without which research institutions cannot function.

The 4th thing that had to be preserved was disciplinary continuity. Every science develops through cumulative practices: methods, terminologies, collections, publication habits, schools, debates, instruments, and intergenerational transmission. Even where disciplines had been ideologically distorted, they still contained traditions that could be recovered, corrected, or redirected. The humanities and social sciences needed deep renewal after normalisation, but they also needed historians, sociologists, philosophers, economists, philologists, archaeologists, and legal scholars capable of reconstructing those fields. Natural and technical sciences needed internationalisation, new equipment, and freer exchange, but they also needed continuity in laboratories, research groups, and specialist training. The Academy's historical overview stresses that Czech science retained creative energy despite

disparities among fields and periods of communist rule (*Academy of Sciences of the Czech Republic, n.d.*). This point is essential. Transformation was not an intellectual year zero. It was a critical continuation of disciplines whose development had been constrained but not erased.

The 5th thing to preserve was the Academy's long historical memory. ČSAV was not only a socialist institution; it was a container of older Czech scientific traditions. The Academy's history links the modern institution with the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, specialised interwar institutes, and research bodies formed before the socialist consolidation of 1952 (*Academy of Sciences of the Czech Republic, n.d.*). This memory was important after 1989 because democratic legitimacy could not rest on the socialist period alone. The Academy needed to show that Czech science had older roots in Enlightenment learned culture, national revival, First Republic institutions, and European scholarly exchange. Preserving this memory allowed the new Academy to claim continuity with Czech scientific civilisation rather than with the party-state. At the same time, this memory had to be critical, not nostalgic. The older genealogy did not excuse the deformations of normalisation, but it prevented the Academy from being reduced to them.

The 6th thing to preserve was the capacity for basic research. In a period of post-socialist economic restructuring, there was a real danger that science would be judged only by immediate utility, market value, or short-term policy usefulness. ČSAV had supported basic research in many fields, and this capacity could not be sacrificed without damaging the country's long-term intellectual and technological future. The present CAS mission continues to define the Academy's primary role as research across a broad spectrum of natural, technical, social sciences, and humanities, aiming to advance scientific knowledge at the international level while responding to Czech society and national culture (*Czech Academy of Sciences, n.d.*). This formulation preserves a crucial balance. Science must serve society, but it cannot be reduced to immediate service. The post-1989 Academy had to keep laboratories, institutes, and research teams capable of asking long-term questions. Preservation of basic research was therefore one of the main reasons why the Academy could not simply be dissolved into universities, ministries, or market structures.

The 7th thing to preserve was the Academy's role in national culture. Czech scientific institutions had never been only technical organisations; they had also been connected with language, history, literature, archaeology, national memory, and the cultural self-understanding of Czech society. The older Academy of Sciences and Arts had published scholarly works, redistributed grants, represented Czechoslovak science at home and abroad, and supported specialised committees and research work (*Academy of Sciences of the Czech Republic, n.d.*). ČSAV inherited and transformed parts of this cultural function. After 1989, the new democratic order needed institutions capable of studying the Czech language, literature, history, archaeology, philosophy, art, and social development without ideological control. If these fields had been abandoned because they were damaged by socialism, the country would have lost essential instruments of self-knowledge. The task was therefore to preserve cultural scholarship while liberating it from doctrinal interpretation. In this sense, preservation was also national-cultural reconstruction.

The 8th thing to preserve was international scientific capacity. ČSAV had operated under ideological restrictions, but it had not been completely isolated. Some institutes maintained contacts, reputations, publications, and collaborative relationships that could be revived after 1989. The Academy's later institutional portrait emphasises that integration of Czech science

into the international context has been promoted through joint international research projects and exchanges of scientists with counterpart institutions abroad (*ALLEA, 2015*). This post-1989 internationalisation relied partly on existing competences and contacts. It was easier to renew cooperation where fields had retained recognisable scientific quality. It was also easier to attract foreign partners when institutes had archives, laboratories, specialists, and institutional names that could be identified. The democratic Academy therefore needed to preserve the international scientific capital that had survived socialism. The goal was not to continue politically filtered foreign relations, but to convert surviving links and reputations into open international cooperation.

The 9th thing to preserve was the Academy's function as a national research coordinator. Under socialism, coordination had often been too centralised and ideologically directed, but the need for coordination itself did not disappear. A small or medium-sized country cannot afford the complete fragmentation of advanced research capacity. It needs institutions capable of sustaining expensive infrastructure, long-term projects, national collections, interdisciplinary programmes, and scientific representation abroad. The present CAS mission describes the Academy as involving institutes, universities, applied research, industry, public institutions, international programmes, and elected self-governing bodies (*Czech Academy of Sciences, n.d.*). This role had to be rebuilt after 1989, but it could not be invented from nothing. ČSAV had already concentrated expertise and organisational capacity. What had to be preserved was the coordinating potential; what had to be rejected was political command. Democratic coordination had to replace authoritarian coordination.

The 10th thing to preserve was the Academy's relationship with universities, but in a transformed form. Under state socialism, the division between Academy research and university teaching had been shaped by Soviet-style institutional design and political control. Yet the Academy's history notes that ČSAV sometimes retained a greater formal degree of decision-making autonomy than universities and could even provide refuge for scholars expelled from universities for ideological reasons, including Václav Černý, Jan Patočka, and Otto Wichterle (*Academy of Sciences of the Czech Republic, n.d.*). This history shows that the Academy-university relationship was complex. ČSAV could not be idealised, but neither could it be treated only as an obstacle to university science. After 1989, what had to be preserved was the possibility of strong research institutes cooperating with universities in doctoral training, teaching, and joint projects. The current CAS mission explicitly mentions the participation of Academy researchers in education, especially doctoral programmes and teaching at universities (*Czech Academy of Sciences, n.d.*). This cooperation represents preservation through transformation, not simple institutional continuity.

The 11th thing to preserve was the Academy's archival and documentary heritage. The transformation of ČSAV required criticism of the past, but criticism depends on evidence. The Academy's archives preserved documents concerning institutes, presidia, correspondence, foreign cooperation, workplace problems, and relations with state and party authorities. Without this documentary record, the history of normalisation, reform, exclusion, and institutional survival would be much harder to reconstruct. The preservation of archives was therefore not only an administrative matter. It was a democratic and scholarly necessity. A society emerging from ideological control needs documents that allow it to examine how control worked. The Academy had to preserve records even when they were uncomfortable. The archive was part of the scientific capital inherited from ČSAV, because it made possible future historical knowledge of the Academy itself.

The 12th thing to preserve was the accumulated publication culture of Czech scholarship. ČSAV had produced journals, bulletins, edited volumes, monographs, dictionaries, catalogues, documentary editions, scientific reports, and disciplinary periodicals. Some publications were ideologically compromised, but many contained valuable research and data. After 1989, this publication infrastructure needed reform, editorial freedom, new peer standards, and international openness. It did not need total destruction. Disciplines depend on continuity of publication channels, especially in smaller-language scholarly cultures. Czech-language scholarship in history, philology, archaeology, philosophy, sociology, and cultural studies needed journals and publishers capable of communicating with domestic readers as well as international audiences. The preservation of scholarly publishing was therefore tied to the preservation of national intellectual life. The task was to remove censorship and formulaic ideology while retaining the institutional capacity to produce serious scholarly texts.

The 13th thing to preserve was expertise in fields essential for state and social transformation. After 1989, Czechoslovakia and then the Czech Republic needed knowledge in economics, law, sociology, political science, history, demography, environmental studies, technology, medicine, energy, and many other fields. Some of this expertise was located in universities, but much of it was also concentrated in Academy institutes. The transformation of economic and social life created demand for experts who could advise, analyse, criticise, and educate. To abolish the Academy would have deprived the new democracy of important intellectual resources. At the same time, expertise had to be detached from its old technocratic or ideological functions. It had to serve public debate, democratic policy, and evidence-based reasoning rather than party planning. Preserving expertise therefore meant changing its public role. The Academy could remain useful only if expertise became open, contestable, and professionally accountable.

The 14th thing to preserve was scientific leadership, but not the old hierarchy of political prestige. Many senior scientists in ČSAV possessed genuine scholarly authority, institutional experience, and international recognition. The problem was that the socialist Academy had mixed scientific distinction with political status. The post-1989 solution was not to reject all senior authority, but to separate genuine expertise from politically contaminated hierarchy. The ALLEA portrait notes that after 1989 the status of academicians and corresponding members at ČSAV was abolished and that the Learned Society of the Czech Republic was later established as a civic association contributing to the free, self-directed advancement of science (*ALLEA, 2015*). Rudolf Zahradník's account similarly explains that the old group of academicians had become contaminated by the regime and that its abolition after communism was experienced as a liberating act, while the renewal of a learned society remained desirable in democratic form (*Zahradník, 2004*). Thus, what had to be preserved was learned distinction; what had to be abandoned was its fusion with state-socialist hierarchy.

The 15th thing to preserve was institutional memory of reformist science. The Prague Spring had shown that parts of the Academy, especially in the social sciences, could participate in intellectual renewal, public debate, and reformist thinking. Normalisation punished these currents, but it did not erase their memory. After 1989, that memory became a resource for democratic reconstruction. The Academy's history explicitly notes that normalisation was especially hard on ČSAV because of the role played by Academy social-science groups in the reform efforts of 1968 (*Academy of Sciences of the Czech Republic, n.d.*). This means that ČSAV contained not only the legacy of ideological control, but also the memory of attempts to

overcome it. Preserving that memory helped prevent the Academy from identifying itself only with the late-socialist period. It also provided a bridge between 1968 and 1989. The reformist tradition became one of the moral foundations for renewal.

The 16th thing to preserve was the experience of scientific survival under pressure. This may sound paradoxical, but it was important. Many researchers had learned how to continue serious work despite ideological constraints, shortages, travel restrictions, and bureaucratic interference. Such experience did not make the system legitimate, but it demonstrated professional resilience. After 1989, Czech science needed this resilience because freedom arrived together with uncertainty, budget cuts, institutional restructuring, and international competition. The Academy could not afford to lose those who knew how to maintain laboratories, archives, collections, journals, and research teams in difficult circumstances. Survival experience had to be purified of fear and compromise, but its practical knowledge remained valuable. Democratic science also faces crises, though of different kinds. The human capacity to preserve research continuity under pressure was therefore part of what ČSAV handed over to the new Academy.

The 17th thing to preserve was the connection between specialised knowledge and public responsibility. Under socialism, public responsibility had been distorted into service to the party-state, but the idea that science should serve society could not simply be rejected. The current CAS mission states that Academy research aims to advance scientific knowledge internationally while taking into account the needs of Czech society and national culture (*Czech Academy of Sciences, n.d.*). This formulation shows how an old idea could be democratically reworked. Science should not obey ideology, but neither should it be socially indifferent. The Academy had to preserve a sense of responsibility for national culture, education, technological development, health, environment, and public understanding. What changed was the basis of responsibility. It became responsibility through truth, competence, and openness, not responsibility through political loyalty. This distinction allowed the Academy to retain social mission without reproducing socialist instrumentalisation.

The 18th thing to preserve was the Academy's capacity for interdisciplinary research. ČSAV had institutes in natural, technical, social, and human sciences, and this breadth was one of its strongest assets. The current CAS mission continues to stress a broad spectrum of specialised and interdisciplinary research (*Czech Academy of Sciences, n.d.*). Interdisciplinarity was especially important after 1989 because the transformation itself required multiple forms of knowledge. Economic reform, legal transition, environmental problems, technological modernisation, historical reckoning, and cultural renewal could not be understood from one discipline alone. The Academy's breadth made it possible to sustain such connections. If the transformation had fragmented all research into isolated university departments or market-oriented units, this interdisciplinary capacity might have been weakened. Preserving the Academy's broad structure therefore served both science and society. The challenge was to make interdisciplinarity intellectually free rather than administratively imposed.

The 19th thing to preserve was the Academy's technical and support staff. Discussions of research institutions often focus on famous scholars, directors, and academicians, but scientific continuity depends on many less visible professionals. Laboratory technicians, instrument makers, librarians, archivists, editors, translators, field assistants, data managers, maintenance workers, and administrators all carry institutional knowledge. ČSAV had

accumulated such expertise across decades. Abrupt institutional destruction would have dispersed this knowledge and damaged research capacity in ways not immediately visible in political debate. Preservation of support structures was therefore essential. A democratic Academy could change leadership and evaluation while still needing the people who knew how instruments worked, where documents were stored, how collections were organised, and how long-term projects were maintained. Scientific capital is collective. The transformation had to preserve that collective dimension.

The 20th thing to preserve was the Academy's regional and institutional diversity. Although Prague was central, the Academy's workplaces and associated research activities were not reducible to one building or one administrative centre. Scientific fields were distributed across institutes, collections, observatories, laboratories, and specialised workplaces. This diversity helped Czech science maintain depth in several areas. The present CAS continues to be described as a complex of public research institutions, not as a single centralised office (*Czech Academy of Sciences, n.d.*). The post-1989 challenge was therefore not merely to democratise the centre, but to preserve a network. A network can sustain specialisation, collaboration, and long-term development better than a purely central bureaucratic body. What had to be removed was political centralism; what had to remain was organised scientific plurality. The survival of institute diversity was one of the reasons the Academy could remain a national research system.

The 21st thing to preserve was the possibility of public funding for high-level research. The socialist Academy had been state-funded, and this had often been linked with political dependence. Yet public funding itself was not the problem. Advanced research in basic science, humanities, archives, and national collections cannot rely only on markets. Act No. 283/1992 Coll. established the Czech Academy of Sciences as a publicly funded institution and the successor of the former ČSAV (*Act No. 283/1992 Coll., 1992*). This legal continuity was crucial because it protected research from complete market exposure during a period of economic shock. The issue was to make public funding compatible with autonomy and evaluation. The present CAS mission notes both institutional financing and target-oriented financing through public competition and grant projects (*Czech Academy of Sciences, n.d.*). Thus, what had to be preserved was public responsibility for research, while the mechanisms of funding had to become more transparent and competitive.

The 22nd thing to preserve was the Academy's emerging capacity for grant-based and peer-reviewed research support. The current CAS mission states that the Academy was the first institution in the Czech Republic to establish its Grant Agency and that it supported projects selected through peer-review procedures involving reviewers from abroad (*Czech Academy of Sciences, n.d.*). This was not a socialist inheritance in the old sense, but it was a transformation of the Academy's institutional capacity. It showed that ČSAV's organisational structure could be converted into a more modern research-support system. The Academy did not need to disappear for competitive research funding to emerge. Instead, it could become a pioneer of such mechanisms in the Czech research environment. This is important for the continuity-discontinuity problem because it shows that preservation could generate innovation. The institute system, once democratised and evaluated, could support reform rather than block it. The Academy's continuity was therefore productive when linked with new procedures.

The 23rd thing to preserve was the connection between science and learned-society culture, though in a new institutional form. The old ČSAV combined research institutes with a corps of

academicians and corresponding members, a structure that became politically compromised. Yet the idea of a learned society of outstanding scholars was older and valuable. Zahradník's account notes that, after the fall of the regime, it became clear that it was desirable to re-establish a learned society according to principles common in democratic countries (*Zahradník, 2004*). The later establishment of the Learned Society of the Czech Republic preserved the cultural and symbolic function of learned association while separating it from the old Academy membership hierarchy. This separation was one of the most intelligent forms of selective preservation. It did not throw away the idea of scholarly honour. It freed that idea from the contaminated structure in which it had been embedded. Thus, the Academy's transformation preserved learned culture by relocating it.

The 24th thing to preserve was public trust in science, but this trust had to be rebuilt rather than inherited. ČSAV had possessed prestige, but that prestige was damaged by ideological control. After 1989, society needed to believe that scientific institutions could serve truth rather than power. Preservation of trust required visible discontinuity from party control, but it also required continuity of competence. If the Academy had been abolished, society might have lost one of its most important centres of expertise. If it had continued unchanged, trust would have remained compromised. The solution was transformation through self-government, evaluation, internationalisation, and public mission. The present CAS mission describes the Academy's supreme self-governing body, elected representatives, Academy Council, Council for Sciences, public funding, and competitive grant mechanisms (*Czech Academy of Sciences, n.d.*). These institutional features helped preserve trust by changing the basis on which trust could be given.

The 25th thing to preserve was the Academy's ability to serve as a bridge between Czech science and European science. Before 1948, Czech research institutions had built robust international relationships, including affiliation with international scientific organisations (*Academy of Sciences of the Czech Republic, n.d.*). Under socialism, those relationships were redirected and restricted, but not fully destroyed. After 1989, the Academy could help Czech science return to broader European and global circuits. Its institutes had the scale, disciplinary range, and institutional visibility needed for international agreements, research projects, and scholarly exchange. The ALLEA portrait emphasises the Academy's promotion of international cooperation through joint projects and scientist exchange (*ALLEA, 2015*). This function could not be preserved by isolated individual scholars alone. It required institutional continuity. Thus, the Academy's survival was part of Czech science's return to Europe.

The 26th thing to preserve was the habit of long-term scientific work. Political revolutions are fast, but science is slow. Many Academy projects in linguistics, history, archaeology, biology, geology, mathematics, physics, chemistry, and archival scholarship require decades. A dictionary, a critical edition, a long-term experiment, a collection, an observatory series, or a national database cannot be reconstructed after institutional collapse without enormous loss. ČSAV had maintained many such long-term forms of research, sometimes despite ideological pressure. Democratic transformation needed to protect them from the impatience of political and market reform. This did not mean protecting every inherited project automatically. It meant recognising that some scientific value appears only over long durations. The new Academy had to preserve institutional time against both ideological command and short-term utilitarianism.

The 27th thing to preserve was the Academy's capacity for self-reform. The transformation after 17 November 1989 began not only through external pressure but also through activities inside

the scientific community, including initiatives directed towards transforming ČSAV and coordinating demands from individual institutes (*Blažka et al., 2014*). This internal reform energy was itself part of what had to be preserved. It showed that the Academy was not a passive object of political change. Younger researchers, elected representatives, reform-minded senior scholars, and institute communities participated in redefining its future. Such capacity for self-reform justified preservation more strongly than any appeal to tradition alone. An institution that can criticise and reorganise itself deserves a different judgement from an institution that only defends inertia. ČSAV's transformation demonstrated that scientific communities inside the Academy could become agents of democratic renewal. This agency became part of the foundation of the Czech Academy of Sciences.

Thus, what had to be preserved from ČSAV was the scientific substance that had survived inside a politically compromised institutional form. The post-1989 transformation needed to protect institute-based research, human capital, laboratories, archives, collections, disciplinary continuity, publication infrastructures, public funding, international capacity, and long-term scholarly projects. It also needed to preserve older Czech academic traditions that had passed through ČSAV but were not reducible to socialism. At the same time, preservation could not mean passive inheritance. Every preserved element had to be reinterpreted through autonomy, self-government, evaluation, openness, and democratic public responsibility. The Czech Academy of Sciences became possible because reformers distinguished between the Academy as a vehicle of ideological control and the Academy as a reservoir of scientific capital. The former had to be rejected; the latter had to be preserved. This selective preservation made the Czech transformation historically significant. It allowed Czech science to pass from the crisis of the socialist research system into a new institutional order without severing the intellectual and material continuities on which serious research depends.

3. Scientific Capital, Human Capital, Archives, Institutes, and Infrastructure

The problem of continuity and discontinuity in the transformation of ČSAV can be understood most clearly through the category of capital. The Academy inherited from the socialist period not only formal institutions, but several accumulated forms of capital: scientific capital, human capital, archival capital, institutional capital, and material-infrastructural capital. These forms of capital were not politically innocent, because they had been accumulated inside a system marked by ideological supervision, personnel discrimination, censorship, and administrative dependence. Yet they were also not reducible to that system. Laboratories, long-term research programmes, scholarly expertise, documentary collections, scientific libraries, research schools, and international reputations possessed value that could survive the political framework in which they had operated. The task after 1989 was therefore not to continue ČSAV mechanically, but to extract and reorganise the capital that could serve democratic science. The Czech Academy of Sciences was later legally established as the Czech successor of the former Czechoslovak Academy of Sciences, and this succession would have been empty if there had been no scientific substance to inherit (*Czech Academy of Sciences, n.d.; Act No. 283/1992 Coll., 1992*).

Scientific capital was the first and most visible form of this inheritance. ČSAV had preserved research traditions across natural, technical, social, and human sciences, even though the degree of freedom and international integration varied sharply among disciplines. The Academy's historical overview stresses that Czech science remained under heavy ideological

pressure until 1989, but also that it retained creative energy and achieved international recognition, including the Nobel Prize awarded to Jaroslav Heyrovský and the worldwide recognition of Otto Wichterle's discovery connected with contact lenses (*Academy of Sciences of the Czech Republic, n.d.*). This duality is essential. Scientific capital in ČSAV was not a pure product of the socialist order; in many cases it survived despite that order. The scientific achievements of individual researchers, research groups, and institutes showed that the Academy contained capacities that a democratic state could not afford to discard. The transformation therefore had to identify which scientific fields were genuinely productive, which needed rehabilitation, which needed international renewal, and which had been maintained mainly by administrative inertia.

Scientific capital also included disciplinary memory. A discipline is not only a set of current publications or laboratories; it is a continuity of questions, methods, debates, data, instruments, and personal transmission. ČSAV contained such continuities in fields as different as chemistry, physics, mathematics, linguistics, archaeology, history, biology, geology, economics, and literary studies. Some of these continuities had been distorted by ideological pressure, especially in the humanities and social sciences. Others had been technically or materially constrained, especially through limited access to equipment, foreign literature, and international mobility. Yet even distorted continuity could be repaired more easily than total discontinuity. The post-1989 Academy therefore had to preserve the accumulated grammar of research while changing the conditions under which research was conducted. It had to allow disciplines to reconnect with international standards, recover suppressed authors and topics, and rebuild evaluation criteria around scholarly quality rather than ideological acceptability.

Human capital was even more delicate. ČSAV inherited researchers, engineers, technicians, librarians, editors, archivists, laboratory staff, field specialists, translators, administrators, and younger scholars whose practical knowledge was embedded in institutes. Some had been victims of normalisation, some had been beneficiaries of it, and many had lived in the grey zone between adaptation and professional survival. The transformation could not treat all personnel as politically equivalent, but neither could it destroy the professional community on which research depended. A laboratory cannot be rebuilt simply by appointing a new director; it requires people who know instruments, methods, samples, data, safety procedures, and long-term experimental traditions. An archive cannot function without specialists who understand provenance, catalogues, conservation, and documentary context. A scholarly edition cannot be continued without philological competence and institutional memory. Human capital therefore had to be critically reassessed rather than collectively condemned. This was one of the hardest tasks of post-socialist academic reform, because moral evaluation and professional dependence were deeply entangled.

The preservation of human capital did not mean the preservation of old hierarchies. The old system of authority had been compromised by political selection, party loyalty, and normalisation-era personnel practices. Yet many senior scholars possessed genuine expertise, and many younger researchers brought reformist energy and international aspirations. The early transformation of ČSAV therefore required a redistribution of authority without a destruction of competence. This is why open competitions for leadership, elected workplace representation, and professional evaluation were so important. They allowed the Academy to preserve people while changing the rules by which authority was recognised. In this sense, human capital was not merely a stock of employees. It was a field of relationships

that had to be morally and institutionally reorganised. The Academy needed to protect knowledge, but not the personnel mechanisms that had subordinated knowledge to political reliability.

The archival capital of ČSAV was another indispensable inheritance. The Masaryk Institute and Archives of the Czech Academy of Sciences describes its fonds as covering all bodies, units, and institutes of ČSAV from the entire period of its existence from 1952 to 1992, as well as the Czech Academy of Sciences from 1993 onward; it also notes that institutes are often listed together because many operated continuously despite reorganisations of leading Academy bodies (*Masaryk Institute and Archives of the CAS, n.d.*). This archival continuity is extremely important. It means that the Academy preserved documentary evidence not only of scientific work, but also of institutional power, workplace organisation, foreign cooperation, personnel decisions, and the mechanisms of transformation itself. Archives made rehabilitation possible because they preserved traces of exclusion and administrative decision-making. They also made criticism possible because they allowed historians to reconstruct how ideological control actually operated. Without archival capital, the post-1989 Academy would have had memory but not evidence.

The archives also linked institutional continuity with intellectual honesty. A democratic Academy could not simply present itself as the heir of older Czech scientific traditions and ignore the socialist period. The preserved fonds forced the institution to confront the whole history of ČSAV, including normalisation, compromised leadership, and disciplinary deformation. At the same time, archival records showed that the Academy had been a complex institution, not a single moral category. They preserved evidence of repression, adaptation, scientific productivity, foreign cooperation, workplace conflicts, and attempts to protect research under constraint. This complexity was valuable because it resisted both nostalgia and simple denunciation. The archive allowed the Academy to remember itself as a historically dense institution. It also gave later researchers the possibility to study the transformation empirically rather than only through memoirs or political narratives. Thus, archival capital became one of the foundations of democratic self-reflection.

Institutional capital consisted in the survival of institutes as organised research environments. ČSAV was not merely an honorary learned body; it was a network of workplaces with staff, projects, buildings, equipment, libraries, archives, collections, and disciplinary missions. Act No. 283/1992 Coll. preserved this institute-based principle by establishing the Czech Academy of Sciences and stating that the Academy performs research through its institutes (*Act No. 283/1992 Coll., 1992*). This legal formulation was decisive because it rejected the idea that all Academy research should simply be dissolved into universities or ministries. It did not preserve ČSAV unchanged, but it preserved the idea that non-university public research institutes were necessary for the Czech research system. The law therefore transformed institutional capital into a new legal order. The institutes survived not as remnants of socialism, but as reorganised carriers of national research capacity.

The institute model had older Czech roots and could not be dismissed as merely Soviet. The Academy's historical overview recalls that several specialised research institutes existed or emerged before the foundation of ČSAV in 1952, including the Czech Language Institute, the Nuclear Physics Institute, the Mathematical Research Institute, the Institute for Czech Literature, the Oriental Institute, the Archaeological Institute, and other specialised bodies (*Academy of Sciences of the Czech Republic, n.d.*). This historical background mattered greatly

after 1989. It allowed reformers to argue that institute-based research had a Czech and European genealogy deeper than the socialist Academy. The transformation could therefore separate the form of specialised research institutes from the ideological framework that had controlled them after 1948 and especially after 1968. This separation helped defend institutional continuity against calls for wholesale abolition. It also helped place the new Czech Academy within a longer tradition of Czech scientific organisation.

Infrastructure was the material body of that institutional capital. Research infrastructure includes buildings, laboratories, instruments, observatories, libraries, collections, field stations, archives, computing capacity, technical workshops, and maintenance systems. These resources are slow to build and easy to damage. The political collapse of a regime does not automatically make a microscope obsolete, nor does it eliminate the value of a language archive, a geological collection, a long-term biological dataset, or a historical documentary edition. The transformation therefore had to protect infrastructure even while reviewing the institutes that housed it. In some cases, infrastructure could be modernised, transferred, merged, or reorganised. In other cases, it had to be defended against short-term financial reduction. The Academy's survival as a public research system depended on recognising infrastructure as accumulated national scientific wealth, not merely as property inherited from a socialist organisation.

The material question was sharpened by the financial pressures of the early 1990s. Post-socialist transformation across Central and Eastern Europe often involved severe reductions in research funding, restructuring of institutes, and the fragmentation of earlier science and technology systems. Meske's comparative analysis of science and technology systems in European transition economies describes this period as one of institutional transformation, dissolution, fragmentation, and significant personnel reduction across the region (*Meske, 1998*). The Czech Academy faced these pressures while trying to defend its scientific core. The danger was that necessary political discontinuity could turn into destructive infrastructural discontinuity. If too many laboratories, archives, and research teams were dismantled, democratic Czech science would begin the 1990s with freedom but without capacity. Preservation of infrastructure was therefore not conservative inertia. It was a strategic condition for participating in European and global research after the end of ideological isolation.

The institutional transformation of ČSAV also involved legal succession, property transfer, and organisational continuity. A law could establish the Czech Academy of Sciences, but the practical transfer of institutes, obligations, buildings, equipment, and staff required documentary and administrative work. The CAS mission page states that the Czech Academy was established by Act No. 283/1992 Coll. as the Czech successor of the former Czechoslovak Academy of Sciences and is now organised as a complex of public research institutions (*Czech Academy of Sciences, n.d.*). This language of succession is important. It expresses both continuity and transformation. The new Academy did not simply declare a new beginning; it inherited a body of institutions. At the same time, it reorganised that inheritance under a democratic and public legal framework. Succession was therefore the legal form through which preserved capital could be placed under new rules.

The scale of the inherited system also mattered. The present CAS describes itself as a complex of 54 public research institutions employing more than 8,000 people, more than half of whom are researchers with university degrees (*Czech Academy of Sciences, n.d.*). These

contemporary figures should not be read back mechanically into the early 1990s, but they show the continuing scale of the institute-based Academy model. A system of this size cannot be explained as symbolic continuity alone. It represents the survival and transformation of a large research ecology. The people, institutes, and infrastructures inherited from ČSAV formed the basis from which the Czech Academy could later define its role in basic research, applied research, education, and international cooperation. The continuity of scale also explains why the transformation was politically contested. A small learned society could have been re-founded easily; a large research academy had to be reorganised carefully.

Scientific capital also included the capacity for international reintegration. Under socialism, international exchange had been filtered and unequal, but it had not disappeared. Some researchers and institutes retained reputations that could be activated after 1989. The ALLEA portrait of the Czech Academy notes that integration into the international research context has been promoted through joint projects and scientist exchange with foreign counterpart institutions (*ALLEA, 2015*). This international role depended on the existence of credible institutes, trained staff, and identifiable research programmes. International partners do not cooperate with abstract political freedom alone; they cooperate with laboratories, scholars, projects, and results. The Academy therefore had to preserve the scientific substance that made reintegration meaningful. The transition from controlled international contact to open international cooperation was one of the ways in which inherited capital was converted into future capacity.

Human capital was also linked to generational transmission. The Academy contained senior scholars with deep expertise, middle-generation researchers whose careers had been shaped under normalisation, and younger researchers who entered the 1990s with new expectations. Each group carried a different form of capital. Senior scholars often preserved disciplinary memory and long-term institutional knowledge. Middle-generation researchers knew the practical functioning of institutes and could sustain research programmes during transition. Younger researchers brought mobility, methodological renewal, foreign-language competence, and an appetite for international exchange. The transformation needed all three, though not in the old hierarchy. A system that rejected all senior authority would have lost memory. A system that left all authority unchanged would have blocked renewal. The problem was to reorganise generations so that experience and reform could work together.

The archives and libraries of ČSAV formed a special bridge between scientific and cultural capital. In disciplines such as history, linguistics, literature, philosophy, archaeology, sociology, and art history, documentary collections and specialist libraries were not merely support services. They were the substance of research itself. A national language institute, a historical institute, or a literary research institute depends on accumulated corpora, bibliographies, manuscripts, catalogues, editions, and reference collections. The Academy's historical overview notes the existence of specialised institutes such as the Czech Language Institute and the Institute for Czech Literature in the post-war period before the foundation of ČSAV (*Academy of Sciences of the Czech Republic, n.d.*). This continuity shows why archives and libraries could not be treated as ordinary assets. They embodied national scholarly memory. Their preservation was essential for the recovery of Czech cultural scholarship after ideological control.

The institutes of the humanities and social sciences also carried damaged but recoverable capital. The Institute of History of the Czech Academy of Sciences, for example, traces its

tradition to the Czechoslovak State Historical Publishing Institute founded in 1921, notes its integration into ČSAV in 1952, and records that after Prague Spring the institute was renamed and seriously undermined by forced political resignations and even imprisonment of leading experts, while its research subjects were restructured (*Institute of History of the CAS, n.d.*). This example shows the logic of selective preservation very clearly. The institute's tradition and source-publishing mission had to be preserved. The political damage of normalisation had to be criticised and overcome. The research palette had to be renewed. The institution could not simply return to 1968 or 1921, but it could recover deeper scholarly functions that had been distorted. In this case, preservation and rehabilitation were inseparable.

The social sciences show a similar complexity. Czech sociology, public opinion research, economics, and political analysis had been deeply affected by ideological supervision, but they also preserved methods, datasets, institutional experience, and expert communities. Some workplaces were abolished, reorganised, or newly founded after 1989, while others had to redefine their mission in a democratic society. The value of this capital was not only academic. A transforming society needed knowledge about inequality, public opinion, political institutions, economic reform, social stratification, education, religion, and civil society. If the social-science capital inherited from ČSAV had been destroyed, democratic public debate would have been poorer. Yet this capital had to be critically reconstructed because it had often operated in proximity to state or party needs. The new Academy therefore had to convert social-science expertise from an instrument of controlled knowledge into a field of public and professional inquiry.

The natural sciences and technical sciences carried another kind of inherited strength. Their capital was often concentrated in laboratories, instruments, experimental traditions, technical teams, and links between basic and applied research. In fields such as chemistry, physics, mathematics, biology, geology, plasma physics, and scientific instrumentation, the Academy's institutes could preserve expertise that universities alone could not easily absorb. The ALLEA portrait explicitly connects the Academy's post-1989 legitimacy with internationally recognised scientific achievements, including Heyrovský and Wichterle, and notes Wichterle's role as the first president after the revival of democracy (*ALLEA, 2015*). These examples are symbolic, but they point to a broader reality: scientific capital in the natural sciences is cumulative and materially demanding. It cannot be rebuilt quickly after institutional collapse. The new Academy therefore needed to protect the strongest research communities while opening them to international evaluation and cooperation.

Infrastructure also included the administrative capacity to support research. Administration is often viewed negatively because socialist bureaucracy had been associated with control and inertia. Yet a large research organisation cannot function without budgets, personnel offices, grant administration, legal services, foreign-relations offices, property management, publication support, and technical coordination. The issue after 1989 was not whether administration should exist, but what it should serve. Under the socialist Academy, administration had often served planning and political control. In the transformed Academy, it had to serve research autonomy, evaluation, international cooperation, and accountability. This required preserving administrative competence while changing administrative culture. If all administrative knowledge had been discarded, institutes would have struggled to operate. If administrative habits had remained unchanged, reform would have been superficial. The transformation therefore required administrative continuity under new norms.

The transition also preserved the public mission of science, but redefined it. The current CAS mission states that the Academy conducts research in a broad spectrum of natural, technical, social sciences, and humanities; advances understanding internationally; educates researchers; and applies results for education, culture, competitiveness, and current social problems (*Statutes of the Czech Academy of Sciences, 2006*). This formulation is a mature version of a post-1989 compromise. The Academy could not preserve the socialist idea that science served a party-defined project. Yet it also could not abandon the idea that publicly funded science should serve society. The inherited capacity of ČSAV was valuable because it could be redirected towards a democratic public mission. Scientific capital became socially legitimate when it was linked with autonomy, public accountability, and international quality. This redefinition allowed preservation to avoid both ideological nostalgia and neoliberal reduction.

The role of the Learned Society also reveals a specific form of preserved capital. The old ČSAV membership system of academicians and corresponding members was abolished, but the idea of learned scholarly association did not disappear. Rudolf Zahradník's account of the creation of the Learned Society explains that the dissolution of the old group of academicians initiated efforts to renew a learned society in the Czech Republic, continuing the tradition of the Royal Bohemian Society of Learning and analogous societies abroad (*Zahradník, 2004*). This was a refined form of institutional separation. The research-institute capital of ČSAV was preserved in the Czech Academy of Sciences. The honourific and learned-society capital was reconstituted in a separate civic form. The result was not a total abandonment of scholarly honour, but a reorganisation of honour outside the compromised socialist academic hierarchy. This shows that selective preservation could operate through institutional differentiation.

The question of capital also involved political defence. In the early 1990s, some critics argued that the Academy was obsolete, too expensive, or too closely connected with the socialist past. Such criticism was not groundless in every respect, because the Academy did require restructuring and moral self-examination. Yet a purely abolitionist approach would have ignored the enormous cost of losing accumulated scientific capital. The Academy's transformation therefore had to make an argument for continuity in a public environment suspicious of inherited institutions. The argument could not be sentimental. It had to show that the Academy possessed research capacities not easily replaced by universities, ministries, private firms, or temporary grant projects. Preservation was justified only if the Academy could prove that its institutes contributed to knowledge, education, culture, and society under new democratic conditions.

The institutional capital of ČSAV also included the capacity for self-reform. The publication *1989 + 25 = Výzkum užitečný pro společnost* includes an appendix on the transformation of ČSAV into the Czech Academy in 1989–1993 and presents the early period as one of political decisions, organisational changes, and development of research evaluation and support after 1989 (*Blažka et al., 2014*). This is important because reform was not only imposed from outside. Actors inside the Academy created committees, elected representatives, proposed grant systems, assessed workplaces, changed leadership, and prepared legal succession. The capacity to reform itself became part of the Academy's legitimacy. An institution that can examine, reduce, reorganise, and democratise itself possesses a different kind of capital from an institution that can only defend its inherited privileges. ČSAV's transformation into AV ČR therefore preserved not only structures, but a reforming agency within scientific communities.

The preservation of capital was not evenly successful in every field. Some institutes were abolished, merged, or reorganised. Some research communities lost personnel or infrastructure. Some disciplines needed years to recover from international isolation and ideological damage. Some archives and institutional memories were easier to preserve than living schools of thought. Yet unevenness does not invalidate the broader logic of preservation. It shows that transformation involved selection under pressure. The Academy could not preserve everything, and in some cases it should not have preserved everything. The central issue was whether the most valuable forms of capital could be identified and transferred into the new institutional order. The survival of the Academy as a major public research institution suggests that this transfer was broadly successful, although not painless.

The concept of scientific capital also helps explain why the Academy's history after 1989 cannot be written as a simple liberation story. Freedom was essential, but freedom alone does not produce research excellence. Excellence requires people, instruments, collections, schools, methods, libraries, time, and institutions. The Velvet Revolution created the political and moral conditions for academic freedom; ČSAV's inherited capital provided much of the material and intellectual basis on which that freedom could operate. The new Academy was therefore born from a combination of rupture and inheritance. It rejected ideological supervision, but it inherited research capacity. It abolished compromised hierarchies, but it preserved scholarly distinction in new forms. It criticised normalisation, but it used archives produced by normalised institutions to understand that period. This paradox is the core of the Czech academic transformation.

The continuity of institutes also prevented Czech research from becoming entirely dependent on short-term university or market pressures. Universities were themselves being democratised and rebuilt after decades of control, and they could not immediately absorb all Academy functions. Private-sector research and innovation structures were also unstable during economic transformation. In this environment, the Academy's institutes provided continuity for basic research, national collections, long-term projects, and specialist expertise. The CAS mission continues to define the Academy as a national research centre and a democratically organised network of autonomous scientific institutions with an irreplaceable role in the Czech system of research, development, and education (*Statutes of the Czech Academy of Sciences, 2006*). This later formulation reflects the deeper rationale for preservation. A democratic state needed institutional plurality in research. The Academy was one of the pillars of that plurality.

Archives, institutes, and infrastructure were also forms of national memory. They preserved not only scientific facts, but the historical continuity of Czech society's engagement with knowledge. The Academy's archive, older learned traditions, specialised institutes, and research collections connected post-1989 science with the First Republic, the national revival, Enlightenment learned culture, and European scientific exchange. This continuity helped prevent post-socialist transformation from becoming culturally rootless. The new Academy could present itself not as a relic of communism, but as a modernised heir to a longer Czech academic tradition. That claim was credible only because the material and documentary bases of tradition had survived. Preservation therefore had cultural significance beyond the internal needs of researchers. It helped democratic Czech society recover a non-ideological history of its scientific institutions.

Thus, the scientific capital, human capital, archives, institutes, and infrastructure inherited from ČSAV formed the indispensable substrate of the Czech Academy's post-1989 transformation. The Academy could reject ideological control only because there remained something valuable to liberate from it. Scientific schools, trained researchers, laboratories, collections, archives, periodicals, administrative competence, international contacts, and institute-based traditions made possible a transformation that was neither liquidation nor passive continuity. These forms of capital were not preserved unchanged; they were reorganised through democratic self-government, legal succession, evaluation, grant mechanisms, international cooperation, and public accountability. The result was a selective transfer of value from a compromised socialist institution into a new democratic research order. This transfer was difficult because each form of capital carried traces of the system in which it had survived. Yet the alternative would have been far worse: the destruction of accumulated scientific capacity at the very moment when Czech society needed knowledge, expertise, memory, and international reintegration. The history of ČSAV's transformation therefore shows that discontinuity and continuity were not opposites. They were mutually necessary operations in the reconstruction of Czech science.

The Transformation of Czech Research in International Perspective

1. Post-socialist Science Policy and Institutional Reform

Post-socialist science policy in Czechoslovakia and, after 1993, in the Czech Republic emerged from a problem that was much broader than the internal transformation of ČSAV. The Velvet Revolution destroyed the political legitimacy of the socialist research system, but it did not immediately create a new model of research governance, funding, evaluation, and institutional cooperation. Science policy had to be reconstructed at the same time as the state was democratised, the economy was liberalised, universities were granted self-government, public administration was reorganised, and the federal state itself moved towards dissolution. This meant that the Academy's transformation was never only an Academy matter. It belonged to a wider change in the relationship between science, state, economy, universities, and society. The socialist model had treated research as a planned sector of national development, with the Academy, universities, branch institutes, industrial research bodies, and ministries placed within a politically managed system. The post-socialist model had to replace this with a more plural structure based on institutional autonomy, public funding, competition, evaluation, grant support, and international integration. The Czech case is especially interesting because it did not abolish the Academy, but reconstituted it within a new science-policy framework. Thus, institutional reform and national science policy developed together, each forcing the other to become more explicit.

The first post-socialist science-policy challenge was to separate science from party-state authority without abandoning public responsibility for research. In a market transformation, it might have seemed tempting to treat all state-supported research institutions as remnants of the old system. Yet the Academy, universities, and many public institutes contained scientific

capacities that could not be rebuilt by the market alone. Basic research, archives, national collections, long-term humanities projects, expensive laboratories, and doctoral training all required public support. The question therefore was not whether the state should leave science completely, but how the democratic state should support science without controlling its intellectual content. This distinction became central to the Czech transformation. Public funding had to remain, but it had to be reorganised through legal rules, transparent allocation, evaluation, and competitive instruments. The Academy's survival depended on this distinction. If public funding had been identified with socialist control, the Academy would have been vulnerable to abolition. If public funding had continued without reform, the Academy would have remained morally and institutionally compromised.

The legal creation of the Czech Academy of Sciences was one of the first major acts in this redefinition. Act No. 283/1992 Coll. established the Czech Academy of Sciences, located it in Prague, and stated that the Academy performs research through its institutes; it also allowed the Academy and its institutes to conclude agreements on international cooperation in scientific activity and technological development (*Act No. 283/1992 Coll., 1992*). This law preserved the institute-based research model, but placed it into a new legal context. The Academy was no longer to function as a Soviet-style academic corporation embedded in one-party governance. It was to become a public research organisation of the Czech Republic, structured around institutes and increasingly linked with international cooperation. The law therefore created continuity at the level of research capacity and discontinuity at the level of political legitimacy. It did not solve all problems of funding, evaluation, or institutional reform, but it gave the transformed Academy a legal foundation. In science-policy terms, it meant that the Czech Republic chose reform and legal succession rather than liquidation.

The second decisive legal step was the creation of new mechanisms for state support of research and development. Act No. 300/1992 Coll., on state support of scientific activity and technology development, established the Research and Development Council of the Government of the Czech Republic in 1992 and laid the foundation for changing the organisation and financing of research and development in the country (*Research and Development Council, n.d.*). This was a structural turning point because science policy could no longer depend on inherited ministry channels, Academy hierarchy, and sectoral planning alone. A coordinating body was needed to prepare concepts, assess budgetary requirements, participate in legislative work, and help build the new support system. The Council's early activity concentrated on fundamental conceptions of research and development after the formation of the Czech Republic and on creating necessary structures, especially the Grant Agency of the Czech Republic (*Research and Development Council, n.d.*). This placed the Academy within a broader policy environment. Its budget and mission would increasingly be discussed alongside universities, ministries, grant agencies, and other research organisations.

The establishment of the Grant Agency of the Czech Republic was one of the most important symbols of post-socialist science-policy reform. The Research and Development Council records that the Grant Agency was formed in 1993 pursuant to Act No. 300/1992 Coll. and that it supported projects from all branches through public tenders, regardless of the legal form or sectoral affiliation of the applicant (*Research and Development Council, n.d.*). The University of Hradec Králové similarly summarises that the Grant Agency was established by Act No. 300/1992 Coll. as an independent institution supporting basic scientific research, awarding grants to the best projects in all fields on the basis of public tender (*University of Hradec Králové, n.d.*). This mattered because project competition introduced a new logic into Czech

research. A research task could be supported not because an institute occupied a place in an administrative hierarchy, but because it had been formulated, submitted, evaluated, and selected. Competitive grants did not replace institutional funding, but they changed the culture of research support. They created space for individual initiative, new topics, younger researchers, and cross-institutional competition. They also introduced new pressures, because researchers had to learn to translate scholarly ideas into project proposals and measurable outputs.

The distinction between institutional funding and targeted support became central to the new science-policy architecture. The Research and Development Council describes state support of R&D in two forms: targeted support for projects successful in public tenders and institutional funding for R&D organisations and their research plans, provided from budgetary chapters on the basis of assessment of organisational results (*Research and Development Council, n.d.*). This distinction helped resolve one of the main dilemmas of post-socialist reform. Institutional funding was necessary because research organisations, including Academy institutes, needed stable support for infrastructure, long-term programmes, and specialised staff. Targeted support was necessary because science needed competition, flexibility, and project-based evaluation. The old socialist system had tended to protect institutions through administrative allocation. A purely grant-based system would have risked undermining long-term research capacity. The Czech model therefore moved towards a mixed system. For the Academy, this meant that survival required both defence of institutional continuity and adaptation to competitive funding.

The introduction of public tenders was especially important because it changed the moral economy of research funding. Under the socialist research system, resources could be allocated through planning, ministry priorities, political trust, institutional bargaining, or administrative inertia. After 1989, reformers sought mechanisms that would make funding more transparent and professionally justified. The Research and Development Council notes that the 1995 amendment to Act No. 300/1992 Coll. introduced the condition of public tender for allocating targeted state funds, made the system of state support more transparent, unified terminology with OECD countries, and defined the position of the Grant Agency's area committees (*Research and Development Council, n.d.*). This was a significant step from revolutionary principle to policy procedure. Transparency was not simply a democratic ornament; it was a way of replacing opaque political and administrative selection. OECD terminology also mattered because it aligned Czech science policy with international categories of research and development. The Czech system was beginning to speak the language of comparative science policy, not the language of socialist planning.

This shift towards evaluation was equally important for institutional reform. Public research organisations could not simply claim support by historical right. They had to demonstrate scientific activity, research plans, and results. The Research and Development Council states that rules of institutional support were later developed so that funds would be provided to organisations on the basis of regular evaluation of their research plans and results, with detailed procedures approved in the late 1990s (*Research and Development Council, n.d.*). Although these later rules belong to a period after the immediate 1989–1993 transition, they continued the logic that had begun with the early transformation of ČSAV. The Academy had already moved towards workplace evaluation, foreign expert assessment, and internal grant principles. National policy then extended similar ideas into the wider R&D system. Evaluation became the bridge between public funding and scientific autonomy. It allowed the state to

support research without directly prescribing conclusions. It also forced research organisations to become more self-conscious about quality, strategy, and output.

Post-socialist science policy also required the redefinition of universities. The socialist research system had often separated teaching and research too sharply, with Academy institutes carrying much of the basic research capacity while universities were constrained by political control and administrative overload. After 1989, universities regained self-government and academic freedom, but they could not immediately absorb all Academy research functions. This created a policy dilemma. Some reformers wanted research to move back towards universities, while others argued that the Academy's institutes were too valuable to dissolve. The Czech solution gradually became a dual and cooperative system, with universities and Academy institutes both playing major research roles. Later Czech research-policy documents explicitly state that universities and institutes of the Czech Academy of Sciences collaborate closely and that this cooperation is often necessary for Czech research establishments to compete internationally (*Office of the Government of the Czech Republic, 2015*). This later statement reflects a compromise whose roots lie in the early 1990s. The Academy would not replace universities, but neither would universities replace the Academy.

The redefinition of the Academy's role therefore occurred in a broader national research ecology. Ministries, universities, the Grant Agency, the Research and Development Council, Academy institutes, industrial research bodies, and later private-sector actors all had to find new positions. The Research and Development Council notes that, since 1993, it annually compiled proposals for the allocation of state funds to R&D and that research and development were financed from multiple budgetary chapters, including ministries, the Academy of Sciences, and the Grant Agency (*Research and Development Council, n.d.*). This plural budgetary structure differed sharply from the simplicity of a command model. It created opportunities for flexibility, but also risks of fragmentation, duplication, and uneven policy coordination. For the Academy, this meant that it had to defend its budget and mission within a multi-actor system. It could no longer rely on a single inherited position within the state. It had to argue for its role as one component of a broader research and innovation system.

The post-socialist transformation also changed the relationship between basic and applied research. In the socialist system, applied research had often been organised through branch institutes and industrial ministries, while the Academy was associated with basic research but also housed many fields with applied relevance. After 1989, industrial research institutes faced severe restructuring, privatisation, decline, or reorientation. This placed additional pressure on the Academy and universities. The new science policy had to decide how to protect basic research while encouraging knowledge transfer and applied relevance. The Research and Development Council's later description of national policy emphasised both support for scientific and technical findings transfer and compatibility with European Union policies (*Research and Development Council, n.d.*). This orientation was already implicit in the early reforms. Czech science could not remain a closed academic sphere, but it also could not be reduced to immediate industrial service. The Academy's long-term position depended on maintaining basic research while showing that basic research could contribute to public interest, innovation, education, and culture.

The broader Central and Eastern European context helps explain why Czech reforms took this form. Slavo Radosevic's analysis of socialist S&T transformation argues that the post-socialist process involved the transformation of socialist science and technology systems into emerging

systems of innovation, shaped by micro-level, sectoral, national, and regional determinants (*Radosevic, 1999*). This perspective is useful because it shows that the Academy's reform was not isolated institutional housekeeping. It was part of a systemic move from a planned research apparatus towards a more plural innovation environment. In such a transition, institutions do not simply disappear; they are reconfigured by new incentives, markets, public policies, foreign firms, international standards, and domestic capacities. The Czech Academy had to adapt to this emerging system without losing its basic-research mission. The problem was not only how to democratise science, but how to position science within a changing economy and society. This is why science policy became inseparable from institutional reform.

Werner Meske's comparative work also helps place the Czech case in regional perspective. He described the transformation of science and technology systems in European transition economies as involving institutional reorganisation, fragmentation, personnel reductions, and shifts in funding and governance (*Meske, 1998*). The Czech Academy's transformation fits this pattern but also shows a particular balance. It experienced financial pressure, staff reductions, evaluation, and restructuring, yet it survived as a national public research institution. This was not inevitable. Across the region, academies, branch institutes, and industrial research organisations faced different fates depending on political choices, fiscal pressures, disciplinary strengths, and national traditions. The Czech solution preserved the Academy because it could be redefined as a modern public research network. This made the Czech case less radically abolitionist than some reform rhetoric suggested, but more transformative than simple continuity. It was a negotiated restructuring rather than an institutional collapse.

Science policy after 1989 was also shaped by the ambition to "return to Europe." This phrase had political, cultural, and institutional meanings, and in research it meant reintegration into European and global scientific standards. Czech research policy increasingly had to align with OECD and EU categories, competitive funding principles, international peer review, and cross-border cooperation. The Research and Development Council's account notes that later policy principles were developed with a view to the Czech Republic's forthcoming entry into the European Union and that policy documents sought compatibility with EU member-state policies (*Research and Development Council, n.d.*). For the Academy, Europeanisation meant more than access to conferences. It meant exposure to evaluation, competition, project management, mobility, and institutional comparison. It also meant that Czech science had to justify itself not only nationally but internationally. The Academy's institutes had to become partners in European projects, not merely domestic research units. This was a major cultural and administrative shift.

International cooperation was already anticipated in the Academy's founding legal framework. Act No. 283/1992 Coll. explicitly provided that the Academy and its institutes could conclude agreements on international cooperation in scientific activity and technological development (*Act No. 283/1992 Coll., 1992*). This provision may seem routine, but in the immediate post-socialist context it had strategic significance. Under socialism, international cooperation had been politically filtered, especially with Western institutions. The new law normalised international scientific cooperation as part of the Academy's mission. It allowed institutes to build partnerships according to research relevance rather than ideological alignment. It also helped the Academy present itself as a European research organisation, not a national remnant of a closed system. Internationalisation thus became both a scientific opportunity and a policy instrument. It encouraged reform by exposing institutes to external standards and partners.

The reform of science policy also demanded new information systems and data. A democratic and competitive research system requires information about projects, organisations, outputs, budgets, and evaluation results. The Research and Development Council later described the development of national R&D databases and a unified information system integrating databases for projects, research plans, results, and tenders (*Research and Development Council, n.d.*). Although this development matured after the early 1990s, it followed from the same post-socialist need for transparency and comparability. The old system had generated many documents, but not necessarily open data for policy evaluation. The new system needed evidence that could support budget decisions, project evaluation, and public accountability. For the Academy, this meant that research outputs and institutional plans increasingly had to be recorded in national systems. Documentation shifted from internal control towards policy information. This was another example of how post-socialist reform transformed inherited administrative habits into new governance instruments.

The fiscal dimension of reform was unavoidable. Post-socialist states faced severe economic pressures, and research systems were often vulnerable because they depended heavily on public budgets. The Academy's reform unfolded in an environment where freedom arrived together with austerity. Filáček's later analysis of the Czech Academy's transformation notes that the radical changes of the 1990s, including a steep decrease in financing, initiated major reforms of the Academy and produced personnel reductions, institutional transformation, plural financial sources, new science-assessment procedures, and changing patterns of international collaboration (*Filáček, 2023*). This summary captures the key features of post-socialist science policy. Reform was not only normative; it was material. The Academy had to redesign itself while coping with financial threat. This made evaluation and prioritisation urgent. It also meant that some reforms were driven by necessity as much as by intellectual principle.

The reduction of resources had ambiguous consequences. On one hand, financial pressure forced the Academy and the state to ask which institutes, research programmes, and structures were genuinely necessary. It could break the inertia of inherited systems and prevent public money from supporting weak or politically protected units. On the other hand, abrupt cuts could damage valuable research capacity, especially in basic science and long-term humanities projects where immediate outputs are not always visible. Post-socialist science policy therefore had to avoid two extremes: protecting everything because it had existed under ČSAV, and cutting everything because it looked inherited from socialism. The Academy's survival depended on selective restructuring. Evaluation, grant support, and legal reconstitution were meant to make that selection more rational. Yet the social and intellectual costs of restructuring remained real. The early 1990s were therefore a period of both liberation and vulnerability for Czech science.

The creation of the Grant Agency also changed the relationship between individual researchers and institutions. Under the old model, the institute was often the primary unit through which research was planned and funded. Under the new model, individuals and teams could compete for project support across fields. The Research and Development Council states that GACR supported the best projects from all branches, regardless of the legal form or sectoral affiliation of the holder, through public tenders (*Research and Development Council, n.d.*). This opened possibilities for researchers in universities, Academy institutes, and other organisations. It encouraged mobility of ideas across institutional borders. It also increased pressure on researchers to demonstrate productivity and competitiveness. For the Academy,

this was transformative because institutes could no longer rely only on institutional budgets. Their researchers had to participate in national competition for scientific resources.

The post-socialist funding model also encouraged the pluralisation of financial sources. Filáček's account notes that the transformation of the Czech Academy led not only to institutional changes but also to plurality of financial sources and new assessment procedures (*Filáček, 2023*). This pluralisation had both advantages and dangers. It allowed institutes to seek support from grants, international projects, contracts, applied research, and cooperation with public or private partners. It reduced dependence on one central allocation mechanism. Yet it also made research management more complex and could push institutes towards short-term project cycles. The Academy had to learn how to combine stable institutional support with competitive and external sources. In science-policy terms, this was a move from an administered research economy to a mixed research-funding ecology. The success of such a system depended on whether plural funding could support excellence without undermining long-term research.

Institutional reform also required changes in governance. The socialist Academy had been shaped by presidium authority, party influence, and hierarchical decision-making. The post-socialist Academy needed self-governing bodies, representative mechanisms, scientific councils, and transparent relations with the state. Act No. 283/1992 Coll. defined the Academy's bodies, including the Academy Assembly, Academy Council, President, and Council for Sciences, with the Assembly serving as the supreme self-governing body (*Act No. 283/1992 Coll., 1992*). This governance model translated the revolutionary demand for academic democracy into a durable institutional structure. It also created a mechanism through which institutes and scientific communities could participate in decisions affecting the Academy's future. Self-government did not mean independence from law or budgetary accountability. It meant that scientific institutions would no longer be governed as subordinate branches of a party-state. Governance reform was therefore one of the core elements of science-policy transformation.

The post-socialist science-policy framework also redefined the relationship between national priorities and researcher initiative. In the socialist model, priorities often descended from state plans or ideological programmes. In the post-socialist model, priorities had to be negotiated through government policy, grant competitions, institutional strategies, expert evaluation, and international opportunities. The Research and Development Council's later policy account identifies both institutional support and targeted support for programmes and projects, showing that the Czech system combined bottom-up and top-down elements (*Research and Development Council, n.d.*). This combination was necessary. A democratic state may identify strategic areas such as health, energy, environment, education, competitiveness, or cultural heritage. At the same time, fundamental discoveries often arise from researcher-driven inquiry. The Academy was particularly concerned with this balance because many of its strongest fields depended on long-term basic research. Post-socialist policy therefore had to give space to both public priorities and scholarly freedom.

The institutional reform of science was also tied to the reform of legal terminology and policy language. The move towards OECD-compatible terminology, noted in connection with the 1995 amendment to Act No. 300/1992 Coll., was more than a technical adjustment (*Research and Development Council, n.d.*). It signalled that Czech science policy was entering an international comparative framework. Terms such as research and development, institutional

support, targeted support, research plans, project evaluation, and public tender helped replace the ideological vocabulary of socialist science. They also made it possible to compare Czech data with those of other countries. This mattered for EU integration, OECD-oriented policy learning, and domestic transparency. Language and policy instruments changed together. The Academy's transformation required this linguistic shift because a new science system cannot be governed through the concepts of the old one.

Industrial research formed another part of the post-socialist challenge. Under socialism, branch institutes and enterprise research units had been tied to ministries and planned production. After market transformation began, many of these institutions faced privatisation, contraction, or loss of their previous industrial environment. Radosevic's analysis of Central and Eastern European S&T transformation stresses that post-socialist innovation systems were shaped by sector-specific and micro-level factors, including the behaviour of firms and networks (*Radosevic, 1999*). For the Czech Republic, this meant that science policy could not focus only on the Academy and universities. It also had to consider the weakened or changing relationship between research and industry. The Academy's institutes could contribute to applied research and technology development, but they could not simply replace the old branch research system. New interfaces between public research, firms, state programmes, and later EU funds had to be developed. This was a long-term process, not a single reform.

The Academy's role in this emerging innovation system was therefore complex. It was primarily a basic-research institution, but not isolated from applied relevance. It possessed expertise useful for technology, medicine, environmental policy, energy, materials science, data analysis, humanities, and social policy. Post-socialist science policy had to allow the Academy to contribute to innovation without reducing its mission to commercialisation. Later policy documents emphasised collaboration between corporate-sector actors and universities or Academy institutes through joint projects financed from public funds, including by the Technology Agency in later periods (*Office of the Government of the Czech Republic, 2015*). This later development grew from the same post-socialist need to rebuild links between research and socio-economic application. The Academy had to become more open to external cooperation. Yet its distinctive value remained its capacity for long-term and high-level research. Institutional reform had to protect that distinctiveness.

The post-socialist science-policy transformation also affected evaluation culture. Under the socialist system, evaluation was often administrative and political. Under the new system, it increasingly had to become expert-based, competitive, and internationalised. Filáček's account identifies new methodology and procedures of science assessment as one of the outcomes of the Academy's transformation (*Filáček, 2023*). This development was necessary but contentious. Evaluation can improve quality, but it can also impose narrow metrics or short-term pressures if poorly designed. In the early Czech transformation, the priority was to replace ideological and bureaucratic judgement with professional assessment. Foreign expert evaluation was especially attractive because it promised distance from local conflicts. Yet the Academy also needed criteria suitable for different disciplines, including humanities, social sciences, experimental sciences, and long-term research. Evaluation therefore became both a tool of reform and a recurring object of debate.

The Czech case also demonstrates that post-socialist science policy was not static. The first phase, from 1989 to the mid-1990s, focused on legal foundations, institutional survival, funding mechanisms, and basic restructuring. Later phases developed more elaborate

policies, databases, evaluation rules, EU alignment, innovation programmes, and public-interest strategies. The Research and Development Council's account divides its activity into periods, noting that the first period after 1992 concentrated on fundamental concepts and structures, while later periods addressed principles, institutional support rules, national policy, EU compatibility, and new legislation (*Research and Development Council, n.d.*). This chronology matters for the Academy's history. The immediate post-revolutionary reform was not the final form of Czech science policy. It created a framework that continued to evolve. The Academy had to adapt repeatedly, not only once. Its transformation was therefore a long process of institutional learning.

One of the most important long-term outcomes was the recognition that Academy institutes and universities should be complementary rather than mutually exclusive. The National Research, Development and Innovation Policy for 2016–2020 stated that Academy institutes conduct research across fields while concentrating their capacities on long-term projects and that this research is largely complementary to university research (*Office of the Government of the Czech Republic, 2015*). This later policy language helps clarify the historical meaning of the early 1990s decision to preserve the Academy. The Academy's institute model was not an anti-university survival from socialism. It could become a complementary pillar of the research system. The state's later support for close collaboration between universities and Academy institutes confirms that the Czech solution was institutional pluralism. This pluralism emerged from the crisis of the socialist research system but did not reproduce its rigid division of labour. It created a more flexible ecology of research.

In this perspective, post-socialist science policy was a continuous effort to convert inherited structures into a democratic research and innovation system. The Academy's institutes were preserved, but evaluated and reorganised. Public funding continued, but through more transparent rules and competitive mechanisms. International cooperation expanded, but under professional rather than ideological criteria. Universities regained autonomy, but the Academy remained a major research actor. Grant agencies and government councils were created to coordinate and fund research beyond old administrative channels. Science policy moved from political instruction towards governance through law, budgets, projects, evaluation, and strategy. This did not eliminate conflict or imperfection. It changed the arena in which conflict occurred. The future of science could now be argued through policy, evidence, and institutional negotiation rather than decided by party authority.

Thus, post-socialist science policy and institutional reform in the Czech case formed the broader framework within which ČSAV could become the Czech Academy of Sciences. The decisive issue was not simply the moral rejection of the socialist research system, but the construction of new instruments capable of sustaining science in a democratic and market-transforming society. Act No. 283/1992 Coll. preserved the Academy as an institute-based public research organisation, while Act No. 300/1992 Coll. and the creation of the Research and Development Council and Grant Agency introduced new mechanisms of coordination, funding, competition, and evaluation. The Czech model combined institutional continuity with legal and procedural discontinuity. It preserved public support for basic research while opening science to project competition, international cooperation, policy accountability, and later European integration. This transformation was neither smooth nor cost-free, because financial pressure, restructuring, evaluation, and uncertainty affected institutes and researchers deeply. Yet it allowed Czech science to avoid both passive preservation of the

socialist Academy and destructive abolition of accumulated research capacity. In that balance lay the distinctive character of Czech post-socialist science policy.

2. Comparison with Other Central European Transformations

The transformation of Czech academic science after 1989 belonged to a broader Central European pattern, but it cannot be understood as a simple local variant of one uniform post-socialist model. Poland, Hungary, Slovakia, the Czech Republic, and the former East Germany all inherited research systems shaped in different degrees by the Soviet model: academies of sciences with institute networks, politically managed research priorities, weak or constrained university research, branch institutes tied to industry, and limited international mobility. Yet each country entered transformation with different historical traditions, state structures, political cultures, research capacities, and external conditions. Werner Meske described the first phase across Central and Eastern Europe as the dissolution and fragmentation of the socialist science-and-technology system, followed by restructuring of surviving institutions and their environments in politics and the economy (*Meske, 1998*). The Czech case shared this general pattern, but it followed a relatively balanced route: it rejected ideological control, restructured ČSAV, created new funding and evaluation mechanisms, and preserved a strong institute-based Academy as a public research organisation. This middle path becomes clearer when compared with Poland's gradualism, Hungary's preserved academy autonomy, Slovakia's delayed institutional transformation, and East Germany's radical external integration into the West German research system.

A first common feature was the collapse of the old hierarchical management system. Across Central and Eastern Europe, science had been organised inside broader political and economic structures that lost legitimacy after 1989. Meske's comparative account emphasises that the qualitative sign of the first transformation phase was the dissolution of former hierarchical management and organisational systems, while a key quantitative sign was the reduction of resources allocated to science and technology (*Meske, 1998*). This applies directly to ČSAV, where the resignation of the old Presidium, the emergence of elected workplace representation, and the later establishment of the Czech Academy of Sciences all reflected a break with old authority. Yet the Czech case did not move towards full destruction of the Academy network. The institutional hierarchy was dismantled, but research institutes remained central to the new system. In this respect, the Czech transformation was neither conservative nor revolutionary in the East German sense. It was a selective institutional conversion.

The second common feature was severe financial and personnel pressure. The early 1990s brought reduced public budgets, collapsing industrial R&D demand, uncertainty over institutional missions, and competition for newly scarce resources. Meske notes that Central and Eastern European transformation was linked with science-and-technology personnel being cut back to approximately 20 to 50 per cent of former peak levels, although the scale and timing varied by country (*Meske, 1998*). The Czech Academy was not spared from reduction, but it avoided total institutional rupture. Its institutes were evaluated, reorganised, merged, or abolished in some cases, yet the Academy survived as a national research centre. This was significant because many post-socialist reformers initially suspected academies of sciences of being Soviet-style relics. The Czech outcome showed that reduction and reform did not

require abolition. The Academy could become leaner, more democratic, and more internationally oriented while remaining a major pillar of public research.

The third common feature was the imbalance between academic science and industrial R&D. Socialist systems had often contained strong academy and branch-institute sectors, while enterprises themselves frequently lacked robust internal innovation capacities. After privatisation and economic liberalisation, many industrial research institutes and enterprise R&D units were weakened, commercialised, or dissolved. Meske identifies the disproportion between "academic" science and weak industrial R&D as a typical strategic problem across transforming countries (*Meske, 1998*). This problem affected the Czech Republic as well, where Academy institutes could not simply replace the old industrial research system. The state had to build new relations among public research, universities, private firms, grant agencies, and later European programmes. In comparison with Poland and Hungary, the Czech case was marked by a relatively strong preservation of academy-based basic research, while the applied and industrial side of the research system had to be reconstituted gradually.

Poland provides a useful contrast because its public science system changed more gradually and unevenly. Heinecke's study of the Polish public science system argues that institutional change unfolded stepwise and relatively late, despite major political and economic transformation; it also shows different patterns across sectors: the Polish Academy of Sciences was institutionally reproduced, governmental applied R&D units were partly dismantled and displaced by private-sector R&D, and higher education expanded strongly (*Heinecke, 2016*). Compared with the Czech case, Poland therefore displays stronger institutional layering over time. The Polish Academy did not disappear, but the most visible expansion occurred in higher education, especially as demand for degrees rose in the new market society. Czech reform, by contrast, more directly tied the survival of the Academy to a legal act, self-governance, evaluation, and the redefinition of ČSAV as the Czech Academy of Sciences. Both countries preserved academy-based research, but Poland's transformation has often been interpreted as more incremental and delayed. The Czech case appears more concentrated around the 1989–1993 institutional rupture.

Polish science policy also developed an early national funding body with a hybrid character. The Committee for Scientific Research became responsible for the distribution of state research funds in 1991 and combined governmental and scientific-community representation, while distributing money on a competitive basis (*Kuvaldin, 2024*). This resembles the Czech creation of national grant and research-policy structures, but the timing and institutional balance differed. In Poland, the new funding mechanism emerged in a system where the Academy, universities, and other institutes had to negotiate status within a large and socially influential academic sector. In the Czech Republic, the internal grant initiatives of ČSAV and the creation of the Grant Agency of the Czech Republic became part of a more compact transformation of a smaller national research system. Both countries moved away from automatic budget allocation towards competitive and evaluated funding. Yet both also had to preserve institutional funding because long-term research could not be supported only through short grants. This shared tension became one of the main features of post-socialist science policy.

Another Polish difference lay in the social role of the academic intelligentsia. Polish universities, research institutes, and the Polish Academy of Sciences retained strong cultural prestige under socialism, and parts of the academic intelligentsia were involved in opposition

activity, including the broader environment around Solidarity (*Kuvaldin, 2024*). In the Czech case, intellectual opposition and reformist science also mattered, but ČSAV was more directly marked by the trauma of 1968 and normalisation within the Academy itself. The post-1989 Czech debate therefore focused strongly on the rehabilitation of excluded scholars, the replacement of compromised leadership, and the recovery of autonomy after the punitive normalisation of Academy institutes. Poland's academic transformation was also morally and politically charged, but it was more strongly embedded in the prestige of the academic intelligentsia as a social force. The Czech Academy, by contrast, had to defend itself against suspicion that it was a socialist institution while simultaneously claiming deeper Czech learned traditions. This gave Czech reform a sharper continuity/discontinuity dilemma.

Hungary presents a different comparison because the Hungarian Academy of Sciences preserved a strong public status and later legal autonomy. Official Hungarian R&D documentation states that, under Law XL of 1994, the Hungarian Academy of Sciences was an autonomous public body based on self-governance and constituted by ordinary, corresponding, external, and honorary members (*National Office for Research and Technology, 2004*). This resembles the Czech concern with autonomy, but the institutional model was not identical. The Czech reform separated more clearly the research-institute function of the Academy from the learned-society function by abolishing the old ČSAV academic membership status and later supporting the Learned Society of the Czech Republic. Hungary retained a stronger academy-as-public-body identity combining learned authority and research-network responsibility. The Czech Academy became primarily a network of public research institutes with self-governing bodies. Hungary's model therefore preserved a more traditional academy membership structure, while the Czech model redefined academy identity around institutes, research performance, and public legal succession.

Hungary also shared with the Czech Republic the problem of balancing academy institutes and universities. The ALLEA portrait of the Hungarian Academy notes that, already in the 1980s, research institutes and universities developed cooperation, including arrangements allowing institute employees to teach at universities, and that HAS aimed to develop close cooperation between state-owned research centres and university faculties (*ALLEA, 2015*). This is comparable to the Czech need to reconnect Academy institutes with universities after the restoration of academic freedom. Both countries inherited a socialist division in which academy institutes held much basic research capacity, while universities had been politically and institutionally constrained. Both therefore had to move towards cooperation rather than simple merger. The Czech difference lay in the immediate federal and legal rupture of 1992–1993, which forced the creation of a new Czech Academy. Hungary did not face an equivalent dissolution of statehood or division of academy assets at that moment. Its reform was intense but not framed by the end of a federal state.

Slovakia offers the closest comparison because it shared the Czechoslovak institutional context before 1993. The pre-1993 asymmetry is important: there was a Czechoslovak Academy of Sciences and a Slovak Academy of Sciences, but no separate Czech Academy before the dissolution of Czechoslovakia (*Blažek, 2008*). This meant that Czech academy reform had to create a new Czech institutional form as part of state dissolution, whereas Slovakia already possessed the Slovak Academy of Sciences. The Czech Academy of Sciences emerged as the Czech successor to ČSAV, while the Slovak Academy continued in the new Slovak state. The two systems therefore separated from a shared federal research history but did not begin from symmetrical institutional positions. This asymmetry is one of the distinctive

features of the Czech transformation. The Czech case was simultaneously post-socialist and post-federal.

The Slovak transformation appears, in several respects, slower and more legally prolonged. The Slovak Academy's historical materials state that since 2007 SAS began considering transformation into the legal-economic form of public research institutions, and that implementation of this plan took more than ten years (*Slovak Academy of Sciences, n.d.*). This later chronology shows a contrast with the Czech Academy, which received a new legal foundation already in 1992 and began operating as the Czech Academy in 1993. Slovakia had a functioning academy after independence, but deeper legal-economic transformation of its institutes was delayed. A 2003 transition report similarly observed that basic research institutions concentrated in the Slovak Academy of Sciences had not yet been transformed, while commercial R&D had changed dramatically (*Bertelsmann Transformation Index, 2003*). Thus, the Slovak case illustrates a more protracted institutional path. Czech reform was not simple, but it moved earlier towards a public-research-institution model and a clearer legal succession.

The comparison with Slovakia also shows that political transformation and research transformation do not automatically proceed at the same speed. Both Czech and Slovak science left the socialist system in 1989–1993, but the institutional consequences unfolded differently after state separation. Slovakia faced its political and economic turbulence in the 1990s, including debates over state-building, democratic consolidation, and economic reform. In such an environment, academy reform could be delayed, partial, or subordinated to other priorities. The Czech Republic, by contrast, stabilised the legal form of its Academy early, even though later reforms continued. This gave Czech institutes a clearer institutional framework during the 1990s. It also allowed the Czech Academy to define itself earlier as a public, self-governing, institute-based research organisation. The Slovak case therefore helps demonstrate that ČSAV's Czech succession was not an automatic outcome of shared Czechoslovak history, but a specific institutional choice.

The East German case represents the most radical contrast. The Academy of Sciences of the GDR was not merely reformed internally; its research institutes were dissolved as part of German reunification. The Unification Treaty provided for the separation of the learned society from the research institutes, the temporary continuation of institutes until 31 December 1991, assessment by the Science Council, and the rapid application of West German research-promotion methods and programmes in East German research institutions (*Höppner, 1994*). This was a fundamentally different transformation from the Czech one. In East Germany, external evaluation by West German institutions decided which research capacities would survive and where they would be integrated. The old academy-institute structure was dismantled, and positively evaluated parts were absorbed into the West German research landscape. Czech reform used evaluation too, but it did not dissolve the Academy as an institute network. The East German example shows what a much harder rupture looked like.

The scale of East German restructuring was dramatic. A later German expert report states that R&D personnel in eastern Germany fell from 24,000 in June 1990 to nearly 16,000 in November 1991, that the German Council of Science and Humanities evaluated the institutes, that positively assessed institutes were re-established and integrated into West German research institutions, and that others were closed; by January 1992 this produced 32 institutes in the "Blue List," now associated with the Leibniz Association, with additional institutes integrated

elsewhere (*Expert Commission on Research and Innovation, 2010*). Compared with this, the Czech path was less externally imposed and less institutionally destructive. It certainly involved reduction, evaluation, and restructuring, but the Czech Academy remained as a national institutional subject. East German research was integrated into an already existing West German system, while Czech science had to build its post-socialist system. This difference is fundamental. East Germany underwent incorporation; the Czech Republic underwent reconstruction.

The East German comparison also highlights the importance of state context. East Germany did not become a separate democratic state that needed to preserve a national academy; it became part of the Federal Republic of Germany. Its academy institutes were judged in relation to West German organisations such as the Max Planck Society, Fraunhofer Society, Helmholtz centres, universities, and the Blue List/Leibniz sector. The Czech Republic, however, had no external West Czech research system into which ČSAV institutes could be absorbed. It had to create national continuity under new democratic conditions. This explains why Czech reformers could not follow the East German model even if they admired aspects of its evaluation. The institutional environment was entirely different. Czech science needed an academy because the Academy itself contained much of the country's research capacity. East Germany could rely on a larger federal research infrastructure; the Czech Republic could not.

This contrast also reveals two different meanings of evaluation. In East Germany, evaluation was tied to dissolution, selection, and integration into West German structures. In the Czech case, evaluation was tied to internal reform, budget allocation, and the survival of an autonomous public research academy. Both processes used expert assessment, but the institutional consequences differed. East German evaluation asked which parts of the old system deserved incorporation into a different national system. Czech evaluation asked which parts of ČSAV could be transformed into the scientific base of a new Czech institution. The Czech Academy therefore retained more institutional memory and organisational continuity. This continuity had risks, because old habits could survive. But it also protected national scientific capital from the losses that accompany radical institutional liquidation.

The Polish, Hungarian, Slovak, and East German cases together show that the "Soviet model" was never adopted identically across Central Europe. Meske notes that Central and Eastern European countries entered the socialist system after 1945 with different economic and scientific-technical traditions, and these traditions continued to influence the socialist period and post-socialist transformation (*Meske, 1998*). This observation is crucial for the Czech case. Czech science had strong pre-communist traditions, specialised institutes, learned societies, and international links. These older traditions made it easier to argue that the Academy should not be reduced to its socialist form. Poland and Hungary also possessed deep learned traditions, but their institutional reforms followed different patterns because their state structures, academy-university relations, and political contexts differed. The Czech transformation thus belongs to a family of Central European transformations, but its institutional genealogy gave it a distinctive profile.

The Czech model may be described as selective continuity under democratic self-reconstruction. Poland displayed more gradual and layered transformation, with the Polish Academy reproduced and higher education expanding strongly (*Heinecke, 2016*). Hungary preserved a self-governing academy public body under Law XL of 1994 (*National Office for Research and Technology, 2004*). Slovakia retained its academy but delayed deeper legal-

economic transformation of public research institutes (*Slovak Academy of Sciences, n.d.*). East Germany dissolved its academy institutes and redistributed surviving capacities into West German structures (*Höppner, 1994*). The Czech path stood between these poles. It was faster and more legally concentrated than the Slovak path, less gradual than the Polish path, more institute-centred than some university-expansion models, and far less externally incorporative than East Germany.

The Czech case also differed in the way it separated learned-society identity from research-institute identity. The old ČSAV had combined the functions of academy membership and research-institute governance in a way that carried Soviet-style features. After 1989, the old membership status of academicians and corresponding members was abolished, and the Czech Academy developed primarily as a network of research institutes, while the Learned Society of the Czech Republic later took on a separate civic scholarly role. Hungary, by contrast, retained a strong academy membership structure alongside research-network functions. Poland also preserved the Polish Academy of Sciences as an important institution with research institutes and learned functions. The Czech solution was therefore unusually clear in differentiating the academy as a public research organisation from the academy as a learned honourific body. This differentiation helped reduce the symbolic contamination of socialist academic hierarchy. It also made the Czech Academy more directly comparable to a national research organisation than to a traditional academy of members.

Another difference concerns the pace of Europeanisation. All Central European countries sought reintegration into European science, but the institutional routes varied. Poland's reforms included later acceleration under EU and Lisbon-strategy pressures, with reform of the Polish Academy and new structures coordinating science policy appearing prominently in the 2000s (*Kuvaldin, 2024*). Hungary's academy autonomy and research network adapted through national reforms and later tensions over governance. Slovakia's academy transformation into public research institutions was delayed deep into the post-accession period. The Czech Republic created its Academy law, Grant Agency, and research-policy coordination early in the 1990s, before EU accession but already with a clear orientation towards international standards. This early legal stabilisation helped the Czech Academy position itself for later European programmes. It did not solve all problems of quality or funding, but it gave the institution a defined place from which to internationalise.

The broader industrial context also shaped differences. In all countries, the collapse or privatisation of state industry weakened applied R&D. Poland saw governmental applied R&D units partly dismantled and displaced by private-sector R&D, while higher education expanded (*Heinecke, 2016*). East Germany's research restructuring occurred within a much wealthier West German institutional environment, yet also involved closures and painful personnel losses. The Czech Republic had to manage the weakening of industrial R&D while preserving academy-based basic research and gradually building links with firms, ministries, and innovation agencies. Hungary faced similar problems of converting academy and university research into a new innovation environment. These differences mattered because academy reform cannot be separated from economic transformation. Research institutes survive differently depending on whether industry, universities, and state policy can absorb or cooperate with them.

The comparison also shows different degrees of external pressure. East German transformation was defined by reunification and assessment according to West German

institutional standards. Polish and Hungarian transformations were shaped by domestic political decisions, economic reform, and later European policy learning. Slovak transformation was shaped by state-building and delayed legal reform. The Czech transformation combined domestic Academy reform, federal dissolution, national legal creation, and early science-policy institution-building. It was less externally imposed than East Germany's, but more legally abrupt than Poland's gradual layering. It had a stronger national-institutional rupture than Hungary's, because the Czech Academy had to be created as a successor after the end of ČSAV. This mix of pressures explains why the Czech path cannot be placed neatly into a single comparative category. It was a national reconstruction out of a federal academy.

The Czech experience also demonstrates that institutional survival can itself be an achievement. In the early 1990s, survival was not guaranteed for academies of sciences in post-socialist countries, because they were often associated with the Soviet model, political hierarchy, and privileged public funding. The Czech Academy survived because reformers could show that it contained scientific capital, because they accepted restructuring and evaluation, and because legal reform gave it democratic legitimacy. Poland and Hungary also preserved academy institutions, though through different models. Slovakia preserved the Slovak Academy but postponed some structural transformation. East Germany did not preserve the academy-institute system as a national structure. This spectrum shows that survival depended not only on scientific merit but also on state context, political negotiation, public perception, and availability of alternative institutions.

The Czech model was not without weaknesses. Selective continuity can preserve old habits as well as valuable capital. Institute-based systems may remain vulnerable to corporatism, uneven evaluation, generational blockage, or insufficient university integration. Competitive funding may encourage short-termism, while institutional funding may protect inertia. These problems were not uniquely Czech; they appeared in different forms across the region. Poland's gradualism risked delayed reform, Hungary's academy autonomy later became politically contested, Slovakia's delayed transformation limited organisational flexibility, and East Germany's radical restructuring caused painful losses of personnel and institutional memory. The Czech case should therefore not be romanticised as the perfect middle path. It was a workable compromise under specific historical conditions. Its significance lies in how it balanced reform and preservation, not in eliminating all post-socialist dilemmas.

The comparison also clarifies why ČSAV's transformation had to be interpreted internationally. The Academy was not only correcting its normalisation-era past; it was participating in a regional reordering of knowledge institutions after the collapse of state socialism. Meske's three-phase model—dissolution and fragmentation, consolidation of surviving actors, and integration into a new science-technology system—helps situate the Czech process in this broader sequence (*Meske, 1998*). The Czech Academy moved through all three phases: the old ČSAV hierarchy was dissolved, surviving institutes were consolidated under new law, and the Academy gradually became integrated into national and European research policy. Poland, Hungary, Slovakia, and East Germany moved through comparable phases, but with different timing and institutional outcomes. This comparative perspective prevents the Czech case from being seen as either uniquely exceptional or merely typical. It was typical in its problems and distinctive in its institutional solution.

Thus, comparison with other Central European transformations shows that the Czech Academy's post-1989 restructuring was part of a regional movement away from socialist science systems, but it followed a specific route of selective continuity. Like Poland, Hungary, Slovakia, and East Germany, the Czech Republic had to dismantle ideological control, reduce or reorganise inherited structures, create new funding mechanisms, and reconnect with international science. Unlike East Germany, it did not dissolve academy institutes into an externally dominant research system. Unlike Slovakia, it stabilised the legal form of its academy early after the federal split. Unlike Poland, its transformation was less gradual and more concentrated around the 1989–1993 crisis of ČSAV. Unlike Hungary, it more clearly separated the research-institute Academy from the learned-society function. The Czech case therefore stands as a model of reconstituted institutional continuity: the old socialist Academy was not preserved as it was, but neither was its scientific capital destroyed. Its institutes, people, archives, and research traditions were transferred into a new democratic framework, where autonomy, evaluation, public funding, and internationalisation became the organising principles of reform.

3. The Czech Case as a Model of Academic Restructuring

The Czech transformation of the Academy after 1989 may be interpreted as a model of academic restructuring, but only if the word "model" is used carefully. It was not a universal recipe that could simply be exported to every post-socialist research system. It was a historically specific solution to a historically specific problem: how to dismantle ideological and political dependence while preserving a large body of accumulated scientific capital. The Czech case did not choose simple liquidation, and it did not choose passive continuation. It created a form of selective institutional continuity, in which ČSAV's scientific, human, archival, and infrastructural assets were transferred into a new democratic legal and policy framework. This is why the Czech transformation is analytically important. It shows that post-socialist academic restructuring could be more than decommunisation, budgetary reduction, or imitation of Western models. It could become a negotiated reconstruction of the relationship between science, state, society, and historical memory.

The first model element was selective discontinuity. The Czech transformation rejected the political architecture of the socialist Academy: party tutelage, ideological supervision, cadre policy, censorship, normalisation-era personnel hierarchies, and the fusion of scientific prestige with political loyalty. Yet it did not reject the Academy as a research institution. This distinction was essential because ČSAV had contained real scientific capacity even under ideological pressure. The official historical account of the Czech Academy stresses both sides of this inheritance: the Academy had been subjected to heavy ideological pressure until 1989, while Czech science nevertheless retained creative energy and reached international significance in several fields (*Academy of Sciences of the Czech Republic, n.d.*). The Czech model therefore began with a difficult act of discrimination. It separated the institution's scientific substance from the political system that had constrained it.

The second model element was legal re-foundation rather than administrative improvisation. Act No. 283/1992 Coll. established the Czech Academy of Sciences, placed its seat in Prague, defined research as being performed through Academy institutes, and allowed the Academy and its institutes to conclude international cooperation agreements in scientific activity and technological development (*Act No. 283/1992 Coll., 1992*). This legal act was decisive because

it converted revolutionary transformation into a durable institutional form. ČSAV did not simply continue under a changed political atmosphere; it was succeeded by a newly founded Czech Academy within the legal order of the Czech Republic. At the same time, the law preserved the institute-based research model. This was the heart of the Czech solution: legal discontinuity with the socialist framework, but institutional continuity of scientific work. The model therefore depended on law as a stabilising instrument between rupture and preservation.

The third model element was the preservation of institute-based science. Many post-socialist critics regarded academies of sciences as remnants of the Soviet model, and in some contexts this criticism had real force. Yet in the Czech lands, specialised non-university research institutes had deeper historical roots, including older learned societies, interwar institutions, and specialised research bodies later incorporated into ČSAV. The Academy's historical overview links the modern Academy not only with ČSAV but also with the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and several specialised institutes that preceded the socialist Academy (*Academy of Sciences of the Czech Republic, n.d.*). This longer genealogy allowed reformers to argue that the institute model itself was not identical with Stalinisation. What had to be rejected was the party-state mode of governance, not the existence of specialised public research institutes. In this respect, the Czech case became a model of institutional rescue through historical recontextualisation.

The 4th model element was the conversion of public funding into democratic public responsibility. The socialist Academy had been funded by the state, but public funding had been entangled with ideological control. After 1989, the Czech solution did not abolish public support for research. Instead, it attempted to make such support compatible with autonomy, evaluation, grant competition, and public accountability. The present mission of the Czech Academy continues to define its primary role as research across the natural, technical, social sciences, and humanities, advancing international scientific knowledge while taking into account Czech society and national culture (*Czech Academy of Sciences, n.d.*). This formulation captures the democratic reinterpretation of public science. Science would serve society not by obeying a party-defined project, but by producing reliable knowledge, preserving cultural memory, educating researchers, and contributing to public problems. The Czech model therefore preserved public responsibility while rejecting political ownership of truth.

The 5th model element was self-government. The new Czech Academy was not reconstructed as a direct ministry department or a purely bureaucratic agency. It was designed with self-governing bodies, including the Academy Assembly, Academy Council, President, and Council for Sciences, while research remained conducted through institutes (*Act No. 283/1992 Coll., 1992*). This was important because post-socialist reform could easily have replaced party control with ordinary administrative control. The Czech solution sought to avoid that substitution. It recognised that scientific institutions require a public legal framework, but also internal scholarly self-organisation. Self-government did not mean absence of accountability. It meant that scientific judgement, institutional representation, and elected academic bodies would become central to governance. This feature made the Czech case a model of democratic autonomy rather than mere decentralisation.

The sixth model element was early internal mobilisation. ČSAV's transformation did not occur only because the state imposed reform from above. Soon after 17 November 1989, internal initiatives emerged within the Academy, including civic activities, workplace representation, leadership resignations, and demands for institutional democratisation. The publication *1989*

+ *25 = Výzkum užitečný pro společnost* describes the early post-November activities directed towards transforming ČSAV and the establishment of a coordinating centre of civic activities by younger Academy workers (*Blažka et al., 2014*). This internal activism gave the transformation legitimacy from within the scientific community. It prevented reform from being experienced only as external political pressure. The model here is important: a research institution emerging from authoritarian rule must not only be reformed; it must participate in reforming itself.

The 7th model element was symbolic leadership. Otto Wichterle's role after 1989 gave the transformation a recognisable moral and scientific face. He represented internationally respected research, the memory of the Prague Spring, and the reversal of the normalisation-era hierarchy. The ALLEA portrait of the Czech Academy notes that Wichterle became the first president of the Academy after the revival of democracy and that the Czech Academy was established as the Czech successor of ČSAV by Act No. 283/1992 Coll. (*ALLEA, 2015*). This symbolism mattered because institutional restructuring is never only technical. It requires figures through whom communities can understand the new hierarchy of legitimacy. Wichterle's presidency suggested that scientific merit, intellectual independence, and civic credibility could replace political reliability. The Czech case therefore shows the importance of moral-symbolic leadership in academic restructuring.

The 8th model element was the creation of a national science-policy environment around the Academy. The Czech Academy was not transformed in isolation. The early 1990s also saw the formation of new mechanisms for state support of research and development, including the Research and Development Council and the Grant Agency of the Czech Republic. The Government's research and development materials state that the Grant Agency was formed in 1993 pursuant to Act No. 300/1992 Coll. and supported research projects from all branches through public tenders, regardless of the legal form or sectoral affiliation of the applicant (*Research and Development Council, n.d.*). This meant that Academy reform was placed inside a broader system of research governance. The Academy had to operate alongside universities, grant agencies, ministries, and later European programmes. The model was therefore systemic, not merely institutional.

The 9th model element was the introduction of competitive project funding. The Czech Science Foundation describes itself as an independent public organisation supporting basic research across all fields from public funds, and states that since its establishment in 1993 it has funded basic research projects (*Czech Science Foundation, n.d.*). This was a major shift away from inherited administrative allocation. Competitive grants made it possible for individual researchers and teams to propose topics, compete for resources, and be evaluated by scholarly criteria. The grant system did not replace institutional funding, but it changed the incentive structure of Czech research. It encouraged new topics, younger researchers, cross-institutional competition, and professional accountability. For the Academy, this meant that survival as an institution had to be complemented by competitiveness at the project level. The Czech model thus combined institutional continuity with competitive renewal.

The 10th model element was the balance between institutional funding and targeted funding. A research academy cannot live only from short-term grants, especially when it maintains archives, collections, laboratories, long-term programmes, and national scholarly infrastructures. Yet it also cannot depend solely on inherited institutional budgets if it wants to avoid stagnation. Czech research policy gradually developed a mixed approach in which

institutional support and targeted project support coexisted. The Government's research-policy materials describe state support through targeted funding for projects and institutional funding for research organisations and research plans (*Research and Development Council, n.d.*). This mixed model was crucial for the Academy. Institutional funding protected long-term capacity, while project funding introduced competition and renewal. The Czech case can therefore be seen as a model of hybrid funding for post-socialist public science.

The 11th model element was evaluation. ČSAV had to move from ideological and administrative judgement towards expert assessment, including the use of foreign reviewers and international standards. Later analyses of the Academy's transformation identify new methodologies and procedures of science assessment as one of the key outcomes of the reform process (*Filáček, 2023*). Evaluation was necessary because public trust could not be restored by declaration alone. Institutes had to show scientific quality, not merely institutional continuity. At the same time, evaluation had to be adapted to different disciplinary cultures. Physics, biology, archaeology, linguistics, sociology, and history cannot be judged by one crude metric. The Czech model therefore shows both the necessity and difficulty of expert evaluation in academic restructuring.

The 12th model element was internationalisation. The post-1989 Academy had to return Czech science to open European and global scholarly exchange. Act No. 283/1992 Coll. explicitly allowed the Academy and its institutes to conclude international cooperation agreements, which was significant after decades of politically filtered mobility (*Act No. 283/1992 Coll., 1992*). Internationalisation was not only a matter of prestige. It was a mechanism of quality control, methodological renewal, and institutional comparison. Foreign cooperation allowed Czech researchers to enter projects, conferences, publications, and networks from which they had been partially isolated. It also exposed institutes to demanding standards. The Czech restructuring model therefore linked autonomy with openness rather than isolation. A free Academy had to become an internationally communicative Academy.

The 13th model element was the defence of basic research in a market-transforming society. The early 1990s brought strong pressure towards economic utility, privatisation, and short-term reform. In such an environment, a large public research academy could easily be portrayed as expensive, slow, or obsolete. The Czech response was not to deny usefulness, but to defend a broader understanding of usefulness. The Academy's current mission stresses both specialised and interdisciplinary research, international advancement of knowledge, and responsiveness to Czech society and national culture (*Czech Academy of Sciences, n.d.*). This language preserves the value of basic research while linking it to public interest. The model is important because post-socialist transformation often risked replacing ideological instrumentalism with market instrumentalism. The Czech Academy's survival depended on resisting both reductions.

The 14th model element was the redefinition of the Academy-university relationship. Under socialism, the relationship between Academy institutes and universities had been distorted by political control and by the Soviet-style separation of research and teaching. After 1989, universities regained autonomy, but they could not immediately absorb all institute-based research. The Czech model therefore preserved the Academy while encouraging cooperation with universities. Later Czech research-policy documents describe Academy institutes and universities as complementary and emphasise their cooperation as necessary for international competitiveness (*Office of the Government of the Czech Republic, 2015*). This was a practical

resolution of an old structural tension. The Academy did not become a substitute for universities, and universities did not dissolve the Academy. The result was a plural research ecology in which different institutional forms could support one another.

The 15th model element was the separation of research-institute function from learned-society function. The socialist Academy had combined research institutes, honorary academic status, and state-recognised scholarly hierarchy. After 1989, the old status of academicians and corresponding members was abolished, while the Learned Society of the Czech Republic later developed as a separate civic scholarly association. The ALLEA portrait notes this abolition of the old ČSAV membership status and the later establishment of the Learned Society in 1994 (*ALLEA, 2015*). This separation was institutionally intelligent. It allowed the Czech Academy to become primarily a public research organisation, while learned honour could be reconstructed outside the compromised Soviet-style hierarchy. The model shows that restructuring may require differentiation, not only reform. Some inherited functions must be preserved, but in separate and more appropriate institutional forms.

The 16th model element was archival responsibility. The Czech transformation required criticism of the socialist past, and such criticism depended on documents. Archives, bulletins, presidium records, institute files, correspondence, and internal reports made it possible to reconstruct how ČSAV had worked under normalisation and how it changed after 1989. This archival dimension is central because a democratic research institution cannot build legitimacy on selective memory. The Academy had to preserve evidence of both achievement and deformation. Its archives made possible rehabilitation, institutional history, and scholarly analysis of the communist period. In this respect, the Czech case offers a model of documentary continuity as a condition of moral discontinuity. The past could be criticised seriously because its records were preserved.

The 17th model element was restructuring without epistemic amnesia. Many research systems undergoing political transformation are tempted to erase the previous institutional past as if a new beginning could purify everything. The Czech case shows the limits of that temptation. Scientific knowledge is cumulative, and even compromised institutions may contain irreplaceable knowledge. The transformation therefore preserved laboratories, human expertise, libraries, archives, collections, and long-term projects while changing their governance and public meaning. This was especially important in fields such as linguistics, history, archaeology, chemistry, physics, biology, mathematics, and social research. A democratic Academy needed memory, not only freedom. The Czech model thus shows that academic restructuring must protect the epistemic continuity without which freedom becomes institutionally empty.

The 18th model element was adaptation to broader post-socialist science-system transformation. Werner Meske's comparative work on European transition economies describes the transformation of science and technology systems as involving the dissolution of old hierarchical structures, fragmentation, restructuring, and the development of new relations among science, state, and economy (*Meske, 1998*). The Czech Academy belonged to this regional process, but it avoided the most destructive variant of institutional rupture. It experienced cuts, evaluation, and reorganisation, but it survived as a national public research institution. This gave the Czech case comparative significance. It demonstrated that an academy inherited from socialism could be transformed into a modern research organisation if legal reform, self-government, evaluation, funding diversification, and internationalisation

were combined. The Czech model was therefore not an exception to post-socialist restructuring; it was one successful form of it.

The 19th model element was resilience under financial pressure. The 1990s brought reductions in financing and personnel pressure across the Academy and the wider research system. Filáček's later account characterises the radical changes of the 1990s, including a steep decrease in financing, as initiating major reforms of the Czech Academy, leading to institutional changes, plurality of financial sources, new assessment procedures, and new patterns of collaboration (*Filáček, 2023*). This is a key point for understanding the Czech case as a model. Reform was not carried out in comfortable conditions. The Academy had to defend its scientific mission while absorbing austerity and restructuring. Its survival therefore cannot be explained only by political goodwill. It depended on the institution's ability to demonstrate value, reorganise internally, and adapt to new funding environments.

The 20th model element was the conversion of crisis into institutional learning. The first post-revolutionary years forced the Academy to confront leadership legitimacy, institute quality, research priorities, staff structures, international isolation, public suspicion, and budget pressure at the same time. This combination could have produced paralysis. Instead, it produced new bodies, new legal acts, new funding instruments, new evaluation practices, and new forms of public mission. The Czech Academy's later development, including its mission as a broad public research organisation, shows that the early transformation created a platform for continuing change rather than a finished settlement (*Czech Academy of Sciences, n.d.*). A model of restructuring should not be judged only by immediate outcomes. It should also be judged by whether it creates capacity for further adaptation. The Czech case did so.

The 21st model element was the gradual movement from "science surviving society" to "science for society." In later interpretation, the Academy's transformation has been linked with the development of responsible science, plural financial sources, new assessment procedures, and the Strategy AV21 programme, whose motto is "Top research in the public interest" (*Filáček, 2023*). Strategy AV21 itself presents coordinated research programmes of Academy institutes focused on contemporary problems and practical application of research results in socially and economically significant areas (*Czech Academy of Sciences, n.d.*). Although this belongs to a later phase, it reveals the long-term logic of the Czech restructuring. The Academy did not merely escape the socialist system. It gradually reformulated its public mission in democratic and socially responsive terms. The model therefore extends beyond 1993. It shows how post-socialist institutional survival could develop into a modern concept of public-interest research.

The 22nd model element was the preservation of breadth. The Czech Academy remained a research organisation spanning natural, technical, social sciences, and humanities. This breadth is important because many post-socialist reforms risked privileging immediately profitable or internationally visible fields while weakening humanities, social sciences, and national cultural research. The Academy's mission explicitly includes the humanities and social sciences alongside natural and technical sciences (*Czech Academy of Sciences, n.d.*). This breadth allowed the Academy to function not only as a laboratory system but also as a centre of national memory, social analysis, language research, historical scholarship, and cultural reflection. Such breadth made the Academy more difficult to manage and evaluate, but also more valuable. The Czech model therefore defended academic plurality within a public research institution. It resisted both ideological narrowing and market narrowing.

The 23rd model element was the ability to translate historical legitimacy into future relevance. The Academy could not survive only by invoking the Royal Czech Society of Sciences or the Czech Academy of Sciences and Arts. Historical genealogy helped, but it was insufficient. The institution had to show why a democratic Czech Republic still needed a large public research academy. It did this by linking older traditions with new legal structures, project funding, international cooperation, evaluation, university collaboration, and public-interest research. The official Academy history provides the long continuity, while the Act of 1992 and later mission statements provide the modern institutional answer (*Academy of Sciences of the Czech Republic, n.d.; Act No. 283/1992 Coll., 1992; Czech Academy of Sciences, n.d.*). This combination is one of the most instructive aspects of the Czech case. Tradition became useful because it was modernised. Modernisation became credible because it did not pretend to begin from nothing.

The 24th model element was institutional pluralism. The Czech research system after 1989 did not place all knowledge in one type of institution. Universities, Academy institutes, the Grant Agency, ministries, industrial partners, and later technology agencies all formed part of the evolving research and innovation landscape. The Government's research-policy materials describe public support through multiple providers and mechanisms, including targeted project support and institutional support (*Research and Development Council, n.d.*). This pluralism was very different from the socialist command model. It created competition, collaboration, overlap, and sometimes tension. Yet such tension is normal in democratic research systems. The Czech Academy's role became stronger because it was no longer the only privileged research actor, but one major actor among several. Its legitimacy had to be earned within a plural system.

The 25th model element was the recognition that restructuring is not a single event. The Academy was legally re-founded in 1992–1993, but its transformation continued through funding reform, public research institution law, evaluation procedures, EU integration, Strategy AV21, and later debates about research responsibility and public interest. Filáček's account presents the transformation of the Czech Academy as a staged process whose developments produced institutional change, plural funding, assessment procedures, and later public-interest strategies (*Filáček, 2023*). This staged character is important. Post-socialist restructuring should not be measured only by the first laws after 1989. Institutions continue to reinterpret their mission as society, science policy, and international standards change. The Czech model therefore shows transformation as institutional evolution. The rupture of 1989 opened the process, but did not exhaust it.

The Czech case should nevertheless not be idealised. The Academy faced real losses, reductions, conflicts, and uneven disciplinary development. Some institutes were abolished or merged, some research communities suffered, and some older habits likely survived longer than reformers wished. Competitive funding introduced renewal but also insecurity. Evaluation improved accountability but also raised difficult questions about disciplinary fairness. Internationalisation created opportunities but also exposed inequalities among fields. The model therefore should not be read as a story of effortless success. It is better understood as a historically productive compromise. Its value lies precisely in how it managed contradictions rather than in how it eliminated them.

For other post-socialist or transforming research systems, the Czech case suggests several transferable principles. First, one must distinguish political deformations from scientific

capacities. Second, legal re-foundation is stronger than informal adaptation. Third, public funding can be preserved if it is combined with autonomy and accountability. 4th, institutes should be evaluated, but not destroyed merely because they are inherited. 5th, research systems need both institutional stability and competitive project funding. 6th, internationalisation must be used not as decoration, but as a mechanism of quality and openness. 7th, archives and institutional memory must be protected because reform without evidence becomes myth. These principles do not provide a mechanical blueprint, but they define the Czech model's analytical value.

The Czech model also shows why academies of sciences in post-socialist countries should not be judged by institutional form alone. An academy may be authoritarian, bureaucratic, closed, and politically dependent. It may also be autonomous, research-intensive, internationally connected, and publicly valuable. The decisive question is not whether an institution is called an academy, but how it is governed, funded, evaluated, and connected with society. The Czech Academy of Sciences became legitimate after 1989 because it changed the meaning of the academy form. It became a public, non-university research organisation rooted in historical continuity but governed through democratic and professional principles. This is why the Czech case remains important for comparative academic history. It demonstrates that inherited institutions can be refunctionalised when reform is deep enough.

Thus, the Czech case may be regarded as a model of academic restructuring because it achieved a difficult balance between rupture and preservation. It rejected the socialist Academy's ideological, political, and personnel mechanisms, but preserved the scientific capital, institute infrastructure, human expertise, archives, and long-term research capacities that democratic society needed. Its legal foundation in Act No. 283/1992 Coll., the development of national research-support mechanisms under Act No. 300/1992 Coll., the creation of competitive grant funding, the use of evaluation, the preservation of public basic research, and the opening to international cooperation created a new institutional order. This order was not perfect and did not remove all conflicts, but it enabled Czech science to avoid both destructive abolition and compromised continuity. The Czech Academy's later mission and public-interest strategies show that the transformation did not end with survival; it developed into a continuing attempt to connect high-level research with democratic society. In this sense, the Czech model is not a monument to successful reform, but a historically grounded example of how a compromised research institution can be reconstituted through selective discontinuity, accountable continuity, and sustained institutional learning.

References

Academy of Sciences of the Czech Republic. (2017). *Informační příručka Akademie věd České republiky* [Information handbook of the Czech Academy of Sciences]. Akademie věd České republiky.

Academy of Sciences of the Czech Republic. (n.d.). *History overview*. Academy of Sciences of the Czech Republic.

Act No. 172/1990 Coll. (1990). *Zákon o vysokých školách* [Act on higher education institutions].

Act No. 283/1992 Coll. (1992). *Act on the Czech Academy of Sciences*.

Akademický bulletin. (2011). *Do třetího decennia* [Into the third decade]. *Akademický bulletin, 1/2011*.

Akademický bulletin. (n.d.). *Akademický bulletin 1990–1998* [Academic Bulletin 1990–1998]. Akademie věd České republiky.

ALLEA. (2015). *The Academy of Sciences of the Czech Republic*. All European Academies.

ALLEA. (2015). *The Hungarian Academy of Sciences*. All European Academies.

Balík, S., Hloušek, V., Holzer, J., & Šedo, J. (2008). Czechoslovakia in 1989: A case of successful transition. *Totalitarismus und Demokratie, 5*(1), 113–132.

Bertelsmann Transformation Index. (2003). *Slovakia country report 2003*. Bertelsmann Stiftung.

Blažek, J. (2008). Break-up of Czechoslovakia: Roots, 1989, and consequences. *Contributions to the History of Concepts, 4*(2), 179–185.

Blažka, M., et al. (2014). *1989 + 25 = Výzkum užitečný pro společnost: Nástin historie státní podpory výzkumu v ČR v letech 1989 až 2014* [1989 + 25 = Research useful for society: Outline of the history of state support for research in the Czech Republic from 1989 to 2014]. Technologická agentura České republiky.

Britannica. (2026). *Velvet Revolution*. Encyclopaedia Britannica.

Czech Academy of Sciences. (n.d.). *Mission of the CAS*. CAS.

Czech ISSN National Centre. (n.d.). *Bulletin Československé akademie věd* [Bulletin of the Czechoslovak Academy of Sciences]. National Technical Library.

Czech Science Foundation. (n.d.). *GACR in profile*. Czech Science Foundation.

Expert Commission on Research and Innovation. (2010). *Research and innovation in Eastern Germany*. Commission of Experts for Research and Innovation.

Filáček, A. (2023). Transformation of the Academy of Sciences: From science in society to the responsible science for society. *Teorie vědy / Theory of Science, 45*(2).

Havel at Columbia. (2006). *November 29, 1989: Guarantee of communist power removed from Czechoslovak constitution*. Columbia University.

Havel Center. (2019). *Thirty years ago, a two-hour general strike took place*. Václav Havel Center.

Heinecke, S. (2016). The gradual transformation of the Polish public science system. *PLOS ONE, 11*(4), e0153260.

Höppner, M. (1994). *Transformation and integration of the East German science system*. Wissenschaftszentrum Berlin für Sozialforschung.

Institute of Contemporary History of the Czech Academy of Sciences. (n.d.). *PhDr. Antonín Kostlán, CSc.* Institute of Contemporary History of the Czech Academy of Sciences.

Institute of History of the Czech Academy of Sciences. (n.d.). *History of the Institute and specialisation*. Institute of History of the Czech Academy of Sciences.

Kostlán, A. (Ed.). (2002). *Věda v Československu v období normalizace: Sborník z konference, Praha, 21.–22. listopadu 2001* [Science in Czechoslovakia during the period of normalisation: Proceedings of the conference, Prague, 21–22 November 2001]. Výzkumné centrum pro dějiny vědy.

Kramerius Digital Library. (n.d.). *Bulletin Československé akademie věd* [Bulletin of the Czechoslovak Academy of Sciences]. Czech Academy of Sciences Library.

Krapfl, J. (2013). *Revolution with a human face: Politics, culture, and community in Czechoslovakia, 1989–1992*. Cornell University Press.

Kurtz, L. R. (n.d.). *Czechoslovakia's Velvet Revolution (1989)*. International Center on Nonviolent Conflict.

Kuvaldin, S. A. (2024). Polish science and higher education in the post-socialist period. *Herald of the Russian Academy of Sciences, 94*(4), 170–179.

Lommi, J. (2012). *Scientists with human faces: The ideology of the Czechoslovak scientific and technological revolution*. Tampere University Press.

Magna Charta Observatory. (n.d.). *Magna Charta Universitatum*. Magna Charta Observatory.

Masaryk Institute and Archives of the Czech Academy of Sciences. (n.d.). *Fondy Československé akademie věd (ČSAV) a Akademie věd ČR (AV ČR)* [Fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences]. Masarykův ústav a Archiv AV ČR.

Masaryk Institute and Archives of the Czech Academy of Sciences. (n.d.). *Paměť v digitálním věku* [Memory in the digital age]. Masarykův ústav a Archiv AV ČR.

Meske, W. (1998). *Institutional transformation of S&T systems in the European economies in transition: Comparative analysis*. Wissenschaftszentrum Berlin für Sozialforschung.

National Office for Research and Technology. (2004). *Research and development in Hungary 2003–2004*. National Office for Research and Technology.

Oates-Indruchová, L. (2008). The limits of thought? The regulatory framework of social sciences and humanities in Czechoslovakia, 1968–1989. *Europe-Asia Studies, 60*(10), 1767–1782. https://doi.org/10.1080/09668130802434620

Office of the Government of the Czech Republic. (2015). *National research, development and innovation policy of the Czech Republic 2016–2020*.

Oliva, P. (1990). K aktuálním otázkám společenských věd [On current questions of the social sciences]. *Věstník Československé akademie věd, 99*, 92–93.

Pačes, V. (1995). The transformation of research in the Czech Republic: The role of the Academy of Sciences. *Higher Education in Europe, 20*(4), 114–116.

Pecka, E. (2011). Proces tzv. normalizace v české sociologii [The process of so-called normalisation in Czech sociology]. *Historická sociologie, 1*, 77–94.

Radosevic, S. (1999). Transformation of science and technology systems into systems of innovation in Central and Eastern Europe: The emerging patterns and determinants. *Structural Change and Economic Dynamics, 10*(3–4), 277–320.

Research and Development Council of the Government of the Czech Republic. (n.d.). *Research and Development Council of the Government of the Czech Republic*. Government of the Czech Republic.

Skovajsa, M. (2007). Placing contemporary Czech sociology in a historical context. *Polish Sociological Review, 162*, 163–171.

Slovak Academy of Sciences. (n.d.). *Milestones in the history of the Slovak Academy of Sciences*. Slovak Academy of Sciences.

Statutes of the Czech Academy of Sciences. (2006). *Statutes of the Czech Academy of Sciences*. CAS.

Suk, J. (2003). *Labyrintem revoluce: Aktéři, zápletky a křižovatky jedné politické krize (od listopadu 1989 do června 1990)* [Through the labyrinth of revolution: Actors, plots, and crossroads of a political crisis from November 1989 to June 1990] (2nd ed.). Prostor.

Turnovec, F. (2002). Economics—Czech Republic. In M. Kaase, V. Sparschuh, & A. Wenninger (Eds.), *Three social science disciplines in Central and Eastern Europe: Handbook on economics, political science and sociology (1989–2001)* (pp. 50–64). Informationszentrum Sozialwissenschaften.

University of Hradec Králové. (n.d.). *Basic research – Grant Agency of the Czech Republic*. University of Hradec Králové.

Ústav pro studium totalitních režimů. (2017). *Každodenní život v Československu 1945/48–1989* [Everyday life in Czechoslovakia 1945/48–1989]. Ústav pro studium totalitních režimů.

Zahradník, R. (2004). *A few words about the creation, establishment and life of the Learned Society of the Czech Republic*. Learned Society of the Czech Republic.

Živa. (2016). *Ke 125. výročí vzniku České akademie císaře Františka Josefa pro vědy, slovesnost a umění* [On the 125th anniversary of the establishment of the Czech Academy of Emperor Franz Joseph for Sciences, Literature and Arts]. *Živa, 1*, 5–6.

Chapter Seven

The Establishment of the Czech Academy of Sciences, 1992–1993

The Dissolution of Czechoslovakia and the Future of Academic Science

1. Federal Science and the Division of Institutional Inheritance

The dissolution of Czechoslovakia created a constitutional, administrative, and symbolic problem for academic science that was more complex than the ordinary division of ministries or state offices. Science had been organised not only through budgetary lines, buildings, archives, and staff lists, but also through long-formed intellectual communities, shared laboratories, common publication channels, disciplinary councils, and international networks. The Czechoslovak Academy of Sciences, known as ČSAV, was one of the most important institutional products of the socialist state, but by 1992 it was already undergoing post-communist reconstruction under the pressure of democratisation, public criticism, and budgetary uncertainty. Its federal character was therefore inherited in a paradoxical form: politically it belonged to a state that was disappearing, but professionally it contained institutes, teams, schools, and infrastructures that could not simply be dissolved without damaging Czech and Slovak science for decades. The question was not whether the old Academy should survive unchanged, because that option had already been historically exhausted after 1989. The real question was how much of its research capacity should be preserved, how much should be democratically re-founded, and how much should be redistributed between the two successor republics. In this sense, the division of academic inheritance was not an accidental administrative consequence of the “Velvet Divorce”, but one of the most sensitive tests of whether the new states could treat knowledge as a public good rather than as ideological property. The wider political dissolution has often been interpreted as a peaceful but elite-driven constitutional process, and the same duality shaped academic science: the transfer was orderly in legal terms, yet internally full of unresolved anxieties about funding, identity, and the future status of non-university research (*Rychlík, 2017*; *Stolarik, 2017*). The Czechoslovak Academy of Sciences ceased to exist on 31 December 1992, and the Czech Academy of Sciences was established at the same historical threshold as the Czech successor institution of this academy system (*Academy of Sciences of the Czech Republic, n.d.*).

The inheritance of federal science must first be understood against the older structure of Czechoslovak academic organisation. Since 1953, ČSAV had combined two functions that in many Western systems were usually separated: it was both a learned academy and a vast complex of research institutes. It inherited and absorbed earlier learned societies, state research facilities, and specialised institutes that had been built in the Czech lands and Slovakia before and after the Second World War. The official historical account of the present Czech Academy emphasises that, in 1952, research facilities of earlier institutions were integrated into the newly founded Czechoslovak Academy of Sciences, including institutes that had previously belonged to ministerial or autonomous scholarly structures (*Academy of*

Sciences of the Czech Republic, n.d.). This means that the inheritance divided in 1992–1993 was already a layered inheritance, not a single homogeneous body. It contained pre-socialist scientific traditions, the centralising architecture of Stalinist academic organisation, the partial reforms of the 1960s, the distortions of normalisation, and the democratic correction attempted after 1989. The Slovak Academy of Sciences, with its research institutes, had existed as an autonomous part of the broader Czechoslovak academic arrangement, which made the division less like the creation of two academies from nothing and more like the legal separation of two historically connected but institutionally distinguishable parts (*Academy of Sciences of the Czech Republic, n.d.*). The presence of Slovak academic autonomy within the wider system mattered greatly, because it reduced the likelihood that the dissolution of the federation would destroy all existing research structures. At the same time, it did not remove the difficulty of dividing federal rights, obligations, property, projects, and symbolic capital. The Academy's inheritance was therefore simultaneously territorial, functional, disciplinary, and historical.

The Czech part of the inheritance was concentrated in Prague and in a dense network of institutes located across the Czech lands. This geography was not incidental, because the Czech academic centre had historically been linked to Prague's older scientific institutions, the Czech Academy of Sciences and Arts, Charles University, specialised state institutes, and the large research infrastructure of ČSAV. When the federation was approaching its end, the Czech side inherited not merely buildings and staff posts, but an entire metropolitan and regional ecology of research. This included laboratories in the natural sciences, institutes in physics, chemistry, biology, mathematics, and earth sciences, as well as humanities and social science institutes that had played an important role in both the reform atmosphere of the 1960s and the public-intellectual transformations after 1989. The post-1989 Academy had already begun to change its internal legitimacy by separating scholarly authority from the old status of academicians and corresponding members, and by moving towards a more modern institutional model of research institutes and learned representation (*Academy of Sciences of the Czech Republic, 2008*). Otto Wichterle's presidency after the fall of communism symbolised this transition especially strongly, because his biography connected scientific creativity, political exclusion, international recognition, and post-communist moral rehabilitation. The official history of the Czech Academy describes Wichterle as the last chairman of ČSAV after the fall of the Communist regime and notes that the purposeful reconstruction of the research organisation began during his chairmanship (*Academy of Sciences of the Czech Republic, n.d.*). This reconstruction preceded the legal foundation of AV ČR and helped ensure that the Czech successor body would not appear merely as a renamed socialist institution. Yet the institutional continuity remained indispensable, because a rapid liquidation of the research institutes would have broken working laboratories, doctoral training relations, international projects, archives, and specialised expertise. The Czech inheritance therefore had to be preserved and transformed at the same time, which became one of the defining tensions of the years 1992–1993.

The legal form of this inheritance was fixed by Act No. 283/1992 Coll., on the Czech Academy of Sciences. The Act declared that the Czech Academy of Sciences was established and that its seat was Prague, thereby giving the Czech research system a new national institutional centre at the moment when the federal framework was disappearing (*Czech National Council, 1992*). It also stated that the Academy performs research through its institutes, which was crucial because the new Academy was not designed as a purely honorary learned society. It

was legally constructed as a body whose main life would continue in research workplaces, laboratories, libraries, archives, editorial offices, field stations, and specialised disciplinary centres. The Act further defined the Academy as an organisational body of the Czech Republic financed from the state budget, with a special budgetary status that allowed it to function as a central authority for budgetary purposes (*Czech National Council, 1992*). This was a decisive point in the division of inheritance, because the Academy was not pushed into the ordinary university sector, nor reduced to a weak association dependent on voluntary membership. It retained a direct public status, but this status was now attached to the Czech Republic rather than to the Czechoslovak federation. The legal continuity of institutes was therefore placed inside a new state framework, and this made the Czech Academy a successor institution rather than a merely newly created administrative shell. The Academy inherited the mission of basic research, international cooperation, research infrastructure, scientific information, expert assessments, and doctoral training cooperation with higher education institutions. In practical terms, the Act translated the abstract division of federal science into a legally operational architecture for Czech non-university research.

The most important provision for the division of institutional inheritance was the transitional mechanism contained in the final part of the Act. It stated that the property, rights, and obligations passing to the Czech Republic on the basis of the federal settlement of the former Czechoslovak Academy of Sciences would pass to the Czech Academy on the day the Act entered into force (*Czech National Council, 1992*). This sentence expressed in legal language the basic logic of the whole transformation: the Czech state first received its share of the federal academic inheritance, and the new Academy then became the institutional holder of that share. The same transitional provision stated that the institutes of ČSAV passed to the Czech Republic by the federal act would become institutes of the Czech Academy, and that the directors and scientific councils of these institutes would become directors and scientific councils under the new Act (*Czech National Council, 1992*). This was more than a technical continuity clause. It prevented institutional collapse during the constitutional transfer of statehood. It ensured that employees, research programmes, internal governance bodies, and organisational responsibility did not fall into a legal vacuum between the end of ČSAV and the beginning of AV ČR. It also showed that the Czech Academy was founded through a controlled transformation of inherited capacity rather than by a symbolic proclamation alone. Such continuity did not mean the absence of reform, because later provisions required the creation of new self-governing bodies, including the Academy Assembly. Yet the law clearly protected the operational substance of the research system at the very moment when the political state that had created it disappeared.

The division of inheritance was therefore marked by a distinction between constitutional rupture and institutional continuity. Constitutionally, ČSAV belonged to a federal state that ceased to exist. Institutionally, many of its Czech institutes continued their work under a new legal roof, sometimes with the same directors and scientific councils at the beginning of the transition. This continuity was not simply conservative. It was necessary because research organisations cannot be reconstructed in the same way as ordinary administrative offices. Laboratories depend on long-term equipment, tacit knowledge, experimental routines, collections, specimens, archives, field data, technical staff, doctoral students, and trust-based international relations. A failed transfer would not merely have delayed bureaucracy; it would have destroyed scientific capital that had taken decades to accumulate. The Czech political leadership and academic representatives therefore had to distinguish between the

ideological form of the socialist Academy and the real research capacities contained inside it. The socialist hierarchy, party supervision, privileged academic titles, and central planning mechanisms had to be abandoned or reworked. But the institutes, research schools, library systems, instruments, and intellectual communities had to be kept alive if Czech science was to enter the post-socialist period with any chance of international competitiveness. This explains why the founding of AV ČR was simultaneously a legal act, an administrative settlement, and an act of institutional preservation. The transfer of inheritance was not a nostalgic defence of ČSAV, but a pragmatic decision to save research capacity from the turbulence of state dissolution.

The federal character of the old system also meant that the division of inheritance was not merely Czech internal reform. It was linked to the broader settlement between the Czech Republic and the Slovak Republic. The two successor states had to divide common property, institutional obligations, representation rights, and state functions, while also avoiding paralysis in sectors whose continuity mattered for public life. Academic science belonged to this group, although it was less visible to the general public than currency, citizenship, army property, or diplomatic representation. The Czech and Slovak academic systems had already possessed partly separate institutional histories, especially because the Slovak Academy of Sciences had maintained a distinct identity and institutional basis. This allowed the Slovak side to continue through the Slovak Academy rather than depend on the creation of an entirely new system after 1 January 1993. For the Czech side, the situation was different because the Czechoslovak Academy's central apparatus, many major institutes, and much symbolic authority had been located in Prague. The Czech Academy therefore became the successor to the Czech part of ČSAV, while also claiming a longer lineage reaching back to the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts. The split of institutional inheritance thus did not divide one national academy into two equal halves in a mechanical sense. It separated a historically asymmetric, geographically structured, and politically federalised system into two national research frameworks. Each successor state had to construct its story of continuity from the common past.

The word "inheritance" is particularly appropriate because what passed to AV ČR was not only property in the narrow legal sense. It included immovable property, equipment, libraries, collections, archives, documentation, research contracts, publication practices, personnel obligations, unfinished projects, and international commitments. It also included less visible forms of institutional memory: habits of interdisciplinary cooperation, disciplinary hierarchies, internal prestige, relationships between institutes and universities, and professional expectations about the status of basic research. Inherited assets were accompanied by inherited burdens. Some institutes had been overstaffed by the standards of the new funding environment. Some research directions had been shaped by the priorities of the planned economy, the defence sector, or ideological supervision. Some international relations had been weaker than they might have been without the Cold War barriers imposed on socialist science. Some disciplines, especially in the humanities and social sciences, carried the scars of political interference, censorship, purges, and normalisation. The new Czech Academy inherited both the achievements and the distortions of ČSAV. This made the division of inheritance morally and analytically complicated. It was not possible to say simply that the Academy had been a victim of the regime, nor that it had been only an instrument of the regime. Its inheritance was mixed, and the task of 1992–1993 was to preserve the scientific value while removing the political deformation.

The legal transfer of institutes also protected the continuity of research careers. For scientists, technicians, librarians, editors, and administrative workers, the disappearance of ČSAV could have meant a sudden uncertainty about employment, institutional affiliation, pension rights, research projects, and access to facilities. The transitional provisions of Act No. 283/1992 Coll. reduced this uncertainty by ensuring that the institutes transferred to the Czech Republic became institutes of the new Academy. This did not guarantee financial comfort or long-term security, but it gave the academic community a legal address and organisational continuity. In the post-socialist context, this mattered greatly because many public sectors were undergoing rapid privatisation, decentralisation, and budgetary reduction. Industrial research institutes, in particular, were often abolished, privatised, or converted into semi-commercial entities during the 1990s, weakening applied research capacity in the Czech economy (*Hebáková & Kostić, 2009*). The Academy's institutes did not escape pressure, but they were not treated in the same way as many sectoral research bodies connected to ministries or industrial branches. Their preservation under AV ČR helped maintain a strong public basic-research sector. This institutional survival later became one of the distinctive features of the Czech research system compared with some other post-socialist trajectories. It also meant that the Czech Republic entered independence with a concentrated non-university research base that could gradually reconnect with European scientific networks.

The division of inheritance also raised the question of what kind of academy the Czech Republic needed. One possible model would have been to abolish the institute-based Academy and transfer most research to universities. This idea circulated in several post-socialist countries, because the Soviet-style academy model was often associated with the separation of research from teaching and with centralised political control. Another possible model would have been to reduce the Academy to a learned society, leaving research to universities, ministries, private industry, and grant agencies. The Czech solution was different. It maintained an institute-based Academy but transformed its legal, political, and governance basis. This choice recognised that universities in the early 1990s were themselves recovering from decades of ideological pressure, underfunding, and institutional distortion. They could not immediately absorb the entire research capacity of ČSAV without serious loss. The Academy's institutes also possessed specialised infrastructure that universities often lacked. The new Czech Academy therefore became a bridge between the inherited socialist institute system and a future plural research environment. Its survival was not a refusal of reform, but a way of preventing reform from becoming destruction.

In this context, the division of inheritance was inseparable from the emergence of new research funding mechanisms. The early 1990s brought a shift away from central planning and towards competitive grants, institutional evaluation, and diversified funding. The Academy had to function within this changing environment while also carrying the institutional weight of inherited institutes. Later analyses of Czech research policy note that the Czech R&D system underwent radical transformation in the 1990s, including restructuring of the Academy and reductions in former sectoral applied research institutes (*Hebáková & Kostić, 2009*). The Academy's role remained especially strong in basic research, while universities and business research developed under different constraints. This produced both advantages and problems. On one hand, AV ČR preserved high-level research teams and long-term disciplinary continuity. On the other hand, the Czech system continued to face weak links between public research, universities, and industrial application. The division of federal inheritance therefore did not solve the deeper structural problem of how to connect knowledge production with

democratic society and market economy. It merely created the institutional platform from which those problems could be addressed. The new Academy inherited not only laboratories but also the obligation to justify why a public non-university research institution remained necessary in a democratic state.

The Czech Academy's post-1992 legitimacy depended on the answer to that question. It could no longer rely on the old claim that the Academy was the central scientific authority of a socialist state. It had to explain itself in the language of public research, international excellence, national culture, expert knowledge, doctoral training, and cooperation with universities. Act No. 283/1992 Coll. already contained several elements of this new legitimacy. It defined the Academy's activities as scientific research, contribution to knowledge and education, application of research results, scientific information, expert assessments, doctoral training cooperation, international cooperation, cooperation with scientific and technical institutions, and provision of research infrastructure (*Czech National Council, 1992*). These tasks were broad enough to preserve the Academy's inherited complexity, but also modern enough to detach it from the older image of a politically directed supreme scientific authority. The Academy was still publicly financed, but its purpose was no longer ideological service to the socialist state. Its declared purpose was research and knowledge within the Czech Republic and in international scientific space. This new mission was crucial for the peaceful transfer of inheritance, because legal continuity without normative renewal would have been insufficient. Researchers, politicians, universities, and society needed to see that the inherited institution was being redefined. The legitimacy of AV ČR was therefore built through a careful combination of continuity and discontinuity.

The composition of the new Academy's governing bodies also showed this combination. The Act established the Academy Assembly, Academy Council, President, and Council for Sciences as the Academy's bodies. It defined the Assembly as the supreme self-governing body and included institute directors, representatives of universities, elected representatives of institutes, outstanding domestic and foreign scientists, and representatives of public administration and economic life (*Czech National Council, 1992*). This arrangement was designed to prevent the Academy from being governed only by a closed bureaucratic hierarchy. It also sought to connect the inherited institute system with universities, state administration, industry, and wider scientific authority. The Assembly's powers included adopting the statutes, approving the annual report, approving the budget and final account, distributing funds among institutes, and deciding on the establishment, merger, division, or dissolution of institutions (*Czech National Council, 1992*). These powers were especially relevant in the immediate post-dissolution period because the division of inheritance had to be followed by internal restructuring. The Academy could not simply receive institutes and continue as before. It needed instruments for evaluation, consolidation, leadership renewal, and strategic adjustment. The new governance model therefore converted inherited property into a self-governing research system. It placed the future of the inherited institutes inside procedures that were meant to be more plural, transparent, and professionally accountable than the mechanisms of the socialist Academy.

At the same time, the division of inheritance preserved a certain hierarchy of institutional memory. Prague remained the seat of the new Academy, and this reinforced the historical continuity of Czech scientific centrality. The Academy could present itself as the heir not only of ČSAV, but also of the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, the Masaryk Academy of Labour, and other earlier institutions. This historical genealogy

mattered because the socialist Academy had been founded after the dissolution of older learned societies and scientific institutions under communist rule. By reaching behind 1953, AV ČR could symbolically de-socialise its inheritance without denying the scientific value produced during the socialist period. The official history of the Czech Academy explicitly connects the present institution with earlier learned societies, the Czech Academy of Sciences and Arts, interwar scientific bodies, the post-war research institutes, ČSAV, and the democratic reconstruction after 1989 (*Academy of Sciences of the Czech Republic, n.d.*). Such a narrative helped transform legal succession into historical legitimacy. The Academy did not want to appear merely as a technical successor to ČSAV. It wanted to appear as the restored and modernised bearer of a much longer Czech scientific tradition. This was especially important in 1992–1993, because the new Czech Republic itself had to define its relationship to Czechoslovak statehood, Czech national history, European modernity, and post-communist democracy.

The Slovak dimension of the division sharpened this symbolic problem. The Czechoslovak Academy had embodied a common state, but Czech and Slovak scientific traditions had never been identical. Slovakia had its academy history, its institutional centres, and its national scientific aspirations. The Slovak Academy of Sciences was not a simple provincial branch of a Prague institution, even though it had been part of the overarching Czechoslovak academic structure. Its continued existence after 1992 allowed the Slovak Republic to claim its institutional continuity. For the Czech Academy, this meant that the inherited Czechoslovak scientific capital had to be reinterpreted carefully. It could not simply claim all of ČSAV as "Czech" in a national sense, because ČSAV had been a federal or Czechoslovak institution. Instead, it claimed the Czech successor share of ČSAV while also embedding that share in the longer Czech learned tradition. This distinction helped avoid the symbolic appropriation of common heritage. It also reflected the legal reality that rights and obligations were divided through the successor states. The Czech Academy's inheritance was therefore both nationalised and limited: it became Czech, but it remained historically connected to a broader Czechoslovak scientific past.

One of the less visible but highly important elements of inheritance was international representation. ČSAV had maintained relationships with foreign academies, scientific unions, exchange programmes, journals, and international organisations, although these relations had been shaped by Cold War conditions. After 1989, Czech and Slovak science urgently needed to reconnect with Western European and global research networks. The dissolution of the federation could have disrupted this process if international partners were uncertain about legal succession, institutional continuity, or the status of existing agreements. Act No. 283/1992 Coll. therefore gave the Academy and its institutes the capacity to conclude agreements on international cooperation in scientific activities and technological development (*Czech National Council, 1992*). This provision was not ornamental. It allowed the new Czech Academy to act as a recognised legal and institutional partner in the international scientific field. The inherited international relationships of ČSAV could thus be renegotiated, continued, or replaced under the authority of AV ČR. The Academy's later official portrait emphasised that the integration of Czech science into the international context was promoted through international projects and scientist exchange (*Academy of Sciences of the Czech Republic, 2008*). In this respect, the division of inheritance was not only domestic. It was also a re-registration of Czech science in the international order after the end of both communism and the Czechoslovak federation.

Another inherited sphere was the relationship between the Academy and universities. Under the socialist model, research and higher education had often been institutionally separated more sharply than in many Western systems. The Academy concentrated a large share of basic research, while universities were heavily burdened by teaching and ideological supervision. After 1989, democratic reform reopened the question of whether research should be reintegrated into universities. However, the Academy's institute structure remained too significant to be dismantled without loss. The new Act therefore recognised cooperation with higher education institutions, especially in doctoral study programmes and researcher training (*Czech National Council, 1992*). This was a subtle but important transformation of inherited federal science. Instead of defending the Academy against universities, the new model sought to make the Academy part of a broader research and education ecosystem. It preserved the non-university research institutes while creating legal space for cooperation with universities. This arrangement would later become one of the defining features of Czech research: strong Academy institutes working alongside universities, sometimes in close collaboration and sometimes in competition for funds, talent, and prestige. The division of federal inheritance therefore set the foundations for a post-socialist dual research system. It did not abolish the older separation, but it made it more flexible and more compatible with democratic academic life.

The division of inheritance also required decisions about leadership. The old Academy had been governed through structures shaped by party control, although its internal scientific councils and disciplinary bodies had sometimes preserved partial professional authority. After 1989, leadership legitimacy had to be rebuilt. The transitional clauses of the Act kept directors and scientific councils in place at the beginning, but only as a temporary means of continuity. Within a short period, the councils for science of the institutes were required to submit proposals for institute directors, and the transitional committee had to take steps to establish the Academy Assembly within 60 days (*Czech National Council, 1992*). This timetable shows that the Czech side understood the danger of indefinite provisionality. The inherited institutes could not be left in a suspended state. They needed new governance procedures quickly, but not so abruptly that research operations would collapse. The first Academy Assembly had a limited functional period, which underlined its transitional character. The division of institutional inheritance was therefore managed through temporary continuity followed by self-governing renewal. This sequence was characteristic of the whole Czech academic transformation: first prevent collapse, then reconstruct legitimacy, then evaluate and reorganise.

The financial dimension of inheritance was perhaps the most painful. The new Czech Academy inherited institutes, staff, infrastructure, and obligations, but it did so in a state undergoing market transformation, budgetary restraint, and competing public priorities. Post-socialist governments faced pressure to reduce state expenditure, privatise parts of the economy, reform education, build new administrative institutions, and manage the costs of state succession. Research was important, but it was rarely politically urgent in the same way as currency, taxation, welfare, or economic stabilisation. Later analysis of the Academy's transformation stresses that radical changes in the 1990s, including a steep decrease in financing, initiated major reforms of CAS (*Filáček, 2023*). This confirms that the inheritance transferred to AV ČR was not accompanied by an easy financial environment. The Academy had to preserve long-term research capacities while coping with austerity and pressure for personnel reductions. It also had to justify why basic research deserved public funding at a

time when practical economic transformation dominated political discourse. The division of federal inheritance therefore produced a mismatch between institutional responsibility and available resources. The Czech Academy inherited much of the scientific weight of the old system, but it had to carry that weight in a thinner and more competitive fiscal environment.

This financial pressure influenced the meaning of "inheritance" itself. In normal property succession, inheritance is usually imagined as a resource. In the case of AV ČR, inheritance was also a burden requiring constant defence. Buildings needed maintenance, instruments needed renewal, journals needed support, libraries needed preservation, and researchers needed salaries that could prevent talent loss. The danger was not only that some institutes might be closed. It was also that gradual underfunding would quietly degrade research quality, push young scientists abroad, isolate Czech teams from international standards, and weaken the ability to compete for European projects. The early 1990s therefore forced the Academy to think strategically about what could be preserved, what had to be reduced, and what had to be modernised. The division of federal inheritance did not freeze the inherited structure; it began a process of selection. Some disciplines could defend themselves through international publications and grants. Others had to redefine their public relevance after the collapse of ideological demand. Applied research connected to socialist industrial structures faced especially severe difficulties. The Academy's survival depended on its capacity to present inherited basic research not as a remnant of the old regime, but as a necessary infrastructure for the new republic.

The intellectual inheritance of ČSAV was also uneven across disciplines. The natural sciences often possessed internationally recognisable research traditions despite political constraints, especially in fields where scientific standards were less directly ideological. Physics, chemistry, mathematics, biology, and certain technical disciplines could point to research schools, equipment, and international publications that justified continuity. The humanities and social sciences faced a more complicated situation. Some institutes had been severely damaged by normalisation after 1968, while others had been compromised by ideological supervision. Yet these fields were also essential for democratic transformation because they contributed to historical reflection, legal reform, social analysis, language, culture, and public debate. The division of inheritance therefore involved not only material assets but also epistemic rehabilitation. Disciplines that had been politically distorted needed intellectual renewal. Researchers who had been excluded or marginalised needed recognition. Archives and publication projects needed reinterpretation in a freer scholarly environment. The new Czech Academy inherited the task of transforming the humanities and social sciences from controlled ideological fields into open research disciplines. This was one of the reasons why the establishment of AV ČR could not be reduced to legal succession alone.

The federal inheritance was further complicated by the fate of specialised research infrastructures. Some facilities served long-term national needs that did not fit neatly into short political cycles. Collections, observatories, language corpora, archaeological archives, biological stations, astronomical facilities, and specialised libraries all required continuity. These infrastructures were not always visible in political debates, but they formed the deep structure of academic science. Once destroyed, they would have been extremely difficult to rebuild. The Czech Academy's institute-based form helped protect many such infrastructures because they remained attached to stable research workplaces. At the same time, the new Academy had to decide which infrastructures were nationally indispensable and which belonged to an older, overextended research system. Such decisions could not be made purely

by market criteria. A market economy may not immediately reward the preservation of a manuscript archive, a long-term ecological dataset, or a basic physics laboratory. Yet a developed research culture depends on precisely such capacities. The division of inheritance therefore forced the Czech Republic to decide whether it wished to be merely a consumer of imported knowledge or a producer of scientific knowledge with its institutional depth.

The symbolic transfer from ČSAV to AV ČR also had a linguistic and political dimension. The name "Czechoslovak" disappeared from the Academy, and "Czech" became the defining national marker. This change might seem obvious, but it carried a deeper meaning. The Czech Academy was no longer responsible for representing the scientific community of a common Czech-Slovak state. It had to represent Czech science within a new sovereign republic while maintaining cooperation with Slovak colleagues and preserving the memory of shared scientific life. The change of name therefore condensed the whole transformation of statehood. It marked the end of federal academic representation and the beginning of national academic responsibility. Yet the adjective "Czech" did not only refer to ethnicity. It referred to the Czech Republic as a civic state and to its public research system. This was important because Czech science, like Czech society, contained international, regional, disciplinary, and linguistic plurality. The new Academy had to avoid becoming a narrow national monument. Its legitimacy depended on combining Czech historical continuity with openness to international science. The inherited Czechoslovak framework was gone, but the Academy's scientific horizon had to become broader, not narrower.

The division of inheritance can also be read as a moment of institutional triage. Some parts of the old system had to be kept immediately because they were essential for continuity. Some had to be reformed because they were structurally valuable but politically or administratively outdated. Some had to be reduced because they no longer corresponded to the priorities and resources of the new democratic state. This triage was difficult because the scientific community itself was not homogeneous. Different institutes had different reputations, political histories, international connections, and capacities to adapt. Senior researchers, younger scientists, returning émigrés, rehabilitated scholars, and former administrators did not always share the same vision of reform. The Academy had to maintain internal peace while also demonstrating external reform. It had to protect scientific quality without appearing corporatist. It had to ask the state for funding while accepting greater accountability. The division of federal inheritance therefore began a long negotiation between autonomy and responsibility. This negotiation would define much of the Academy's development in the 1990s and beyond.

The post-socialist transformation of science in Central and Eastern Europe provides a broader comparative frame for this Czech case. The socialist science system had generally been organised through strong academies of sciences, sectoral industrial research institutes, and universities that were often less research-intensive than their Western counterparts (*Meske, 1998*). After 1989, these systems faced a triple challenge: political democratisation, economic transformation, and international reintegration. The Czech Republic was not unique in confronting this challenge, but its solution was distinctive in preserving a strong Academy of Sciences as a public non-university research institution. In some countries, academy systems were weakened more radically or pushed towards different organisational forms. In the Czech case, the Academy survived because its institutes were seen as too valuable to abolish and because the legal transfer of inheritance gave them a coherent institutional home. This survival, however, did not protect the Academy from reform. It made reform unavoidable,

because the Academy had to prove that an inherited institute system could function according to democratic, competitive, and internationally recognisable standards. The division of federal inheritance thus became the Czech version of a wider post-socialist question: how to transform a state-socialist scientific apparatus into a modern public research system without destroying accumulated scientific capital.

The Czech Academy's claim to continuity with earlier predecessors also helped answer this comparative challenge. By stressing the Royal Czech Society of Sciences, Purkyně's idea of an autonomous non-university scientific institution, the Czech Academy of Sciences and Arts, and interwar research bodies, the Academy could argue that its institute-based form was not merely a Soviet import. The official history explicitly notes that Purkyně's 19th-century proposal for an autonomous non-university scientific institution corresponded in some respects with the concept and structure of the present Academy (*Academy of Sciences of the Czech Republic, n.d.*). This historical argument was important because critics of the academy model could portray ČSAV as an alien socialist structure. The Academy's defenders could reply that Czech non-university organised science had deeper roots than communism. The truth lay somewhere between these positions. The socialist Academy had indeed reorganised Czech science under a Soviet-style model, but it had also absorbed older institutions and developed research capacities that could not be dismissed as purely ideological. The post-1992 Academy therefore used historical self-definition to separate the value of organised research from the authoritarian form it had taken after 1953. This symbolic work was not decorative. It was part of the institutional survival strategy of AV ČR.

The division of institutional inheritance also influenced how the Czech Republic understood scientific sovereignty. A new state requires more than borders, parliament, currency, and ministries. It also needs the capacity to produce knowledge about nature, society, history, language, territory, health, technology, and culture. The Academy's institutes contributed to this capacity across a wide range of disciplines. They preserved expertise that could support public policy, education, cultural memory, environmental monitoring, technological development, and international scientific participation. In this sense, AV ČR became one of the institutions through which the Czech Republic inherited not only statehood but also cognitive infrastructure. The term may sound abstract, but its meaning is concrete. A country without strong research institutions depends on external knowledge systems. A country with functioning research institutes can interpret its problems, contribute to global science, and train future researchers. The division of federal science therefore concerned the intellectual foundations of sovereignty. The Czech Republic's decision to maintain the Academy showed that the new state wanted continuity in knowledge production even while it accepted constitutional discontinuity.

Thus, federal science in 1992–1993 was divided through a careful balance of legal succession, institutional preservation, national redefinition, and democratic transformation. The Czech Academy of Sciences did not emerge from an institutional void, nor did it simply continue ČSAV under a new name. It received the Czech share of the former federal academic inheritance, including institutes, property, rights, obligations, personnel structures, research capacities, and symbolic traditions, but it had to reinterpret all of this within the framework of a sovereign democratic Czech Republic. Act No. 283/1992 Coll. was decisive because it prevented legal discontinuity from becoming scientific collapse, while also opening the way to new self-governing bodies and a new public mission. The inherited institute system was both an asset and a burden: it preserved advanced research capacities, but it also carried traces of central

planning, ideological distortion, financial vulnerability, and separation from universities and industry. The dissolution of Czechoslovakia therefore turned academic science into one of the laboratories of post-socialist state-building. In the Czech case, the outcome was not the liquidation of academy-based research, but its national, legal, and symbolic re-foundation. This is why the establishment of AV ČR should be understood not merely as an administrative consequence of the Velvet Divorce, but as one of the central acts by which Czech science entered the post-federal and post-socialist era.

2. The Czech and Slovak Academic Trajectories after 1992

The separation of Czech and Slovak academic trajectories after 1992 was not a simple duplication of one institutional model in two new states. It was the result of two related but different historical situations. The Czech Republic inherited the central Prague-based part of the former Czechoslovak Academy of Sciences and transformed it into the Czech Academy of Sciences as a public non-university research institution. Slovakia, by contrast, already possessed the Slovak Academy of Sciences as a historically distinct academy with its headquarters, institutes, internal traditions, and post-1989 reform process. The dissolution of Czechoslovakia therefore did not create two academies from an empty field, but it changed the political scale and symbolic meaning of both institutions. In the Czech case, the key issue was succession to the Czech part of ČSAV and the construction of a new national Academy under Czech law. In the Slovak case, the key issue was the conversion of SAV from an academy within a federal Czechoslovak framework into the principal academy of an independent Slovak Republic. The same political event thus produced two different institutional tasks. For the Czech Academy, the language of succession and continuity with the former ČSAV became central. For the Slovak Academy, the language of national scientific representation, legal protection, and international self-positioning became especially important. The two trajectories remained connected by shared Czechoslovak scientific memory, but they began to operate within different state budgets, research policies, political cultures, and public expectations. The “Velvet Split” produced peaceful state separation, but in academic science it also produced a long-term differentiation of institutional environments (*Rychlík, 2018*; *Stolarik, 2017*).

The Czech trajectory after 1992 was built around a clear legal act of institutional succession. Act No. 283/1992 Coll., on the Czech Academy of Sciences, established the Academy, fixed its seat in Prague, and defined it as an organisational body of the Czech Republic financed from the state budget. The Act also stated that the Academy performed research through its institutes and that, for budgetary purposes, it had the status of a central authority of the Czech Republic. This legal construction was important because it gave the new Academy a strong public status at a moment when other research institutions in post-socialist economies were often exposed to liquidation, privatisation, or drastic weakening. The Czech Academy was not reduced to a symbolic learned society and was not immediately dissolved into the university sector. It remained a complex of research institutes primarily devoted to basic research, although its mission was now formulated in the language of democratic public science rather than socialist scientific planning. The official institutional portrait later described it as the Czech successor of the former Czechoslovak Academy of Sciences and as a public non-university scientific institution encompassing a complex of research institutes (*Academy of Sciences of the Czech Republic, 2008*). This formula reveals the main Czech line after 1992:

legal succession, institute preservation, gradual evaluation, and international reintegration. The Czech Academy had to defend the inherited institute model, but it also had to prove that this model could operate under new democratic and competitive conditions. Its post-1992 trajectory was therefore marked by continuity of infrastructure and discontinuity of legitimacy.

The Slovak trajectory had a different institutional starting point because the Slovak Academy of Sciences did not have to be created as a new institution in 1992. It had been legally grounded by an act of the Slovak National Council in 1953, and it had developed as the major Slovak non-university research institution under the socialist system. After November 1989, SAV underwent its transformation before the final dissolution of the federation. The official history of the Slovak Academy states that the political changes of 17 November 1989 introduced significant changes and subsequent transformations enabled the Academy to become more similar to counterpart organisations of science and research in advanced countries (*Slovak Academy of Sciences, n.d.*). Dušan Kováč's detailed study of SAV transformation presents the period 1989–1993 as a three-stage process: revolutionary leadership change, democratic reconstruction under a newly elected Presidium, and a further transformation stage in 1992–1993 focused on effectiveness and reorganisation (*Kováč, 2010*). This means that, when the independent Slovak Republic appeared on 1 January 1993, SAV was already moving through a deep internal reform. It did not merely receive a new national label after the dissolution of the federation. It became the principal academy of a sovereign state after several years of internal democratisation, staff reduction, introduction of grant principles, and struggle for legal protection. The Slovak path was therefore less a question of succession to ČSAV and more a question of the national consolidation of an existing Slovak academy.

The difference between the two trajectories can be expressed through their relationship to federal inheritance. The Czech Academy was founded as the Czech successor of the former Czechoslovak Academy of Sciences, which made the division of ČSAV's property, institutes, rights, and obligations a central legal issue. The Slovak Academy, by contrast, already possessed its institutional identity and network of institutes, but it had previously depended on the Czechoslovak framework for aspects of international representation and federal-level scientific organisation. Kováč notes that, under the earlier arrangement, the Slovak Academy was represented internationally by the Czechoslovak Academy of Sciences, which caused difficulties in establishing and maintaining foreign contacts (*Kováč, 2010*). After the dissolution of the federation, this changed fundamentally. SAV had to become a direct national actor in international science, reconstructing its contacts and joining international organisations in its name. The Czech Academy also had to re-register itself internationally, but it did so as the successor to the central Czechoslovak academic institution. Slovakia's Academy had to transform from a national academy inside a federation into a national academy of an independent state. This distinction affected institutional self-perception. Czech academic discourse could emphasise legal succession and preservation of Czech institutes within a transformed system. Slovak academic discourse could emphasise sovereignty, separate legal personality, and the need to defend SAV against possible dissolution or marginalisation.

The Czech trajectory was strongly shaped by the survival of the institute-based research model. The Academy retained institutes across the natural sciences, technical sciences, social sciences, and humanities, and these institutes formed the operational core of Czech non-university research. The official portrait of the Academy described its mission as basic research in a broad spectrum of disciplines, including natural, technical, social sciences, and humanities, with attention to both international scientific development and the needs of Czech

society and national culture (*Academy of Sciences of the Czech Republic, 2008*). This combination of international and national purposes became central after 1992. Czech science had to reconnect with global standards, but it also had to provide the new Czech Republic with intellectual infrastructure. The Academy's institutes therefore functioned as sites of continuity, but their justification changed. Under socialism, institute activity had been embedded in central planning and ideological oversight. After 1992, the same institute structure had to be defended through quality, openness, public relevance, and international cooperation. In practical terms, this meant evaluation of inherited capacities, reduction of staff, and gradual adjustment of research priorities. The Czech trajectory was therefore not a static continuation of ČSAV. It was a controlled transformation of a large research apparatus into a post-socialist public research institution.

The Slovak trajectory also preserved the academy model, but under sharper pressure concerning institutional survival and national usefulness. Kováč shows that SAV's post-1989 transformation was accompanied by internal democratic demands, leadership changes, debate over the organisation of science, and pressure from some university circles and political actors. The Academy had to defend itself as an important base for non-university research while also proving that it could reform inherited structures. Its transformation included the correction of injustices from the totalitarian period, the development of a new character as a non-university academic institution, and the introduction of mechanisms intended to make scientific research more effective (*Kováč, 2010*). During the stage from May 1992 to 1993, the number of SAV employees was reduced by almost half, while scientific research was maintained at a good level, partly through structural changes and the introduction of a grant system (*Kováč, 2010*). This was a more dramatic contraction than the Czech pattern described in many institute histories. The Slovak Academy therefore entered independence with a leaner, more vulnerable, but still institutionally coherent structure. Its post-1992 trajectory was marked by the need to survive as the national centre of basic and strategic research in a smaller state with more limited resources. The Czech Academy faced budget cuts and evaluation, but the Slovak Academy faced a more acute struggle over scale, status, and national scientific necessity.

The political economy of the two new states intensified these differences. The Czech Republic entered the 1990s with stronger industrial capacity, a larger concentration of research institutions, and the administrative advantage of Prague as the former federal centre. Slovakia entered independence with a smaller economy, a different industrial structure, and a more difficult task of building full state institutions after 1993. These differences did not automatically determine academic outcomes, but they shaped the possibilities available to each Academy. The Czech Academy could rely on a larger inherited research concentration and on a stronger historical association between Prague and organised Czech science. SAV had to operate in a smaller national environment and make a stronger argument for the strategic value of research in a new state still defining its economic and political direction. The Slovak Academy's effort to become a direct international actor also required institutional energy, because the federal layer that had previously mediated some foreign relations disappeared. Kováč emphasises that the dissolution of Czechoslovakia gave SAV a new position especially in international cooperation, as it became a national member of international scientific organisations and had to reconstruct its foreign contacts (*Kováč, 2010*). The Czech Academy also internationalised, but its path was more visibly attached to

succession from ČSAV. In both cases, post-1992 science was not merely reorganised internally; it was placed into new international and national economies of recognition.

In the Czech case, the transformation of individual institutes illustrates how legal succession became practical reorganisation. Institute histories show that the years 1990–1992 were used for reassessment, evaluation, and preparation for the post-federal framework. The Institute of Photonics and Electronics, for example, states that during 1990–1992 it was necessary to reassess the work of all institutes of ČSAV and secure their activities after the division of Czechoslovakia by adopting the Act on the Czech Academy of Sciences. The same institutional history notes that transformation included a reduction in the number of institutes and staff, and that the institute itself passed evaluation in 1992 but had to reduce its employees by one third (*Institute of Photonics and Electronics of the CAS, n.d.*). This is valuable evidence because it shows that the Czech trajectory was not abstract legal continuity. It was experienced inside institutes as evaluation, personnel reduction, thematic reorientation, and expansion of international cooperation. The Institute also describes a shift from industrial and applied research towards basic research, the opening to the world, and the new importance of research grants (*Institute of Photonics and Electronics of the CAS, n.d.*). These changes were typical of the wider Czech transformation. The Academy preserved institutional continuity, but the content and evaluation criteria of research work changed markedly. Post-1992 Czech academic science therefore combined institutional survival with new demands for competitiveness, openness, and scientific quality.

Slovak institute-level transformation was also tied to evaluation and grant mechanisms, but SAV's reform discourse placed particularly strong emphasis on preventing dissolution. Kováč records that, in 1990, SAV representatives already aimed to establish a grant system, link Slovak research with world science, introduce international evaluation criteria, support scientific ethics, and struggle to preserve SAV as an important base for non-university research (*Kováč, 2010*). The phrase "struggle to preserve" is historically significant, because it reveals the insecurity surrounding the Academy's future. The introduction of a grant system was understood as a positive element in developing research, but it was also constrained by modest financial resources. Kováč notes that the competitive grant system was positive, yet actual grants were very limited, which meant that reform instruments operated under fiscal weakness (*Kováč, 2010*). SAV was therefore pushed towards international standards without receiving abundant resources for that transition. This created a pattern familiar in post-socialist science: institutions were asked to become more competitive, accountable, and internationally visible while simultaneously coping with austerity. The Slovak trajectory after 1992 was defined by this double pressure. The Academy survived, but survival required a painful restructuring of personnel, finances, and research priorities.

The Czech and Slovak trajectories also differed in their symbolic relation to older national scientific histories. The Czech Academy could draw on a long institutional genealogy from the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, the Masaryk Academy of Labour, autonomous interwar institutes, ČSAV, and the post-1989 democratic reconstruction. The official Czech Academy portrait presents the present institution as continuing research traditions and missions not only of ČSAV but also of earlier predecessors, including the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts (*Academy of Sciences of the Czech Republic, 2008*). This genealogy allowed AV ČR to present itself as more than the Czech remnant of a dissolved federal institution. It could claim to be the modern form of a Czech learned and research tradition interrupted, reorganised, and distorted

by 20th-century political regimes. The Slovak Academy also possessed its historical genealogy, including earlier ideas of a Slovak scientific association, the Slovak Academy of Sciences and Arts founded in 1942, and the post-war Slovak Academy of Sciences re-established under the 1953 legal framework. The official SAV history presents these earlier efforts as part of a longer Slovak effort to institutionalise national science (*Slovak Academy of Sciences, n.d.*). After 1992, both academies therefore used historical memory as a resource of legitimacy. Yet the Czech story emphasised succession from the central Czechoslovak academy and older Czech learned institutions, while the Slovak story emphasised the maturation of a Slovak national scientific institution into the academy of an independent state.

The university question also developed differently in the two environments. In both republics, the academy model had to justify itself in relation to universities. The socialist system had concentrated much basic research in academies and kept universities relatively more teaching-oriented. After 1989, some reformers believed that research should move closer to universities, and this debate affected both Czech and Slovak academic life. In the Czech case, Act No. 283/1992 Coll. included representatives of universities in the Academy Assembly and recognised cooperation in doctoral training and scientific education, which helped soften the division between Academy institutes and universities. The Czech Academy thus preserved a strong non-university sector while building formal mechanisms of connection with higher education. In Slovakia, Kováč notes that the newly elected SAS Presidium included university representatives in its scientific colleges and that relations with universities were an important issue during transformation (*Kováč, 2010*). At the same time, he also records that SAV was not spared sharp criticism from some university representatives. This suggests that the Slovak academy-university relationship was more openly contested in the early transformation period. Both trajectories moved towards cooperation, but the Czech legal model gave the Academy a more secure immediate framework, while SAV had to defend its necessity in a more fragile national and fiscal context.

Another major difference concerned scale and concentration. The Czech Academy inherited a denser and more diversified network of institutes, many of them located in Prague or in established Czech research centres. The Czech lands had long possessed a higher concentration of universities, learned societies, industrial research facilities, and specialised institutes. This did not automatically make Czech science superior in all fields, but it gave AV ČR a broader structural base from which to reorganise. Slovakia's Academy operated in a smaller research system where individual institutes often carried a larger share of national responsibility within their disciplines. This made SAV highly important for Slovak scholarly and scientific life, but also more exposed to political and budgetary decisions. If a Czech institute was reduced, the wider Czech research ecosystem might still contain several neighbouring capacities. If a Slovak institute was weakened, the impact on a national field could be proportionally greater. The post-1992 Slovak trajectory therefore required more careful balancing between reduction and preservation. Kováč's account of nearly halved employment must be read in this context: the reform was not simply administrative slimming, but a profound reshaping of the scientific labour force of a small state (*Kováč, 2010*). The Czech trajectory involved severe reductions too, but its inherited scale gave it more internal differentiation and resilience.

Internationalisation became a common priority, but it meant different things for the two academies. For AV ČR, internationalisation meant the renewal of contacts damaged by communist isolation, participation in European research networks, and the demonstration that

Czech institutes could meet international standards. The Academy's official portrait emphasises international projects and scientist exchange as instruments for integrating Czech science into the international context (*Academy of Sciences of the Czech Republic, 2008*). For SAV, internationalisation had the additional meaning of gaining direct national representation after the disappearance of the federal mediator. Kováč notes that, after the dissolution of Czechoslovakia, SAV became a national member of the International Council for Science and other international organisations and had to reconstruct its international contacts (*Kováč, 2010*). This was a major change in the Academy's external identity. It no longer appeared internationally under a Czechoslovak umbrella. It had to represent Slovak research directly and independently. For both academies, internationalisation was associated with quality criteria, grant systems, collaboration, and the moral reconstruction of science after ideological control. Yet the Czech path was that of a successor institution re-entering Europe with a large inherited centre, while the Slovak path was that of an academy acquiring full external sovereignty for the first time in the new state framework.

The two trajectories also differed in the way they handled the memory of socialism. In the Czech case, the official narrative often distinguishes between ideological pressure under the totalitarian regime and the creative energy that Czech science managed to preserve in certain fields. The Academy's institutional portrait mentions both heavy ideological pressure until 1989 and achievements such as the Nobel Prize awarded to Jaroslav Heyrovský and the international recognition of Otto Wichterle (*Academy of Sciences of the Czech Republic, 2008*). This narrative allows Czech academic history to condemn political control without rejecting the scientific achievements produced within the Academy system. In the Slovak case, Kováč's account places stronger emphasis on the correction of deformations and injustices caused by the totalitarian regime, the formation of strike committees, leadership changes, and the establishment of democratic self-governance (*Kováč, 2010*). Both narratives involve rehabilitation and reform, but their emphasis differs. The Czech narrative often stresses continuity of high scientific traditions despite pressure. The Slovak transformation narrative stresses democratic renewal from within SAV and the defence of the Academy against both old authoritarian habits and new political threats. This difference does not reflect a simple opposition between Czech continuity and Slovak rupture. Rather, it reflects different institutional situations after 1992 and different needs of self-legitimation in the two new states.

The Czech Academy's post-1992 trajectory was also shaped by the gradual development of evaluation culture. The early 1990s already involved reassessment of institutes, but the deeper institutionalisation of international evaluation, performance criteria, and strategic programmes came later. Filáček's analysis of CAS transformation argues that radical changes in the 1990s, including steep decreases in financing, initiated major reforms of the Academy and produced new forms of institutional transformation, funding plurality, research assessment, and later concepts such as Strategy AV21 (*Filáček, 2023*). This longer perspective is useful because it shows that 1992–1993 was not the completion of Czech academic transformation. It was the legal and institutional beginning of a process that unfolded over decades. The first post-federal period saved the institute system and gave it a legal framework. Later stages redefined its social responsibility, evaluation mechanisms, and relationship to public interest. The Czech Academy therefore moved from the immediate question of survival and succession to the broader question of responsible public research. The post-1992 trajectory was evolutionary rather than episodic. It began with the Act on the Czech Academy

of Sciences, but it continued through funding reforms, institute evaluations, public research institution status, and strategic programmes.

The Slovak Academy's post-1992 trajectory also continued beyond the immediate transformation period, but the years 1989–1993 formed a particularly decisive phase. Kováč argues that the transformation of SAV was largely completed in the period 1989–1993 and that the Academy was transformed into a democratically run, effective scientific institution carrying out basic research and, in some areas, targeted applied research (*Kováč, 2010*). The phrase "largely completed" should not be misunderstood as meaning that later problems disappeared. It means that the fundamental post-revolutionary reconstruction of governance, staff structure, research organisation, and institutional identity had already taken place by the first year of Slovak independence. The Slovak Academy still faced later legal, financial, and organisational reforms, but it entered the independent state as a functioning national institution rather than as an unresolved remnant of federal science. This was crucial for Slovak scientific sovereignty. Without SAV, the new republic would have lacked a central non-university institution capable of representing basic research across many disciplines. The Academy's survival allowed Slovakia to preserve disciplinary breadth, research continuity, and international representation. Its trajectory after 1992 therefore illustrates how a smaller state can use an academy to maintain scientific capacity beyond what its university sector alone could immediately sustain.

The divergence of Czech and Slovak trajectories should not obscure their common post-socialist condition. Both academies had to move away from central planning, ideological supervision, privileged academic titles, and closed administrative hierarchies. Both had to defend public research in new market-oriented economies. Both had to introduce competitive elements, grant systems, evaluation criteria, international cooperation, and more democratic internal governance. Both had to manage the consequences of budgetary pressure and the risk of losing scientists to foreign institutions or the commercial sector. Both also had to preserve basic research at a time when political discourse often favoured immediate economic utility. These common pressures make the Czech and Slovak cases part of a broader Central and Eastern European transformation of science. Yet their institutional answers differed because their inherited positions differed. The Czech Republic transformed the Czech share of a central federal academy into AV ČR. Slovakia elevated and defended SAV as the national academy of an independent state. The comparison therefore shows how the same post-socialist transition could generate parallel but non-identical institutional pathways. The common past remained visible, but the new national frameworks began to shape science in increasingly distinct ways.

The Czech trajectory retained a stronger connection to the former Czechoslovak academic centre. Prague's role was not merely administrative; it carried symbolic capital accumulated through universities, learned societies, archives, museums, research institutes, and political institutions. AV ČR inherited this centrality and converted it into the institutional authority of the new Czech Republic. This helped stabilise the Academy but also created expectations. A successor institution located in Prague had to show that it was not simply preserving inherited privilege. It had to demonstrate public value, international quality, and openness to universities, regions, and younger researchers. The law gave the Academy a protected position, but protection also made the demand for accountability stronger. The Czech trajectory after 1992 was therefore marked by a gradual movement from inherited centrality towards evaluated public research. The Academy's later development cannot be understood without this initial tension. Its strength came from continuity, but its legitimacy had to be earned through reform.

The Slovak trajectory carried a different symbolic burden. SAV had to represent Slovak science in a newly independent country where statehood itself was still being institutionally consolidated. It had to be more than a research organisation; it had to be a sign that Slovakia possessed the intellectual infrastructure of a modern European state. This was especially important because the Slovak Republic after 1993 had to build or reorganise institutions across diplomacy, defence, currency, public administration, and international representation. In such a context, a national academy of sciences served as a marker of cultural and scientific sovereignty. Yet the Academy also had to avoid becoming merely a national symbol. It had to remain scientifically credible, internationally connected, and internally reformed. Kováč's account shows that SAV's transformation involved both symbolic defence and practical restructuring: leadership change, grant reform, staff reduction, international criteria, and preservation of non-university research (*Kováč, 2010*). The Slovak trajectory after 1992 therefore combined national representation with institutional austerity. It was a path of scientific state-building under constrained conditions.

The two academies also began to occupy different positions within their national research systems. In the Czech Republic, AV ČR became a major research pillar alongside universities, emerging grant agencies, sectoral research bodies, and later European programmes. The size and disciplinary range of the Academy made it an unavoidable actor in Czech science policy. In Slovakia, SAV was likewise central, but its centrality had a different scale and vulnerability. Because the Slovak research system was smaller, the Academy's institutes often represented national capacity in entire fields. This made the Academy indispensable, but also politically exposed. Funding cuts, legal uncertainty, or institutional attacks could have broader systemic consequences. The Czech Academy had to negotiate its place within a relatively larger and more diversified research environment. SAV had to defend its place within a smaller and more fragile national system. The result was a divergence in institutional tone: Czech transformation often appears as reform of a large inherited system, while Slovak transformation appears as defence and consolidation of a national scientific core. Both trajectories were rational responses to different structural conditions.

It is also important to recognise that Czech-Slovak scientific relations did not end with the dissolution of the federation. Researchers continued to share language proximity, personal networks, disciplinary communities, archival knowledge, and common intellectual experiences. Many scientists had studied, worked, published, or collaborated across the Czech-Slovak space before 1993. The political separation created two national research systems, but it did not erase the cultural and professional continuity of Czech and Slovak science. In the short term, however, institutional cooperation had to be renegotiated through new legal and international frameworks. What had previously been internal cooperation within one state became bilateral or international cooperation between two states. This altered the administrative form of collaboration even when personal relations remained strong. The academies had to learn to cooperate as separate national institutions, not as parts of a shared federal arrangement. This was a subtle but important transformation. It changed the meaning of partnership from internal coordination to cross-border collaboration.

The Czech and Slovak trajectories after 1992 also reveal different ways of handling national and European orientation. For AV ČR, European reintegration meant restoring Czech science's place in international knowledge systems after the isolation of state socialism. The Academy's mission combined international scientific standards with attention to Czech society and national culture (*Academy of Sciences of the Czech Republic, 2008*). For SAV, European and

international orientation was also central, but it was linked to the establishment of Slovakia as an independent participant in international science. Kováč's account of SAV becoming a national member of international organisations after the dissolution of Czechoslovakia is particularly important here (*Kováč, 2010*). Both academies therefore entered the 1990s with a dual orientation: national service and international credibility. The balance between these two elements was delicate. Too much national rhetoric could provincialise science, while too much external orientation could weaken public support at home. The post-1992 academies had to show that serving the nation did not mean isolation and that international excellence did not mean indifference to national society. This double orientation became one of the defining features of both trajectories.

The comparison also helps clarify why the Czech Academy's establishment cannot be understood only through Czech legal history. Its creation formed part of a wider Czech-Slovak reallocation of scientific institutions, identities, and external representation. The Czech Academy emerged as a successor to the Czech part of ČSAV precisely because the Slovak Academy had its institutional continuity and national role. The two trajectories defined each other by contrast. AV ČR could become the Czech successor institution because the Slovak research system did not need to be built around a new Slovak successor to ČSAV. SAV could become the national academy of Slovakia because the Czechoslovak federal academy had disappeared and no longer mediated Slovak international scientific representation. The dissolution of Czechoslovakia therefore separated two institutional logics that had previously coexisted uneasily within one state. It clarified ownership, authority, and responsibility, but it also removed the federal framework that had linked Czech and Slovak science administratively. The post-1992 academic landscape was thus both simpler and more demanding. Each academy could act in its national name, but each also had to bear the full consequences of that autonomy.

Thus, the Czech and Slovak academic trajectories after 1992 developed from a shared Czechoslovak inheritance into two distinct national models of post-socialist research organisation. The Czech Academy of Sciences was legally established as the Czech successor of the former Czechoslovak Academy of Sciences, preserving a large institute-based system while redefining it as a democratic public non-university research institution. The Slovak Academy of Sciences, already historically and legally established, entered independence through a parallel but different transformation: it defended its existence, reduced staff dramatically, introduced grant principles, strengthened self-governance, and became a direct national actor in international science. Both academies preserved the academy model, but they did so under different conditions of scale, budget, symbolism, and state-building. The Czech path emphasised succession, institutional continuity, and reform of a large inherited centre. The Slovak path emphasised national consolidation, legal protection, and the preservation of scientific capacity in a smaller new state. Together, these trajectories show that the dissolution of Czechoslovakia did not destroy academic science, but it changed the framework in which Czech and Slovak science understood its mission, legitimacy, and future.

3. Continuity of Czech Institutes and Research Centres

The continuity of Czech institutes and research centres after the dissolution of Czechoslovakia was one of the decisive conditions for the successful establishment of the Czech Academy of Sciences. The new Academy was not created as a purely symbolic learned society, nor was it

formed by assembling a completely new set of research units after 1992. It arose through the preservation, legal transfer, and gradual transformation of a dense institutional network that had already existed within the Czechoslovak Academy of Sciences. This continuity was essential because research institutes are not interchangeable administrative offices. They contain laboratories, archives, libraries, collections, instruments, field stations, editorial projects, research schools, methodological traditions, and tacit professional knowledge accumulated over many years. If the Czech side had interrupted this continuity in the name of radical post-socialist rupture, the country would have lost not only buildings and staff positions but entire disciplinary capacities. The real political and academic challenge was therefore to separate institutional preservation from ideological continuation. The Czech Academy had to inherit the institutes of ČSAV without inheriting the authoritarian logic that had shaped their governance under state socialism. This made continuity after 1992 not passive survival, but an active strategy of controlled transformation. The official history of the Academy confirms that ČSAV ceased to exist on 31 December 1992 and that the Czech Academy of Sciences was established at the same point while claiming both the legacy of ČSAV and the legacy of earlier Czech scientific predecessors (*Academy of Sciences of the Czech Republic, n.d.*).

The legal basis of this continuity was provided by Act No. 283/1992 Coll., on the Czech Academy of Sciences. Its transitional provisions were especially important because they prevented the Czech institutes from falling into a legal vacuum during the federal dissolution. The Act stated that the property and other rights and obligations passing to the Czech Republic from the settlement of the former Czechoslovak Academy of Sciences would pass to the Czech Academy on the day the Act entered into force. It also stated that the institutes of ČSAV transferred to the Czech Republic would become institutes of the Czech Academy, and that their directors and councils for science would become directors and councils for science under the new Act (*Czech National Council, 1992*). This was the crucial bridge between the old and new institutional orders. It ensured that institutes could continue operating, staff could remain attached to recognisable workplaces, and research projects could proceed without administrative collapse. At the same time, this continuity was not meant to freeze the inherited structure permanently. The Act required new procedures for directors, the creation of the Academy Assembly, and a transition towards a self-governing model. In this sense, legal continuity functioned as a stabilising mechanism before deeper institutional reform.

The continuity of institutes also reflected the deeper history of Czech organised science. Many research centres later absorbed into ČSAV had roots before the socialist academy model. The official history of the Czech Academy notes that, after 1945, specialised departments of the Czech Academy of Sciences and Arts began to transform into scientific institutes, including the Czech Language Institute, the Nuclear Physics Institute, the Mathematical Research Institute, and the Institute for Czech Literature. It also records that seven central research institutes in biology, chemistry, physics, geology, mathematics, astronomy, and polarography were gradually built up around the Scientific Research Centre founded in 1949. These bodies, together with earlier institutions such as the State Institute of Archaeology, the Oriental Institute, the Institute of Slavonic Studies, and others, were integrated into the newly founded Czechoslovak Academy of Sciences in 1952–1953 (*Academy of Sciences of the Czech Republic, n.d.*). Therefore, the institutes preserved after 1992 were not merely creations of the communist regime. They also carried older Czech scientific traditions that had been reorganised under socialism. The post-1992 Czech Academy could thus present institute continuity as the preservation of national scientific infrastructure rather than the simple

survival of a Soviet-style institution. This historical layering was central to the legitimacy of the new Academy.

The Czech institutes inherited from ČSAV were also disciplinary communities. They were not only organisational containers but places where research problems, methods, and intellectual standards had been transmitted between generations. In the natural and technical sciences, this continuity included experimental routines, laboratory schools, long-term measurement programmes, and cooperation with international partners. In the humanities and social sciences, it included archives, editorial projects, historical sources, language corpora, sociological surveys, philosophical traditions, and disciplinary debates interrupted or distorted by political pressure. The continuity of institutes therefore preserved both material and intellectual capital. At the same time, the post-1989 transformation forced every discipline to reconsider its standards of quality and public relevance. Some fields could continue through relatively direct scientific modernisation. Others had to undertake deeper moral and methodological reconstruction because they had been more directly affected by Marxist-Leninist orthodoxy or normalisation-era personnel purges. The preservation of the institute network made such reconstruction possible inside existing research communities. Without continuity, post-socialist renewal would have been reduced to symbolic declarations rather than practical scholarly work.

The Czech Academy's mission after 1992 confirmed that the institutes remained the operational centre of the institution. The Academy was defined as a complex of research institutes, not merely as a body of elected scholars. Its present mission statement still emphasises that the Czech Academy of Sciences was established by Act No. 283/1992 Coll. as the Czech successor of the former Czechoslovak Academy of Sciences and is set up as a complex of public research institutions. It also defines the primary mission of the Academy and its institutes as research across the natural, technical, social sciences, and humanities, with the aim of advancing international scientific knowledge while also responding to the needs of Czech society and national culture (*Academy of Sciences of the Czech Republic, n.d.*). This formulation is important because it retains the institute-centred character of the Academy while changing its ideological frame. The institutes no longer existed as organs of socialist planning. They became public research institutions whose legitimacy depended on knowledge production, international quality, and service to democratic society. This mission preserved the inherited breadth of the Academy but reinterpreted it through the language of public research. Continuity was therefore accompanied by a new vocabulary of accountability and openness.

The institutional geography of continuity was also significant. The Academy's network preserved strong Prague-based centres, but it also maintained important research workplaces in Brno, České Budějovice, Ostrava, Průhonice, Řež, and other Czech locations. The current list of CAS institutes still shows a broad distribution across Prague and regional centres, including institutes in mathematics, physics, computer science, earth sciences, chemistry, biology, medicine, archaeology, history, sociology, philosophy, psychology, law, and philology (*Academy of Sciences of the Czech Republic, n.d.*). This geography mattered after 1992 because the new Czech Republic needed research capacity beyond symbolic central buildings. The survival of regional institutes and branches helped prevent the Academy from becoming merely a Prague learned corporation. It also preserved connections between research and specific territories, such as geological, archaeological, environmental, biological, and industrial regions. Some institutes depended on fieldwork and long-term

observation, which could not be moved or recreated easily. Others depended on proximity to universities, libraries, hospitals, technological facilities, or heritage institutions. The continuity of research centres therefore helped stabilise the spatial infrastructure of Czech science after the federal split.

Continuity, however, did not mean that every inherited structure remained untouched. The years 1990–1992 had already brought reassessment of institutes, changes in leadership, internal elections, personnel reductions, and the first attempts to introduce new research priorities. The history of the Institute of Photonics and Electronics is especially illustrative because it describes the transformation from inside one research workplace. According to the institute's historical account, the fall of the totalitarian regime initiated positive changes in the Academy and its institutes; in 1990, the institute's Scientific Council was elected, and changes in research programme gradually shifted emphasis from industrial and applied research towards basic research. The same account states that during 1990–1992 it was necessary to reassess the work of all institutes of ČSAV and to secure their activities after the division of Czechoslovakia by adopting the Act on the Czech Academy of Sciences. It also notes that the transformation included reductions in the number of institutes and staff, and that the institute passed evaluation successfully in 1992 but had to reduce its employees by one third (*Institute of Photonics and Electronics of the CAS, n.d.*). This example shows the practical meaning of continuity: institutes survived, but they survived through evaluation, reorientation, and painful contraction.

The shift from industrial and applied research to basic research was one of the most important forms of continuity-through-change. Under state socialism, many institutes had been connected to planned economic priorities, branch ministries, defence-related projects, or industrial programmes. After 1989, the collapse of the planned economy and the weakening of state industrial coordination changed the environment in which such research had operated. Some applied directions became obsolete, some lost institutional clients, and some had to be converted into more open scientific programmes. The Institute of Photonics and Electronics explicitly describes how the opening to the world expanded international scientific cooperation and how research grants supported a freer research environment (*Institute of Photonics and Electronics of the CAS, n.d.*). This reveals a general pattern of the early 1990s. Continuity was not identical with thematic immobility. Institutes had to preserve their expertise while translating it into new forms of basic research, competitive grant work, and international cooperation. In this sense, the continuity of Czech research centres was also a continuity of adaptive capacity.

The first internal research assessments were central to this adaptive process. Cidlinská and Linková argue that the first internal research assessment in 1990 served both to rectify past wrongs and to assess quality, and that low-quality institutes and departments were subsequently eliminated while only half of the employees remained (*Cidlinská & Linková, 2015*). This observation should not be read merely as a statistic of reduction. It shows that the Czech Academy's continuity was selective. The post-socialist Academy did not preserve inherited capacity indiscriminately. It used assessment as a tool of both moral correction and scientific selection. The moral dimension was connected with the legacy of purges, exclusions, and ideological appointments. The scientific dimension was connected with the need to demonstrate international competitiveness. The personnel dimension was connected with severe financial pressure and the impossibility of maintaining the entire inherited structure at

its previous scale. The institutes that continued after 1992 did so within a new regime of evaluation and justification.

The preservation of institutes was particularly important in fields that had been damaged by political intervention. Philosophy provides a clear example. The Institute of Philosophy of the Czech Academy of Sciences describes itself as having been established in 1990 as a reinstatement of the original Institute of Philosophy of the Czechoslovak Academy of Sciences, which had been founded on 1 January 1953 but dissolved in 1970 for political reasons (*Institute of Philosophy of the CAS, n.d.*). This institutional history is essential for understanding post-1992 continuity. The Czech Academy did not merely preserve old institutes; it also restored institutions that had been destroyed or suppressed during normalisation. The reinstated Institute of Philosophy embodied both continuity and repair. It connected the new democratic Academy to an earlier research tradition while acknowledging the political violence that had broken that tradition. Its later role as a major humanities and social sciences research institution within CAS shows that post-socialist continuity could include the recovery of fields marginalised by the previous regime. The case of philosophy therefore demonstrates that institutional continuity was not always linear. Sometimes it meant restoration after forced discontinuity.

Sociology offers another important example of reconstructed continuity. The Institute of Sociology of the Czech Academy of Sciences states that it was established in its present form in 1990 and is engaged in research into contemporary society and postgraduate education. It conducts empirical surveys, comparative research, public opinion surveys, case studies, and methodological and theoretical work, while also including the Sociological Data Archive, the Public Opinion Research Centre, and its library (*Institute of Sociology of the CAS, n.d.*). This institutional profile is highly significant for the post-1992 Academy. Sociology had been one of the fields most deeply affected by the political constraints of the socialist period, especially after the suppression of reformist intellectual currents following 1968. Its reconstruction after 1989 was therefore directly linked to the democratic transformation of Czech society. The continuity of the Institute of Sociology did not mean the continuation of ideological sociology. It meant the creation of an institutional base for empirical social research, public opinion analysis, comparative studies, and professional integration with international sociology. The new Czech Academy needed such institutes because the new democratic state required reliable knowledge about social change.

Archaeology shows a different but equally important dimension of continuity: the preservation of long-term documentation, archives, and national heritage expertise. The Prague Institute of Archaeology traces its origin to the State Archaeological Institute founded on 12 November 1919, incorporated into the Czechoslovak Academy of Sciences on 1 January 1953. In 1993, some branch offices and work facilities connected with archaeological monument conservation were transferred under the Ministry of Culture, while the Institute continued to pursue basic research into prehistoric and medieval Bohemia, administer specialised archives and databases, and publish professional literature (*Digital Humanities Czech Academy of Sciences, n.d.*). This case illustrates how the post-1992 transition could involve both continuity and redistribution of functions. Some monument-conservation tasks moved towards heritage administration, while the Academy institute retained research, documentation, archival, and publication roles. The institutional continuity of archaeology was especially valuable because archaeological knowledge depends on accumulated records, field documentation, maps, photographic archives, and reports that cannot be recreated once lost. The Academy's

institute preserved the research memory of Czech archaeology through the state transition. It also adapted to a more plural environment in which new archaeological organisations emerged after 1989.

The post-communist transformation of Czech archaeology also shows that continuity could involve a reduction of institutional monopoly. A study of the Archaeological Map of the Czech Republic notes that the State Institute of Archaeology was incorporated into the Czechoslovak Academy of Sciences in 1952 and that, during the socialist period, the Institutes of Archaeology held central functions and employed the majority of professional archaeologists. After 1989 and the break-up of Czechoslovakia, the role of the Institutes of Archaeology of the Czech Academy of Sciences in Prague and Brno was reduced, and they lost much of their privileged position as new archaeological organisations gained licences to conduct fieldwork (*Kuna et al., 2016*). This was a major institutional change. The Academy's archaeological institutes continued, but their environment became more plural, decentralised, and legally complex. Their continuity therefore did not mean the preservation of exclusive authority. It meant the preservation of research capacity, archives, and professional coordination within a broader field of actors. This example is important because it shows that the democratic transformation of science often weakened monopolies while preserving core expertise.

The continuity of institutes also depended on the survival of personnel communities. Scientists, technicians, archivists, librarians, editors, laboratory assistants, engineers, and administrative workers all formed part of the inherited research centres. Their expertise could not be replaced overnight. A mass dismissal or legal interruption would have broken the everyday operations of laboratories and scholarly projects. The transitional provisions of Act No. 283/1992 Coll. therefore protected not only property and formal institutions but also the social fabric of research. By keeping directors and councils for science in place temporarily, the Act allowed institutes to move through the state transition with basic organisational stability (*Czech National Council, 1992*). At the same time, it opened the way for new appointments and self-governing bodies. This balance was delicate. Too much continuity could have preserved compromised hierarchies. Too much rupture could have destroyed functional knowledge. The Czech solution attempted to combine immediate institutional stability with gradual personnel and governance renewal.

Research centres also needed continuity because they were tied to long-term scientific materials. Libraries, archives, collections, laboratory instruments, biological samples, archaeological documentation, linguistic databases, historical editions, and longitudinal social surveys are all vulnerable to institutional disruption. Such materials may look secondary in legal debates, but they are often the real foundation of scholarly work. The Institute of Sociology's Sociological Data Archive and the Public Opinion Research Centre, for example, show how social-scientific continuity depends on the preservation and development of data infrastructures (*Institute of Sociology of the CAS, n.d.*). The archaeological institutes similarly demonstrate the importance of archives, maps, reports, photographic documentation, and research databases (*Digital Humanities Czech Academy of Sciences, n.d.*; *Kuna et al., 2016*). The continuity of Czech research centres therefore protected research infrastructure in a broad sense. It protected not only expensive scientific apparatus but also documentary and intellectual repositories. These repositories allowed Czech science to maintain memory, comparability, and cumulative knowledge across the post-socialist divide.

The institute network also helped the new Czech Republic preserve a complete disciplinary spectrum. The present CAS structure includes research areas in mathematics, physics, earth sciences, life sciences, chemical sciences, social and economic sciences, historical sciences, humanities, and philology (*Academy of Sciences of the Czech Republic, n.d.*). This breadth was already rooted in the inherited ČSAV structure, even though the number, size, and orientation of institutes changed. Such disciplinary breadth mattered for the new state because no single sector could immediately replace it. Universities were recovering from their own socialist legacy and were primarily teaching institutions, although they gradually strengthened research capacity. Ministries and industrial research organisations were being restructured, privatised, or reduced. Private-sector research was not yet strong enough to sustain the full range of scientific work. The Academy therefore remained the main public institution capable of maintaining basic research across many fields. Its institute continuity gave Czech science a structural depth that would otherwise have been difficult to preserve during economic transformation.

The relationship between Academy institutes and universities became an important part of this continuity. The Academy's mission emphasises that researchers from its institutes participate in education, especially doctoral programmes, and also teach at universities (*Academy of Sciences of the Czech Republic, n.d.*). This was a significant post-socialist adjustment. Under socialism, the separation between research and university teaching had often been reinforced by institutional design and political control. After 1989, the survival of Academy institutes did not mean the continuation of isolation from higher education. Instead, the institutes increasingly became partners in doctoral training, joint research centres, teaching, and supervision. This arrangement allowed the Czech Republic to preserve specialised research workplaces while gradually reconnecting them with universities. It also helped train younger researchers in environments where advanced equipment, archives, and research teams were already available. Continuity of institutes therefore supported continuity of researcher formation. The post-1992 Academy was not only a custodian of inherited science; it became a training environment for the next generation.

International cooperation was another area where continuity mattered greatly. The Academy's mission statement stresses that integration of Czech science into the international context is promoted through joint international research projects and exchanges with counterpart institutions abroad (*Academy of Sciences of the Czech Republic, n.d.*). This was especially important after 1992 because the collapse of the federal state coincided with the broader reopening of Czech science after the Cold War. Institutes that survived the transition could renew or expand international contacts more effectively than newly created bodies would have been able to do. They already possessed researchers, publications, equipment, reputations, and disciplinary identities that could be presented to foreign partners. At the same time, international cooperation became a mechanism of reform. It exposed institutes to external standards, peer review, competitive grants, and new methodological expectations. Continuity therefore made internationalisation possible, while internationalisation changed the content of continuity. Czech institutes did not simply preserve themselves; they were increasingly measured against a wider European and global scientific field.

The creation of grant mechanisms also transformed the inherited institute system. The CAS mission statement notes that the Academy was the first institution in the Czech Republic to establish its own Grant Agency, which supported projects selected through peer review involving foreign reviewers (*Academy of Sciences of the Czech Republic, n.d.*). This was

important because it introduced competitive allocation into an institution that had emerged from a planned-science environment. Grants helped shift authority from administrative hierarchy towards project quality, peer evaluation, and research initiative. They also gave institutes and research teams more flexibility in defining scientific problems. However, grant funding did not remove the need for stable institutional support. Basic research, long-term archives, laboratories, and field stations cannot depend entirely on short project cycles. The post-1992 Academy therefore had to combine institute continuity with competitive mechanisms. This combination became one of the defining features of Czech public research after the dissolution of Czechoslovakia.

The continuity of research centres was also shaped by financial pressure. Filáček's analysis of the transformation of the Czech Academy of Sciences emphasises that radical changes in the 1990s, including a steep decrease in financing, initiated major reforms of CAS. He also notes that the transformation involved personnel reductions, institutional changes, plurality of financial sources, new assessment procedures, support for basic and applied research, engagement with the business sector, and new forms of international collaboration (*Filáček, 2023*). This broader interpretation confirms that institute continuity after 1992 was not financially comfortable. The Academy inherited a large research structure at precisely the moment when public budgets were under pressure and market reforms dominated political attention. Therefore, continuity had to be justified economically as well as scientifically. Institutes had to show that they were not expensive remnants of the socialist state but necessary public research capacities. This financial challenge pushed the Academy towards evaluation, strategic planning, and later concepts of research in the public interest. Continuity survived because it was increasingly coupled with reform.

The post-1992 continuity of institutes also helped maintain Czech scientific sovereignty. A new state needs the capacity to produce knowledge about its own language, territory, society, environment, history, economy, legal order, and cultural memory. The Academy's institutes covered precisely these domains through the Czech Language Institute, institutes of history, archaeology, sociology, philosophy, law, economics, environmental sciences, geology, biology, and many others. The survival of this network meant that the Czech Republic did not enter independence as a state dependent only on universities, ministries, or foreign expertise. It retained a public research sector capable of producing long-term knowledge beyond immediate political demand. This was especially important in the humanities and social sciences, where democratic society needed new interpretations of recent history, social stratification, public opinion, political transformation, and national identity. It was equally important in the natural sciences, where environmental, technological, medical, and material research required continuity of specialised expertise. The institutes therefore formed part of the cognitive infrastructure of the new republic. Their preservation gave Czech statehood a deeper scientific foundation.

The institutional continuity of the Czech Academy also had a symbolic function. It reassured the scientific community that the dissolution of Czechoslovakia would not mean the dissolution of Czech science. The end of ČSAV could easily have been interpreted as a threat to every institute, every research career, and every long-term project. By establishing AV ČR as the legal successor and transferring institutes into it, the Czech political and academic leadership sent a different message. The old federal frame was ending, but the Czech research community would not be abandoned. This symbolic reassurance mattered because the early 1990s were full of uncertainty. Researchers faced budget cuts, new evaluation procedures,

competition for grants, possible restructuring, and the opening of foreign career paths. Institutional continuity helped keep part of the research community in place. It provided a framework within which reforms could be negotiated rather than imposed as institutional collapse. The Academy thus became both a shelter and an arena of transformation.

The continuity of institutes also shaped the future authority of AV ČR within Czech research policy. Because the Academy preserved a broad and productive institute network, it remained a major actor in national debates on science, funding, evaluation, education, and innovation. Cidlinská and Linková observe that the Academy has its own evaluation system and budgetary negotiations, and that its self-governing structure links institutes, universities, public administration, business, and other representatives (*Cidlinská & Linková, 2015*). This later institutional position was made possible by the continuity established in 1992–1993. If the Academy's institutes had been scattered among universities or ministries, AV ČR would not have developed the same collective authority. The survival of the institute network allowed the Academy to speak as an institutional whole. It could defend basic research, organise evaluations, train doctoral students, and participate in national scientific policy. Continuity therefore had long-term consequences beyond the immediate moment of state dissolution. It shaped the institutional balance of Czech science for decades.

At the same time, continuity created future tensions. The Academy's strong institute system sometimes raised questions about duplication with universities, allocation of public funds, and the balance between institutional and project financing. Some critics could see the inherited network as too large, too autonomous, or insufficiently integrated into higher education and innovation policy. Supporters could argue that precisely this network preserved Czech basic research during a fragile period of transformation. Both views had some basis. The institute system was indeed a legacy of a particular historical model, but it was also a valuable scientific infrastructure that could not be recreated quickly if destroyed. The post-1992 history of AV ČR is partly the history of managing this tension. Continuity brought strength, but strength required permanent justification. The Academy had to show that inherited institutional depth was compatible with democratic accountability, scientific quality, and public usefulness.

The preservation of Czech institutes and research centres after 1992 therefore cannot be reduced to administrative inheritance. It was a complex historical act involving law, science policy, personnel, property, disciplinary memory, research infrastructure, and national self-definition. The institutes carried pre-socialist traditions, socialist-era capacities, post-1968 wounds, post-1989 reforms, and future democratic ambitions. Their continuity allowed the Czech Republic to avoid a destructive rupture in research capacity. But it also required evaluation, reduction, restructuring, internationalisation, and new forms of governance. The Czech Academy's establishment depended precisely on this double movement. It preserved what was scientifically indispensable and transformed what was politically or institutionally obsolete. The continuity of institutes was therefore not the opposite of reform. It was the condition that made meaningful reform possible.

Thus, the continuity of Czech institutes and research centres after the dissolution of Czechoslovakia was the practical foundation of the Czech Academy of Sciences. Act No. 283/1992 Coll. secured the legal transfer of institutes, property, rights, obligations, directors, and scientific councils, thereby preventing institutional collapse at the moment when the federal state disappeared. Yet this continuity was selective, evaluative, and reform-oriented rather than mechanical. Research centres survived through reassessment, staff reductions,

new governance procedures, grant competition, international cooperation, and the redefinition of their missions in a democratic context. Some institutes preserved older scientific traditions reaching back before socialism; others restored fields damaged by political repression; still others adapted their functions to a plural post-communist research environment. The result was a Czech Academy that could present itself neither as a mere remnant of ČSAV nor as an institution created from nothing. It was a re-founded research system whose strength lay in the survival of its institutes and whose legitimacy depended on their transformation.

Legal and Institutional Foundation of AV ČR

1. The Creation of the Czech Academy of Sciences as Successor Institution

The creation of the Czech Academy of Sciences was one of the most important legal and institutional acts by which Czech science entered the post-federal period. It was not an improvisation made after the dissolution of Czechoslovakia had already taken place, but a prepared legal transformation adopted while the federation still formally existed. Act No. 283/1992 Coll., on the Czech Academy of Sciences, was adopted by the Czech National Council on 6 May 1992 and promulgated on 15 June 1992; its effectiveness was linked to the federal settlement of the former Czechoslovak Academy of Sciences and, in any case, no later than 31 December 1992 (*Czech National Council, 1992*). The Act established the Czech Academy of Sciences, fixed Prague as its seat, and created the legal basis for the Academy to become the Czech successor of the former Czechoslovak Academy of Sciences. The official mission statement of the present Czech Academy describes it precisely in this way: the CAS was established by Act No. 283/1992 Coll. as the Czech successor of the former Czechoslovak Academy of Sciences and is organised as a complex of public research institutions (*Academy of Sciences of the Czech Republic, n.d.*).

The term “successor institution” is crucial here, because it expresses the double character of the transformation. The Czech Academy was a new institution of the Czech Republic, not merely the old ČSAV with a different name. At the same time, it was not created from nothing, and it did not erase the working structures, scientific capacities, legal obligations, or disciplinary memory of the former Czechoslovak Academy. It inherited the Czech part of ČSAV through a legally regulated transfer of institutes, property, rights, obligations, directors, scientific councils, and administrative continuity. The Federal Assembly’s Act No. 599/1992 Coll. abolished the Czechoslovak Academy of Sciences at the end of 31 December 1992 and regulated the settlement of its property and other rights between the Czech and Slovak successor arrangements (*Federal Assembly of the Czech and Slovak Federative Republic, 1992*). This federal act worked together with the Czech act establishing AV ČR. The Czech law created the receiving institution; the federal law dissolved the old federal academy and determined how its assets and obligations would be distributed.

This legal choreography was necessary because the Academy was not an ordinary state office. ČSAV had been a large public research system with institutes, buildings, collections,

employment relations, unfinished research programmes, libraries, archives, instruments, journals, and international commitments. If the federal academy had simply been abolished without a corresponding Czech successor, the Czech research system would have faced a damaging legal vacuum. The creators of Act No. 283/1992 Coll. therefore designed the Czech Academy as the institutional bridge between the old federal scientific structure and the new Czech national research system. The Act stated that property and other rights and obligations passing to the Czech Republic from the settlement of the former ČSAV would pass to the Czech Academy, and that the institutes of ČSAV transferred to the Czech Republic would become institutes of the Academy (*Czech National Council, 1992*). This provision made succession concrete. It transformed a political dissolution into an administratively manageable and scientifically survivable transition.

The establishment of AV ČR therefore did not mean the liquidation of institutional science in the Czech lands. On the contrary, it was a legal mechanism for preserving the core of Czech non-university research during a moment of constitutional rupture. The Act declared that the Academy performs research through its institutes and that the Academy and its institutes may conclude agreements on international cooperation in scientific activities and technological development (*Czech National Council, 1992*). This was an important declaration of institutional substance. The Academy was not defined primarily as an honorary body of distinguished scholars, nor as a consultative club attached to the state. It was defined as an organisation whose principal work was performed through research institutes. This preserved the central feature of the academy model inherited from ČSAV while redirecting it into the legal order of the Czech Republic.

The Czech Academy was also given a strong public-law status. Act No. 283/1992 Coll. defined it as an organisational body of the Czech Republic financed from the Czech state budget. For budgetary purposes, it was given the status of a central authority of the Czech Republic, with funds budgeted in a separate chapter of the state budget (*Czech National Council, 1992*). This was a decisive choice. The new Academy was not placed under an ordinary ministry, was not immediately absorbed into universities, and was not forced into a semi-private association model. It was made a public scientific institution with a direct budgetary position. This gave the Academy a degree of institutional security at a time when many post-socialist research structures, especially branch and industrial institutes, were exposed to drastic restructuring, privatisation, or disappearance.

This public status also carried a new burden of legitimacy. Under the socialist regime, ČSAV had been formally placed at the summit of the scientific system and was embedded in the political architecture of the state. After 1989, such legitimacy was no longer acceptable. AV ČR could not claim authority because it stood close to political power or because it inherited the old academy hierarchy. Its legitimacy had to be reconstructed through scientific quality, self-governance, public mission, international cooperation, and accountability to Czech society. The new law therefore separated institutional continuity from ideological continuity. The Academy could inherit institutes and research capacities, but it had to operate under a different normative foundation. This distinction was the essence of the successor-institution model.

The legal foundation of AV ČR also preserved continuity at the level of employment and internal management. The transitional provisions stated that, once the relevant federal settlement came into force, the directors and scientific councils of the transferred ČSAV institutes would

become directors and scientific councils of the institutes under the Czech Act (*Czech National Council, 1992*). This prevented the immediate collapse of institute administration. Scientists and staff were not left without organisational representation, and laboratories did not lose formal directors overnight. Yet the same transitional provisions also required the scientific councils of institutes to submit proposals for directors within 60 days, and the competent Academy authority had to appoint directors within 30 days after receiving such proposals (*Czech National Council, 1992*). Thus, continuity was temporary and procedural, not unlimited. The law kept institutions alive, but it also prepared them for renewal.

This balance between continuity and renewal was also visible in the creation of all-academic self-governing bodies. Act No. 283/1992 Coll. defined the Academy's bodies as the Academy Assembly, the Academy Council and its Presidium, the President of the Academy, and the Council for Sciences (*Czech National Council, 1992*). The Assembly was made the supreme self-governing body of the Academy. Its composition included directors of institutes, representatives of universities, elected representatives of institutes, distinguished domestic and foreign scientists, and representatives of state administration, industry, commercial circles, and banks. This composition was deliberately broader than an internal bureaucratic hierarchy. It was intended to connect the inherited institute system with universities, public administration, economic life, and the wider scientific community.

The Assembly's powers were central to the new Academy's legitimacy. It adopted the Statutes of the Academy, approved annual reports, approved budgets and final accounts, distributed funds among institutes, approved the establishment, merger, division, or dissolution of institutions, and decided on proposals for the appointment or recall of the President (*Czech National Council, 1992*). These powers show that AV ČR was not designed merely as a passive custodian of inherited property. It was given legal instruments to reshape its own structure. The Assembly could decide on institutional consolidation and reorganisation. It could approve the budgetary distribution among institutes. It could influence the presidency and the future of individual workplaces. The law therefore transformed succession into self-government.

The President of the Academy was also placed within a mixed system of academic self-government and state confirmation. The Act provided that the President would be appointed and recalled by the President of the Republic from among members of the Assembly and upon a proposal of the Assembly discussed by the Government. The President's term was four years, with a limit of two successive terms (*Czech National Council, 1992*). This arrangement expressed the Academy's dual nature. It was a public institution of the Czech Republic, but its leadership was not simply appointed by government command. The academic community, through the Assembly, initiated the appointment. The state then confirmed it through constitutional and governmental procedure. The result was a model of public autonomy rather than either full state control or private scholarly corporatism.

The successor character of AV ČR also depended on the earlier post-1989 transformation of ČSAV. The Academy that entered legal succession in 1992 was not identical to the Academy of the normalisation period. After the Velvet Revolution, the status of academicians and corresponding members of ČSAV was abolished and later replaced by the independent Learned Society of the Czech Republic, while Otto Wichterle became a central figure of democratic renewal in academic life (*Academy of Sciences of the Czech Republic, 2008*). This matters because AV ČR did not inherit ČSAV in the political condition in which it had existed before 1989. It inherited a research system that had already begun to revise its internal

hierarchy, leadership, and moral identity. The successor institution was therefore built on a transition that had started before the final dissolution of Czechoslovakia.

The official later self-description of the Czech Academy underlines this point by presenting AV ČR as a public non-university scientific institution engaged primarily in basic research. It emphasises a broad spectrum of disciplines, including natural, technical, social sciences, and humanities, and stresses that research should advance international scientific knowledge while also addressing the needs of Czech society and national culture (*Academy of Sciences of the Czech Republic, 2008*). This mission was not only descriptive. It was a post-socialist redefinition of the Academy's purpose. ČSAV had been created in the socialist state as a central scientific authority. AV ČR was created as a public research institution serving a democratic Czech Republic and participating in international science. The continuity of institutes was therefore embedded in a changed conception of public science.

The creation of the Czech Academy as a successor institution also required careful treatment of the learned-society function. Under the ČSAV model, the academy had combined a research-institute complex with the prestige structure of academy membership. After 1989, this model was modified. Act No. 283/1992 Coll. included a provision that the Academy supports the Learned Society of the Czech Republic, a civic association contributing to the free advancement of science, and represents it towards similar foreign scientific institutions (*Czech National Council, 1992*). This provision signalled that the modern Czech Academy would no longer be identical with the old learned membership hierarchy. The research-institute complex and the learned-society function were distinguished more clearly. This distinction made it possible for AV ČR to keep the institute-based research system while moving the symbolic representation of outstanding scholars into a freer civic form.

In this respect, AV ČR was neither a Western-style honorary academy nor a simple continuation of the Soviet-type academy model. It occupied an intermediate form specific to Czech institutional history. It retained a large public research infrastructure, but it did not claim to be the supreme learned society in the old sense. It supported the Learned Society while itself functioning primarily as a network of research institutes. This institutional arrangement was historically sensible because the Czech lands had long possessed both learned societies and specialised research institutes. The socialist Academy had fused these functions under a centralised political framework. The post-1992 Academy re-separated them without destroying the research base. This was one of the most important institutional innovations of the early post-federal period.

The successor institution also inherited a long Czech genealogy that reached behind ČSAV. The later Statutes of the Czech Academy explicitly refer to the constitutionally guaranteed freedom of scientific research and to a tradition of more than two hundred years of Czech scientific institutions, including the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, the Czechoslovak Academy of Sciences, and J. E. Purkyně's 19th-century project of an academy (*Academy of Sciences of the Czech Republic, 2006*). Although the Statutes were adopted later, this formulation clarifies the historical logic already present in the 1992–1993 transition. AV ČR did not want to appear only as the Czech share of a dissolved socialist academy. It positioned itself as the modern continuation of Czech organised science across different political regimes. This historical self-definition strengthened its legitimacy as a successor institution.

The creation of AV ČR also transformed the relationship between science and the state. The Academy was financed primarily from the state budget, but its self-governing bodies gave scientists a formal role in deciding institutional direction, budgets, leadership, and scientific policy. The official mission statement notes that the Academy Assembly is the supreme self-governing body of CAS; two-thirds of its members are representatives of Academy institutes, while the remaining third consists of representatives of universities, state administration, business circles, and other notable personalities (*Academy of Sciences of the Czech Republic, n.d.*). This structure expressed the new democratic compromise. Science remained publicly funded, but it was not supposed to be directly commanded by the state. The Academy was accountable to public institutions and society, but its internal decisions were not to be reduced to political administration.

The creation of AV ČR also ensured that basic research would remain institutionally protected in the new Czech Republic. This was not a minor matter in the early 1990s. The political atmosphere of economic transformation often favoured privatisation, market adaptation, and short-term practical utility. Basic research, especially in fields without immediate commercial application, could easily have been treated as an unaffordable inheritance from socialism. The Czech legislator chose another path. By giving the Academy a public budgetary status and preserving its institutes, the law recognised that a democratic state needs long-term scientific capacity that cannot be governed solely by market demand. The successor institution therefore became a guarantee of continuity in knowledge production during a period when many other public structures were being radically changed.

At the same time, the law did not protect the Academy from reform. The Assembly's authority over the establishment, merger, division, and dissolution of institutions meant that the inherited network could be evaluated and reorganised. The transitional procedures for directors and scientific councils indicated that inherited leadership would not be permanently immune from renewal. The introduction of self-governing bodies created mechanisms through which institutional transformation could occur inside the Academy rather than only from outside it. This was crucial because externally imposed reform might have been perceived as political attack or administrative liquidation. Internal self-government allowed the Academy to participate in its own transformation. The successor institution was therefore not a static legal monument, but a framework for continuing reform.

The timing of the Czech Act is also revealing. It was adopted in May 1992, before the formal end of Czechoslovakia and before Act No. 599/1992 Coll. finally abolished ČSAV. This means that Czech lawmakers anticipated the need for a successor institution before the old federal academy disappeared. The legal system did not wait until scientific institutions were already disorganised. It prepared a receiving structure in advance. This preparation helped avoid sudden institutional breakdown at the turn of 1992 and 1993. It also shows that academic science was treated as part of the constitutional and administrative settlement of state dissolution. The future of research institutes was not left entirely to later improvisation.

The federal Act No. 599/1992 Coll. completed this arrangement by determining that movable and immovable property, property rights, labour-law rights and duties, and other rights and obligations of ČSAV located in the Czech Republic would pass to the organisation designated by the law of the Czech National Council (*Federal Assembly of the Czech and Slovak Federative Republic, 1992*). That organisation was the Czech Academy of Sciences. The same federal act provided for the Slovak side through an organisation designated by the law of the National

Council of the Slovak Republic, while intangible property rights were to be transferred on the basis of agreements under special regulations (*Federal Assembly of the Czech and Slovak Federative Republic, 1992*). This shows that AV ČR was not only a Czech legislative creation but also part of the federal division of institutional inheritance. Its successor status was embedded in the legal mechanics of the Velvet Divorce.

The creation of AV ČR also preserved the international legal capacity of Czech academic science. The Act explicitly allowed the Academy and its institutes to conclude agreements on international cooperation in scientific activity and technological development (*Czech National Council, 1992*). This provision was important because the dissolution of Czechoslovakia could have created uncertainty among foreign partners. Research collaborations, exchange programmes, and international representation needed a recognised institutional counterpart on the Czech side. AV ČR supplied that counterpart. The Academy's later mission statement emphasises international projects and scientist exchanges as means of integrating Czech science into the international context (*Academy of Sciences of the Czech Republic, n.d.*). Thus, the successor institution did not only inherit domestic research structures; it also allowed Czech science to continue and renew its international relations.

The Academy's role in education was another part of the successor model. The Act and later mission statements recognised that Academy researchers participate in education, especially doctoral study programmes and university teaching. The official mission statement notes that researchers of Academy institutes participate in doctoral programmes and teach at universities, while the Academy fosters collaboration with applied research and industry (*Academy of Sciences of the Czech Republic, n.d.*). This provision helped redefine the relationship between the institute-based Academy and the university sector. AV ČR was not meant to remain isolated from higher education, even though it retained its separate institutional structure. The successor institution preserved non-university research but connected it more explicitly to researcher training and academic education.

The creation of AV ČR must therefore be read as a carefully balanced institutional compromise. It preserved the research institutes because they contained indispensable scientific capacity. It changed the governance structure because the old academy hierarchy could not legitimise science in a democratic state. It kept public financing because basic research needed long-term stability. It introduced self-government because science required autonomy from political command. It acknowledged the Learned Society because the prestige function of academy membership had to be separated from the institute complex. It accepted internationalisation because Czech science had to re-enter the wider scientific community after both communist isolation and federal dissolution. Each of these elements belonged to the same legal and historical act of creation.

This balance also explains why AV ČR could survive as a strong institution in the post-socialist Czech research system. Had the law created only a weak symbolic academy, the Czech Republic might have lost much of its inherited non-university research capacity. Had it preserved ČSAV without institutional reform, the Academy would have carried too much of the political and organisational burden of the socialist past. The chosen solution gave the new Academy a public status but subjected it to new forms of self-government, evaluation, and strategic adjustment. The successor institution was therefore both conservative and reformist. It conserved research capacity and reformed the institutional logic through which that capacity was governed.

The establishment of AV ČR also shows how state-building and knowledge-building were intertwined. The Czech Republic was not only creating ministries, courts, fiscal structures, and diplomatic representation. It was also creating a national system capable of producing scientific knowledge about nature, technology, society, language, history, culture, and the economy. The Academy became one of the principal carriers of this cognitive infrastructure. Its successor status ensured that the new state did not begin its independent existence with a rupture in scientific capacity. At the same time, the Academy's new legal form made clear that scientific continuity had to be compatible with democratic legitimacy. This is why the creation of AV ČR belongs not only to the history of science but also to the institutional history of Czech statehood.

Thus, the creation of the Czech Academy of Sciences as a successor institution was a foundational act of post-federal Czech science. Act No. 283/1992 Coll. established AV ČR as a public institution of the Czech Republic, seated in Prague, financed from the state budget, operating through research institutes, and governed by newly defined self-governing bodies. Together with Federal Act No. 599/1992 Coll., it secured the transfer of the Czech part of the former Czechoslovak Academy's institutes, property, rights, obligations, directors, and scientific councils. Yet the successor model did not mean simple continuation. It preserved the scientific substance of ČSAV while detaching it from the ideological and administrative order of state socialism. It created a democratic public research institution capable of legal continuity, institutional reform, international cooperation, and service to Czech society. In this sense, AV ČR was both heir and new foundation: it inherited the Czech part of the Czechoslovak academic system, but it re-founded that inheritance within the legal and political world of the Czech Republic.

2. Statutes, Governance, and New Institutional Legitimacy

The legal establishment of the Czech Academy of Sciences would have remained incomplete without a new architecture of governance. A successor institution could not rely only on the transfer of institutes, property, staff, and obligations from the former Czechoslovak Academy of Sciences. It also needed rules that would define who could speak for the Academy, how decisions would be made, how institutes would be represented, how scientific policy would be formulated, and how the Academy would justify its autonomy before the state and society. This was especially important because the old ČSAV had been compromised not only by ideological pressure, but also by the hierarchical political culture of state socialism. The democratic legitimacy of AV ČR therefore depended on the transformation of internal authority. Act No. 283/1992 Coll. established the Academy and defined its bodies: the Academy Assembly, the Academy Council and its Presidium, the President of the Academy, and the Council for Sciences (*Czech National Council, 1992*). These bodies created a system in which academic self-government, public accountability, executive management, and scientific-policy deliberation were institutionally separated but connected.

The first principle of this new governance model was that the Academy would not be ruled simply from above. The Academy Assembly was defined as the supreme self-governing body of the Academy, and this formulation was a decisive break with the older logic of command administration. The Assembly included directors of institutes, representatives of universities, elected representatives of the institutes, outstanding domestic and foreign scientists, and representatives of state administration, industry, commercial circles, and banks (*Czech*

National Council, 1992). This composition was not accidental. It expressed the attempt to make the Academy neither a closed corporation of institute directors nor a government department. The new Academy had to remain rooted in its institutes, but it also had to open itself to universities, external scientific authority, public administration, and economic life. In this sense, the Assembly became a constitutional space inside the Academy, a forum where inherited research structures could be represented, assessed, and reoriented.

The Assembly's powers were central to the Academy's new legitimacy. It was empowered to adopt the Statutes of the Academy, approve the annual report, approve the budget and final account, distribute funds among institutes, approve the establishment, merger, splitting, or dissolution of institutions, decide on the proposal for appointing or recalling the President, and elect or recall elected members of the Council and members of the Council for Sciences (*Czech National Council, 1992*). These powers gave the Assembly real institutional weight. It was not a ceremonial gathering designed to endorse decisions already made elsewhere. It controlled the main instruments through which the Academy could be governed and transformed. The power to distribute funds among institutes was particularly important because money determined the survival, contraction, or growth of research workplaces. The power to approve institutional mergers or dissolution meant that the Assembly could reshape the inherited structure of ČSAV from within the Academy itself.

The Statutes gave further detail to the Assembly's composition and procedure. They defined the Assembly as the supreme self-governing body and included directors of institutes, elected representatives of institute researchers, representatives of universities, representatives of government bodies, representatives of industry and business, and distinguished domestic and foreign scientists (*Academy of Sciences of the Czech Republic, 2006*). The representative logic of the Assembly was therefore plural. It combined institutional representation, researcher representation, external scientific prestige, and public-sector presence. This plural construction mattered because the Academy was a public institution financed from the state budget, but its primary mission was scientific research, not bureaucratic administration. The Assembly embodied that duality. It allowed the Academy to claim autonomy without isolation and public responsibility without subordination.

The requirement that the Assembly meet at least twice a year was also meaningful. It created a rhythm of institutional accountability and prevented the Academy from being governed only through executive decisions between long intervals of collective review. The Statutes further regulated quorum, resolutions, minutes, and the rights of Assembly members to address propositions, suggestions, complaints, and interpellations to Academy bodies (*Academy of Sciences of the Czech Republic, 2006*). These rules introduced a more parliamentary and deliberative style into the governance of the Academy. Such procedures may appear technical, but they were politically significant in the post-socialist context. They replaced the older culture of informal party pressure, administrative instruction, and hierarchical silence with procedures of questioning, reporting, voting, and recorded decision-making. Institutional legitimacy was therefore built not only through new names and new laws, but through the everyday grammar of governance.

The Academy Council formed the executive centre of the new institution. Act No. 283/1992 Coll. defined the Council as the executive body of the Academy, consisting of the President, Vice-Presidents, the Chairman of the Council for Sciences, and other members elected from the Assembly on the basis of proposals submitted by Academy institutes (*Czech National*

Council, 1992). The Council's term of office was four years, and membership was limited to two consecutive periods. Membership was also incompatible with the function of institute director, which helped prevent excessive concentration of executive authority in the hands of institute leadership. This incompatibility was important because the Academy had to govern institutes, evaluate them, and distribute resources among them. If the same persons had simultaneously directed institutes and dominated the executive Council, conflicts of interest would have been difficult to avoid. The governance design therefore tried to protect both representation and impartiality.

The Council's functions show how the Academy's daily administration was linked to collective self-government. The Council convened Assembly sessions, submitted reports and proposals to the Assembly, managed current activities between Assembly sessions, prepared the annual report, drafted the budget and final account, proposed distribution of funds among institutes, and implemented Assembly resolutions (*Czech National Council, 1992*). In urgent cases, it could decide matters reserved for the Assembly, but the Assembly had to be convened within 30 days, and the Council's decision became invalid if the Assembly did not confirm it. This emergency mechanism is revealing. It gave the Academy executive flexibility, but it did not allow the executive body to replace the supreme self-governing body permanently. The Council was powerful, but its power remained accountable to the Assembly. This balance was one of the institutional safeguards of the new Academy.

The present official description of the Academy Council preserves this basic logic. The Council is described as the Academy's executive body, consisting of seventeen elected members of the Academy Assembly, including the President, Vice-Presidents, the President of the Science Council, and other members. The members are elected by the Academy Assembly by ballot on the basis of proportional representation of research areas (*Academy of Sciences of the Czech Republic, n.d.*). This principle of proportional representation is important because the Academy contains many disciplines with different research cultures, costs, publication patterns, and institutional needs. A governance structure dominated by one research area would have distorted the Academy's internal balance. By requiring proportional representation, the Academy sought to prevent the natural sciences, technical sciences, humanities, or social sciences from monopolising executive authority. This was essential for an institution whose legitimacy rested on disciplinary breadth.

The Presidium added a smaller executive layer inside the Council. The Statutes define the Presidium as a smaller executive body of the Council, consisting of the President of the Academy, the President of the Council for Sciences, and five other members elected by the Council from among its members by secret ballot (*Academy of Sciences of the Czech Republic, 2006*). The Presidium could act in urgent cases, but its decisions had to be submitted to the Council for confirmation. This arrangement made governance more practical without abandoning accountability. A large Council cannot manage every urgent or routine matter with equal speed, but a small presidium can become too powerful if left unchecked. The Statutes therefore created a nested structure: Presidium accountable to Council, Council accountable to Assembly, and Assembly linked to the broader academic and public environment. This nesting gave AV ČR an internal constitutional order rather than a simple administrative hierarchy.

The President of the Academy stood at the junction between self-government and public authority. Act No. 283/1992 Coll. defined the President as the statutory representative of the

Academy, authorised to act on behalf of the Academy in all matters. The President was appointed and recalled by the President of the Republic from among members of the Assembly, upon a proposal of the Assembly discussed by the Government (*Czech National Council, 1992*). This procedure expressed a deliberate compromise. The Academy did not appoint its President entirely by internal decision, because it was a public institution of the Czech Republic. Yet the state did not appoint the President without academic participation, because the proposal came from the Assembly. The presidency of the Academy therefore symbolised public scientific autonomy under democratic constitutional recognition.

The President's powers were broad but institutionally embedded. The Statutes state that the President is the head of the Academy, acts on behalf of the Academy, manages the Academy chapter of the national budget, creates and enforces internal audit and financial control, presides over sessions of the Assembly, Council, and Presidium, appoints Vice-Presidents, issues foundation deeds of institutes, appoints and recalls institute directors, and bestows Academy awards and honours upon proposal of the Council (*Academy of Sciences of the Czech Republic, 2006*). These powers made the President a real executive leader, not a ceremonial representative. However, the President's authority was tied to the Assembly, Council, Presidium, and statutory regulations. The four-year term and the limit of two successive terms prevented the office from becoming a personal academic monarchy. The President represented continuity and leadership, but within a framework of rotation and accountability.

The Council for Sciences gave the new Academy a specialised body for research policy. Act No. 283/1992 Coll. defined it as the permanent advisory body of the Academy Council in matters concerning the preparation and implementation of the Academy's science policy. It was to include representatives of the institutes, representatives of higher education and other scientific institutions, and outstanding foreign scientists (*Czech National Council, 1992*). This design was important because governance of a research institution cannot be reduced to finance, personnel, or property. It must also include judgements about scientific direction, quality, evaluation, disciplinary priorities, and international standards. By creating the Council for Sciences, the Academy recognised that scientific policy required its own deliberative space. This helped separate scientific judgement from everyday administration while keeping both inside one institutional structure.

The Statutes further strengthened this role. They describe the Council for Sciences as an elected policy body of the Academy and a permanent advisory body of the Council on matters related to formulating and implementing Academy research policy. It includes representatives of institutes, universities, other research and development institutions, and distinguished foreign scientists; at least one quarter and at most one third of its members are external members, including foreign members (*Academy of Sciences of the Czech Republic, 2006*). This external participation was a key component of new legitimacy. It opened Academy science to judgement and cooperation beyond its own institutes. It also connected the Academy to universities, other research organisations, and international scientific standards. In the post-1992 context, such openness helped distance AV ČR from the inward-looking character often associated with socialist institutions.

The Council for Sciences was also linked to evaluation. The Statutes gave it the prerogative to propose methods and criteria for evaluating scientific activities of institutes, research plans, and research scientists; to deliberate on evaluation committees; to express opinions on

evaluation outcomes; and to propose conclusions to the Council (*Academy of Sciences of the Czech Republic, 2006*). This was an essential element of institutional legitimacy because the Academy had inherited a large research network from ČSAV. Such a network could not be justified simply by historical continuity. It needed quality assessment, comparison, and reform. The Council for Sciences therefore helped transform the inherited Academy into an evaluative institution. It linked scientific self-government with the demand for accountability.

The governance model also recognised that institutes were the real working units of the Academy. Act No. 283/1992 Coll. defined the institutes as public research institutions and assigned them tasks that included scientific research, contribution to knowledge and education, application of research results, acquisition and dissemination of scientific information, expert assessments, doctoral training cooperation with higher education institutions, international cooperation, cooperation with other scientific and technical institutions, and provision of research infrastructure (*Czech National Council, 1992*). This list shows that institutes were not passive branches of a central office. They were legal and scientific actors performing the Academy's mission. The central governance bodies existed to coordinate, evaluate, fund, and represent them. The legitimacy of AV ČR therefore depended on the legitimacy of its institutes.

The transition from inherited institutes to public research institutions also changed the legal culture of the Academy. The later adoption of Act No. 341/2005 Coll., on public research institutions, and amendments to Act No. 283/1992 Coll. further clarified the public-research-institution status of Academy institutes (*Academy of Sciences of the Czech Republic, 2008*). Although this later development belongs chronologically beyond 1993, it reveals the direction already implicit in the early legal framework. The institutes were to function not as state-administrative departments but as research bodies with a defined public mission, internal organs, and accountability requirements. The post-1992 statutes and governance rules therefore became part of a longer legal modernisation of Czech public research. They placed the Academy between state service, academic autonomy, and public responsibility.

The new governance structure also helped redefine the relationship between AV ČR and universities. University representatives were included in the Assembly, and the Council for Sciences included representatives of higher education and other scientific institutions (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, 2006*). This was a deliberate answer to the old socialist separation between academy research and university teaching. The Academy was not dissolved into universities, but it was no longer allowed to remain institutionally sealed from them. Its legitimacy required cooperation, especially in doctoral education and researcher training. By embedding university representation into its governing bodies, AV ČR acknowledged that it was part of a wider national research and education system. This was an important democratic correction to the inherited academy model.

The inclusion of representatives of state administration, industry, business circles, and banks in the Assembly also served a legitimising purpose. The Academy remained a basic-research institution, but it could not ignore the economic and administrative environment of the new Czech Republic. The early 1990s were shaped by market transformation, privatisation, budgetary restraint, and debates about the usefulness of public institutions. By giving external representatives a place in the Assembly, the Academy showed that it recognised the public and economic dimensions of research. At the same time, their participation did not turn the

Academy into a market-driven organisation. Scientific representatives remained central, and the Academy's primary mission remained research. The governance structure therefore created a controlled interface between science, state, and economy.

The support for the Learned Society of the Czech Republic was another important element of institutional legitimacy. Act No. 283/1992 Coll., as later amended, states that the Academy supports the Learned Society, a civic association contributing to free, self-directed advancement of science in the Czech Republic, and represents it towards similar foreign scientific institutions (*Czech National Council, 1992*). The official Academy portrait explains that the old status of academicians and corresponding members at ČSAV was abolished and replaced by a civic association, the Learned Society of the Czech Republic, established in 1994 (*Academy of Sciences of the Czech Republic, 2008*). This separation was symbolically powerful. It meant that the Academy no longer reproduced the old hierarchy of academy membership inherited from the socialist period. Instead, the research-institute complex and the learned-society function became more clearly distinguished.

The Statutes themselves later expressed the Academy's historical and constitutional self-definition. They referred to the constitutionally guaranteed freedom of scientific research and to the tradition of Czech scientific institutions, including the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, the Czechoslovak Academy of Sciences, and J. E. Purkyně's 19th-century project of an autonomous non-university scientific institution (*Academy of Sciences of the Czech Republic, 2006*). This preambular language was not merely ceremonial. It connected the modern Academy to a longer Czech scientific genealogy and placed its legitimacy in the history of learned autonomy, public knowledge, and institutional continuity. It also helped to de-socialise the Academy's image. AV ČR could present itself as successor to ČSAV, but not as a prisoner of ČSAV's political form.

The Academy's new institutional legitimacy therefore had three foundations: law, self-government, and historical memory. Law established the Academy as a public institution with a budgetary status and a defined mission. Self-government created bodies through which institutes, researchers, universities, external scientists, and public representatives could participate in decision-making. Historical memory placed the Academy within a long Czech tradition of organised science rather than only within the history of socialist scientific administration. These three foundations supported one another. Law without self-government would have looked bureaucratic. Self-government without public law would have lacked state recognition and stable resources. Historical memory without legal and organisational reform would have risked becoming nostalgic rhetoric.

The governance model also addressed the problem of public finance. Act No. 283/1992 Coll. gave the Academy the status of an organisational body of the Czech Republic financed from the state budget and, for budget purposes, the status of a central authority with a separate budget chapter (*Czech National Council, 1992*). Such public financing required mechanisms for budget approval, final accounts, fund distribution, internal audit, and financial control. The Assembly approved the budget and final account, while the President was responsible for managing the Academy chapter of the national budget under the Statutes (*Academy of Sciences of the Czech Republic, 2006*). This arrangement made financial responsibility part of institutional legitimacy. The Academy could claim autonomy, but it also had to account for public money.

The new statutes and governance rules also created procedures for institutional change. The Assembly could approve establishment, consolidation, merger, splitting, and dissolution of institutes, while the Council could submit proposals concerning these matters. The Council for Sciences could express opinions on proposals affecting institutes and on their placement within the Academy's research structure (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, 2006*). This was crucial because the Academy inherited a large network from ČSAV and could not assume that all inherited structures should remain unchanged. Institutional legitimacy required the possibility of reform. The governance model therefore made transformation an internal competence of the Academy rather than only an external political intervention.

The rules for appointing and recalling institute directors also expressed the new institutional order. The President had the authority to appoint and recall directors, but this authority existed within a broader statutory framework involving councils, evaluation, and Assembly oversight. The transitional provisions of Act No. 283/1992 Coll. required institute councils to submit proposals for directors within 60 days of the Act's entry into force, and the competent Academy body had to appoint them within 30 days after receiving the proposal (*Czech National Council, 1992*). This shows how the initial post-federal period combined continuity with renewed legitimacy. Directors did not simply inherit office indefinitely from the ČSAV period. Their positions had to pass through new procedures.

The role of scientific integrity and ethical regulation later developed from this same logic of legitimacy. The official Academy portrait lists the Code of Ethics for researchers, approved by the Academy Assembly in 2006, among the basic documents governing the Academy (*Academy of Sciences of the Czech Republic, 2008*). Although this belongs to a later stage, it reflects the institutional trajectory opened by the 1992 framework. Democratic scientific legitimacy was not only a matter of representation and finance. It also required norms of research conduct, career development, evaluation, and responsibility to the scientific community. The early statutes and governance system created the environment in which such later ethical and professional rules could be adopted. The Academy's legitimacy thus deepened over time from legal succession to normative self-regulation.

The institutional design of AV ČR also responded to the need for international credibility. The inclusion of foreign scientists in the Assembly and Council for Sciences signalled that the Academy wished to measure itself against standards beyond the national community. After decades of restricted international contact under communist rule, this openness mattered greatly. Foreign participation in scientific-policy bodies helped strengthen evaluation, disciplinary comparison, and external confidence in the Academy's transformation. It also showed that the Academy did not understand sovereignty as isolation. The new Czech Academy sought to become a national institution that could participate credibly in European and global science.

At the same time, the Academy's governance remained distinctly Czech in its institutional form. It preserved the institute-based model inherited from ČSAV, but surrounded it with democratic self-government, public budgetary accountability, university participation, and external scientific advice. This hybrid character was one of the reasons why AV ČR could survive the post-socialist transformation without losing its research core. It did not imitate a purely honorary academy, and it did not simply retain the old socialist academy. It created a specific public research institution suited to Czech historical conditions. The statutes and

governance bodies were therefore not administrative details. They were the mechanism by which institutional inheritance became modern legitimacy.

The broader meaning of these statutes and governance structures lies in their conversion of authority. In the socialist Academy, authority had often derived from political hierarchy, party approval, administrative position, and centrally assigned status. In the new Academy, authority was to derive from law, election, representation, scientific competence, public accountability, and procedural rules. This conversion could not be completed instantly, and older habits inevitably survived for some time. Yet the institutional framework pointed in a different direction. It made it possible to contest decisions, elect bodies, evaluate institutes, approve budgets, and connect Academy research with universities and public life. In this sense, governance reform was one of the central acts of de-ideologisation.

Thus, the statutes, governance bodies, and legal procedures of the Czech Academy of Sciences gave the new institution its democratic and public legitimacy after 1992. Act No. 283/1992 Coll. did more than establish AV ČR as a successor to the Czech part of ČSAV; it created a system of self-government through the Academy Assembly, executive administration through the Academy Council and Presidium, public representation through the President, and scientific-policy deliberation through the Council for Sciences. The Statutes later elaborated this system into a detailed institutional order based on representation, elections, accountability, proportional disciplinary balance, external participation, evaluation, and budgetary responsibility. This governance model allowed the Academy to preserve the institute-based research system while detaching it from the authoritarian logic of the socialist period. It made AV ČR a public institution without reducing it to a government office, and a self-governing scientific body without isolating it from universities, society, the state, and international science. In this way, institutional legitimacy was built not by denying continuity with ČSAV, but by governing that continuity through new democratic rules.

3. The First Stage of Transformation in 1993

The year 1993 was the first real test of the Czech Academy of Sciences as a functioning institution rather than a legal formula. The Academy had been established by Act No. 283/1992 Coll., and the Czechoslovak Academy of Sciences had ceased to exist on 31 December 1992, but the decisive question was whether the new body could actually govern institutes, manage public funds, appoint leadership, stabilise research workplaces, and begin restructuring without destroying scientific continuity. The first stage of transformation therefore unfolded in a highly compressed temporal frame. The state had changed, the federal academy had disappeared, and the Czech Academy had to act immediately as the public centre of non-university research in the new Czech Republic. The official historical overview states that ČSAV ceased to exist on 31 December 1992 and that the Czech Academy was established on the same date, claiming both the legacy of ČSAV and the legacy of earlier predecessors (*Academy of Sciences of the Czech Republic, n.d.*). In practical institutional terms, however, 1993 was the year when this claim had to be translated into meetings, resolutions, budgets, appointments, reductions, and new working rules.

The legal basis for the first stage was deliberately designed to avoid paralysis. Act No. 283/1992 Coll. established the Academy in Prague, defined it as an organisational body of the Czech Republic, and stated that its activities were financed from the Czech state budget. It also

specified that the Academy performs research through its institutes and may conclude agreements on international cooperation in scientific activity and technological development (*Czech National Council, 1992*). These provisions mattered immediately in 1993 because the Academy needed a recognised public identity, a budgetary position, and the right to act internationally. Without such provisions, the post-federal transition could have reduced research institutes to suspended legal entities waiting for later political decisions. The Act instead created a legal environment in which research continuity and institutional reform could begin at once.

The same Act defined the governance framework that had to be activated in 1993. It listed the Academy Assembly, the Academy Council and its Presidium, the President of the Academy, and the Council for Sciences as the bodies of the new institution. It also defined the Assembly as the supreme self-governing body and gave it powers to adopt the Statutes, approve annual reports, approve budgets and final accounts, distribute funds among institutes, and approve the establishment, merger, splitting, or dissolution of institutions (*Czech National Council, 1992*). These powers made the Assembly the key organ of the first transformation stage. The Academy could not merely wait for ministerial instructions; it had to govern itself under public law. This was one of the most important differences between a successor institution and a temporarily preserved administrative remnant.

The constituting session of the Academy Assembly in February 1993 was therefore a foundational event. Contemporary Academy reporting records that the constituting Assembly of the Czech Academy of Sciences met in Prague on 24 and 25 February 1993, only weeks after the Academy had begun operating in the new state framework (*Akademický bulletin, 1993*). The meeting took place not in a calm institutional atmosphere, but in a moment of uncertainty about the future of Czech science, the fate of institutes, and the financial basis of public research. The same report described the session as long and tense, with difficult discussion of the general aim of the Academy, its orientation, the system of management, and the prospects of numerous institutes (*Akademický bulletin, 1993*). The first Assembly thus had to perform several tasks at once: ritual foundation, political reassurance, budgetary negotiation, institutional judgement, and scientific self-definition.

The presence and speeches of political and academic figures at the constituting Assembly reveal the wider significance of the event. The contemporary Academy bulletin names, among those present, Minister of Education Petr Piťha, Prime Minister Václav Klaus, the newly elected Academy President Rudolf Zahradník, and Otto Wichterle, who was elected honorary president of the Academy (*Akademický bulletin, 1993*). This constellation symbolised the passage from the late ČSAV transformation to the new AV ČR order. Wichterle represented the moral and scientific rehabilitation of Czech academic life after the fall of communism. Zahradník represented the first presidency of the new Academy. Klaus and Piťha represented the state authorities whose financial and policy decisions would strongly affect the Academy's future. The scene shows that the first stage of transformation was not an internal academic matter alone; it was part of Czech state-building.

Rudolf Zahradník's election as President of the Czech Academy of Sciences marked the beginning of a new leadership period. The official list of representatives of the Academy records the period from 25 February 1993 to 27 March 1997, with Prof. Ing. Rudolf Zahradník, DrSc., from the J. Heyrovský Institute of Physical Chemistry, as President of CAS. It also lists Helena Illnerová from the Institute of Physiology and Václav Pačes from the Institute of Molecular

Genetics as Vice-Presidents (*Academy of Sciences of the Czech Republic, n.d.*). This leadership composition was significant because it linked the new Academy with strong fields of Czech natural science and biomedical research. It also showed continuity with high-level research institutes rather than with the old ideological-administrative apparatus. The presidency was not merely a personal office; it was a signal about the scientific and moral direction of the Academy after 1993.

The first stage of transformation was marked by an unusually difficult balance between reduction and preservation. Already before 1993, the Academy system had undergone major personnel contraction; later historical research notes that ČSAV was reduced from 13,981 persons in 1989 to 8,814 in 1992, or to about 63 percent of its former staff level (*Římanová, 2023*). This reduction shows that the new Czech Academy did not inherit the full size of the late-socialist research apparatus. It inherited an already diminished and politically reworked system. Yet 1993 still required further decisions about institutes, budgets, and future direction. The first stage was therefore not the beginning of reduction, but the point at which reduction became part of the new Academy's own self-governing responsibility.

The constituting Assembly also had to make decisions on the fate of selected institutes. Later research drawing on the early 1993 Assembly resolution notes that the constituting Academy Assembly of 24–25 February 1993 decided definitively on the abolition of selected institutes and stated that a certain reduction in workplaces and personnel was consistent with the will to maintain the Academy as an institution of high scientific quality (*Římanová, 2023*). This is one of the key facts of the first transformation stage. The new Academy did not simply protect every inherited workplace in the name of continuity. It accepted that survival required selection. The reduction of institutes was therefore not only imposed from outside by state austerity; it was incorporated into the Academy's internal reform logic.

This reduction should not be interpreted as anti-academic hostility. It was closer to institutional triage. The Academy had to decide which institutes had sufficient scientific quality, strategic importance, international potential, or irreplaceable infrastructure to justify continuation under difficult financial conditions. The official legal framework had given the Assembly the authority to approve the establishment, merger, division, and dissolution of institutions, so the 1993 decisions were not outside the law but a direct use of the new governance model (*Czech National Council, 1992*). In this way, the first transformation stage tested the seriousness of the Academy's self-government. Self-government was not only the right to defend oneself against the state; it was also the responsibility to make painful internal decisions.

The first stage also involved the consolidation of the new Academy's public budgetary identity. Act No. 283/1992 Coll. gave the Academy the status of a central authority for budgetary purposes and placed its funds in a separate budget chapter of the Czech Republic. This was crucial because the Academy needed more than legal personality; it needed a channel through which institutional funding could reach institutes and through which the Academy could negotiate with the state. The budgetary status separated AV ČR from ordinary ministry departments while keeping it inside the public-finance system. It allowed the Academy to become a recognised actor in annual budget struggles. In the first year, this was essential because the Academy had to maintain laboratories, archives, libraries, salaries, and research projects while also demonstrating fiscal discipline.

At the level of institutional identity, 1993 was also the year when the Academy had to define itself publicly as more than the Czech remainder of ČSAV. The later official portrait of the Academy states that the Academy of Sciences of the Czech Republic was established by Act No. 283/1992 Coll. as the Czech successor of the former Czechoslovak Academy of Sciences and that it was a public non-university scientific institution encompassing research institutes engaged primarily in basic research (*Academy of Sciences of the Czech Republic, 2008*). This retrospective formulation captures what the Academy was already trying to establish in 1993. It was successor, but not residue. It was public, but not a ministry. It was non-university, but not isolated from universities. It was institute-based, but increasingly dependent on evaluation, grants, and international cooperation.

The emphasis on basic research was especially important in the first transformation stage. Under the late socialist system, many institutes had been linked to planned economic priorities, industrial branches, or state-directed research programmes. After 1989 and the collapse of the planned economy, the institutional environment of applied and sectoral research changed sharply. AV ČR had to defend basic research as a long-term national resource, not as a luxury inherited from socialism. The official portrait later emphasised that the primary mission of the Academy and its institutes was basic research across natural, technical, social sciences, and humanities, aiming at international scientific development while also taking account of Czech society and national culture (*Academy of Sciences of the Czech Republic, 2008*). This mission provided the conceptual foundation for the Academy's first reforms.

The first stage of transformation also required a new relationship with universities. The Academy's institutes had strong research capacities, while universities were themselves undergoing post-socialist reform and trying to rebuild academic autonomy. The law included university representatives in the Academy Assembly and allowed the Academy's institutes to participate in doctoral training and cooperation. The later official description notes that scientists of Academy institutes participate in education, especially doctoral programmes, and also teach at universities (*Academy of Sciences of the Czech Republic, 2008*). In 1993, this orientation was not yet a fully mature cooperation system, but it was already part of the Academy's new legitimacy. AV ČR could not remain a closed institute empire; it had to become one pillar of a wider national research and education system.

International cooperation formed another core element of the first stage. Act No. 283/1992 Coll. explicitly authorised the Academy and its institutes to conclude agreements on international cooperation in scientific activity and technology development. This provision was immediately relevant after the dissolution of Czechoslovakia, because foreign partners needed to know which Czech institution could continue scientific relations formerly attached to ČSAV. The later Academy portrait stresses that Czech science was integrated into the international context through joint international research projects and exchanges with counterpart institutions abroad (*Academy of Sciences of the Czech Republic, 2008*). In 1993, internationalisation served both scientific and political functions. It helped the Academy prove that its institutes could meet external standards, and it placed Czech research within the post-Cold War European scientific space.

The first stage also saw the continuation of institute-level transitions already begun in 1990–1992. The example of the Mathematical Institute shows a typical pattern of long continuity through successive institutional forms. It had been established in 1947 within the Czech

Academy of Sciences and Arts, incorporated into the Czechoslovak Academy of Sciences in 1953, and became part of the newly established Czech Academy of Sciences in 1993 after the split of Czechoslovakia (*European Mathematical Society, n.d.*). This kind of institute history demonstrates why 1993 was not a simple institutional beginning. Many institutes entered AV ČR with older scientific lineages, disciplinary reputations, and accumulated resources. The transformation of 1993 gave them a new legal home rather than a new intellectual origin.

Other institute-level documents show how 1993 decisions could later shape structural consolidation. For example, information from the Nuclear Physics Institute records that, by resolution of the constituting session of the Academy Assembly held on 24 and 25 February 1993, the Institute of Radiation Dosimetry was consolidated into the Nuclear Physics Institute as of 30 June 1994 (*Nuclear Physics Institute of the CAS, n.d.*). Although the merger itself took effect later, the decision belongs to the reform logic launched in the first Assembly. It shows that the 1993 transformation was not only about preserving institutes but also about reorganising them. Consolidation could reduce duplication, concentrate expertise, and adapt research structures to the new financial environment. The Academy's first year thus opened a process whose effects continued into the following years.

The atmosphere of the first Assembly was also politically revealing. The contemporary bulletin records concerns over the fate of Czech science and the Academy's institutes, and it presents Václav Klaus as arguing that the transformation of scientific institutions should be linked to the transformation of society as a whole rather than treated as an isolated problem (*Akademický bulletin, 1993*). Whether one reads this statement sympathetically or critically, it captures the period's main tension. The Academy could not defend itself by claiming exemption from the post-communist transformation of public institutions. At the same time, scientific research could not be treated as a normal administrative sector where cuts produced only short-term inconvenience. The first stage of transformation was therefore a negotiation between the economic logic of reform and the cumulative logic of science.

Otto Wichterle's role at the constituting Assembly gave the first stage a strong symbolic dimension. As the last chairman of ČSAV after the fall of the communist regime and a scientist associated with both creativity and political exclusion, Wichterle embodied the moral correction of Czech academic life. The official history notes that, during his chairmanship from 1990 to 1992, the purposeful reconstruction of the research organisation as a whole was initiated (*Academy of Sciences of the Czech Republic, n.d.*). His election as honorary president at the first Assembly linked the new Academy to the reform process that had begun immediately after 1989. It also made clear that the first stage of AV ČR did not start with a blank slate in 1993. It continued a democratic reconstruction already underway inside the late ČSAV.

The first stage was therefore transitional in a strict institutional sense. It inherited temporary directors and councils, but it also had to build new forms of appointment, representation, and authority. It inherited research programmes, but it had to examine their quality and relevance. It inherited buildings and assets, but it had to manage them through a new public budgetary order. It inherited international contacts, but it had to renew them under a Czech national identity. It inherited prestige and suspicion at the same time. This was the characteristic ambiguity of 1993: the Academy was indispensable, but it had to prove that it deserved to survive.

The Academy's first transformation stage also established the pattern of later reforms. Filáček's analysis of the Academy's transformation describes the 1990s as a period of radical

changes, including a steep decrease in financing, major reforms, personnel reductions, institutional transformation, plurality of financial sources, new assessment procedures, support for basic and applied research, engagement with business and enterprise, and new patterns of international collaboration (*Filáček, 2023*). The developments of 1993 were the first institutional crystallisation of these longer processes. The Academy's later evolution towards more sophisticated research assessment and public-interest strategies did not appear suddenly. It began with the basic survival-and-reform choices of the first post-federal year.

The first stage also clarified the Academy's place in the Czech public sphere. It was no longer a socialist supreme scientific authority, but it was also not a private scholarly association. It was a public non-university research institution with direct state-budget financing, self-governing bodies, and a research mission. This combination was unusual and politically delicate. It demanded trust from the state, trust from the scientific community, and trust from society. The first Assembly and the first leadership period therefore had to create confidence that AV ČR could govern itself responsibly. The Academy's legitimacy depended on showing that autonomy did not mean insulation from reform.

The reduction of institutes and personnel created human costs that should not be ignored. Researchers and technical staff experienced the transformation not only as institutional modernisation, but as uncertainty about careers, workplaces, salaries, and scientific futures. The first stage of transformation was therefore also an emotional and social process. Some researchers saw it as liberation from ideological pressure and bureaucratic stagnation. Others experienced it as insecurity, competition, and loss of institutional protection. Both experiences were historically real. The Academy's leadership had to maintain scientific morale while accepting that not every inherited position could be preserved.

The creation of the first Academy leadership also gave the institution a public face. Rudolf Zahradník's presidency represented the Academy in negotiations with the state, in relations with institutes, and before the broader public. The appointment of Vice-Presidents Helena Illnerová and Václav Pačes connected the leadership with prominent research fields and helped embody the Academy as a scientific institution rather than an administrative inheritance (*Academy of Sciences of the Czech Republic, n.d.*). This mattered because leadership in 1993 was not simply managerial. It had to mediate between political power, institute interests, international expectations, and the moral memory of post-1989 renewal. The first leadership team therefore shaped the tone of the Academy's early democratic identity.

The 1993 stage also began the long separation between the Academy's institute-based research function and the learned-society function inherited from older academy models. The official Academy portrait notes that the status of academicians and corresponding members at ČSAV was abolished after the political changes of 1989 and later replaced by the Learned Society of the Czech Republic, founded in 1994 (*Academy of Sciences of the Czech Republic, 2008*). This later formalisation followed the same logic already visible in 1993. The new AV ČR was to function primarily as a research institution, while scholarly honour and learned representation would be reconstituted in a freer civic form. This distinction helped reduce the burden of the old academy hierarchy and made the institute system more compatible with democratic academic culture.

The first transformation stage also involved the practical normalisation of the Academy's name, symbols, and institutional documents. Journals, institutes, contracts, letterheads,

international correspondence, budget requests, and internal regulations all had to move from ČSAV to AV ČR. This kind of administrative work is rarely dramatic, but it is essential for institutional survival. A research institution lives through formal continuity as much as through intellectual creativity. The fact that institutes, publications, and programmes could continue under the new name gave the scientific community a sense that the transition had become operational. In 1993, institutional identity was made through such ordinary acts as much as through major speeches.

The importance of 1993 becomes clearer when one distinguishes three levels of transformation. The first was legal: AV ČR existed under Czech law as the successor to the Czech part of ČSAV. The second was organisational: bodies such as the Assembly, Council, presidency, and institute councils had to become operational. The third was epistemic: research priorities, quality standards, international cooperation, and the balance between basic and applied research had to be redefined. These levels did not move at the same speed. Legal transformation was rapid, organisational transformation took months and years, and epistemic transformation continued for decades. The first stage in 1993 brought all three levels into motion.

The first stage also made visible the Academy's dual dependence on memory and future orientation. It could not deny the scientific achievements and institutional assets inherited from ČSAV, because these formed the real basis of Czech non-university research. Yet it also could not define itself primarily through nostalgia for ČSAV, because the political and moral conditions of the socialist academy were no longer legitimate. The Academy therefore had to narrate continuity through earlier Czech learned traditions and through the language of modern basic research. The official portrait later presented the Academy as continuing traditions not only of ČSAV but also of older predecessors and as a public research institution engaged primarily in basic research (*Academy of Sciences of the Czech Republic, 2008*). This retrospective statement captures the identity work begun in 1993.

The first stage of transformation should therefore be understood as institutional stabilisation under reform pressure. It was not a calm administrative year after a completed legal act. It was the first working year of a public scientific institution that had to preserve research capacity, absorb the shock of state dissolution, reduce parts of its inherited structure, elect new leadership, communicate with the government, and define its mission before a sceptical public. Its success lay not in solving all problems, but in avoiding collapse. It created the conditions under which later evaluation, restructuring, internationalisation, and strategic development could proceed. In this sense, 1993 was the threshold year of the modern Czech Academy.

Thus, the first stage of transformation in 1993 turned the Czech Academy of Sciences from a legally established successor body into a working institution of the new Czech Republic. The constituting Academy Assembly of 24–25 February 1993 activated the Academy's self-government, elected and confirmed a new leadership period under Rudolf Zahradník, recognised Otto Wichterle's reformist symbolic authority, and began difficult decisions about institute reduction, consolidation, budgetary stabilisation, and future scientific orientation. The Academy entered 1993 with inherited institutes, staff, property, obligations, and scientific traditions, but it also faced financial pressure, public scrutiny, and the need to distinguish democratic continuity from socialist institutional inertia. Its first reforms were therefore not cosmetic. They created the operational foundations of AV ČR as a public non-university

research institution committed to basic research, international cooperation, cooperation with universities, and responsible self-government. The transformation remained incomplete, but the first stage proved that Czech academic science could survive the dissolution of Czechoslovakia not as a frozen remnant of ČSAV, but as a re-founded institution capable of further reform.

Reorganisation of Institutes and Research Priorities

1. Evaluation of Inherited Research Capacities

The evaluation of inherited research capacities was one of the most sensitive tasks of the early Czech Academy of Sciences, because it touched the practical substance of succession more directly than any symbolic declaration or legal formula. The new Academy inherited institutes, employees, laboratories, libraries, archives, instruments, publication channels, unfinished projects, and international contacts from the Czech part of the former Czechoslovak Academy of Sciences. Yet it did not inherit them in a politically neutral condition. These capacities had been formed under several different regimes: older Czech learned and research traditions, the Stalinist establishment of ČSAV, the reform atmosphere of the 1960s, the normalisation period after 1968, and the democratic reconstruction after 1989. The assessment of inherited capacity therefore had to distinguish scientific value from ideological deformation, institutional viability from administrative inertia, and long-term national usefulness from the mere survival of inherited structures. The Academy's official mission later defined CAS as a complex of public research institutions conducting research across the natural, technical and social sciences and the humanities, but this broad mission could only become credible if the inherited institutes were examined rather than simply preserved by habit (*Academy of Sciences of the Czech Republic, n.d.*). The first evaluation of inherited capacities thus became a test of whether AV ČR could transform ČSAV's research base into a modern public research system. It was not an abstract quality-control exercise, but a decisive moment in the redistribution of resources, authority, and legitimacy.

The starting point for this evaluation was the simple fact that the inherited Academy was too large, too uneven, and too historically compromised to be continued without selection. ČSAV had contained excellent research teams, internationally recognised scholars, and valuable scientific infrastructure. At the same time, it had also contained fields shaped by planned-economy priorities, politicised humanities and social sciences, overstaffed workplaces, administrative duplications, and research directions whose original institutional environment disappeared with the socialist economy. The problem was not only how much of the inherited structure could be financed. It was also what kind of research system the new Czech Republic wanted to maintain. A democratic state could not preserve every inherited institute merely because it existed, but neither could it afford to destroy accumulated scientific capital in the name of market reform. This double constraint gave the evaluation process its historical tension. It was simultaneously a scientific judgement, a budgetary necessity, a moral reckoning with the past, and a strategic decision about the future of Czech research.

The first stage of evaluation had already begun before the formal establishment of AV ČR. According to Cidlinská and Linková, the first internal research assessment was carried out in 1990 as an instrument for rectifying past wrongs and assessing quality; as a result, low-quality institutes and departments were eliminated and only half of the employees remained (*Cidlinská & Linková, 2015*). This statement is important because it shows that evaluation after 1992 did not begin from zero. The late ČSAV had already been pushed to examine itself under the pressure of post-revolutionary democratisation. The first assessments were therefore inseparable from rehabilitation, personnel correction, and the removal of structures considered scientifically weak or morally compromised. In some cases, evaluation meant the restoration of fields damaged by normalisation; in others, it meant the closure or reduction of units whose performance could not justify continuation. The Czech Academy inherited not only institutes but also the results of these first post-1989 internal judgements.

The 1993 evaluation was more institutional and more severe because it took place under the conditions of a newly independent state budget. A later international audit of research evaluation in the Czech Republic notes that, from 1993 onwards, the Academy performed evaluations every four or five years, and that the 1993 evaluation was triggered when the Czech House of Deputies significantly cut the Academy's budget (*Technopolis Group, 2011*). The objective of that first evaluation was direct and existential: to decide whether institutes should be retained within the Academy system or closed down. The same audit reports that the evaluation was carried out by three ad hoc expert committees, covering mathematics, physics and earth sciences; life and chemical sciences; and humanities and social sciences. At that stage, the evaluation did not involve international experts or databases of research results; the final statements were based on expert knowledge of scientific activities, quality, and productivity (*Technopolis Group, 2011*). By later standards, this procedure appears informal and heavily dependent on personal expertise. Yet in 1993 it was probably the only feasible method, because the Academy needed rapid decisions in a situation of financial shock and incomplete research-information systems.

The severity of the 1993 situation was intensified by the state budget. A Czech retrospective study on research policy states that Act No. 283/1992 Coll. created the Academy, transferred property and other rights and obligations of ČSAV that had passed to the Czech Republic, and gave AV ČR its own budget chapter. It also notes that the Czech state budget for 1993 and the Ministry of Finance's regulatory measures of 27 January 1993 produced a major reduction in Academy expenditure by approximately one third, about 400 million Czech crowns (*Technologická agentura České republiky, 2014*). This budgetary cut made evaluation unavoidable. The Academy could not preserve all inherited capacities under such reduced financing. At the same time, the cut also made evaluation politically dangerous, because scientific assessment could easily become a cover for fiscal contraction. The Academy therefore had to demonstrate that its decisions were not merely mechanical savings but judgements about scientific quality, institutional viability, and future potential.

The constituting Academy Assembly of February 1993 turned this pressure into concrete organisational decisions. The same Czech retrospective account reports that the first Academy Assembly was held on 24 February 1993, elected Rudolf Zahradník as President, elected Otto Wichterle as honorary President, elected further Academy bodies, abolished 21 Academy workplaces, and approved the Statutes and additional measures (*Technologická agentura České republiky, 2014*). This was one of the clearest manifestations of evaluation as institutional selection. The new Academy did not merely announce that inherited capacities

would be reviewed in the future. It immediately used its self-governing body to close, merge, or reorganise parts of the inherited structure. The number of abolished workplaces shows that the early transformation was not cosmetic. It changed the map of Czech non-university research at the very moment when AV ČR was being founded as a successor institution.

The relation between evaluation and governance was crucial. Act No. 283/1992 Coll. gave the Academy Assembly the authority to approve the establishment, consolidation, merger, splitting, and dissolution of Academy institutions, while the Academy Council prepared and submitted proposals and managed current activities between Assembly sessions (*Czech National Council, 1992*). This meant that the evaluation of inherited capacities was not left entirely to the government, nor was it performed only by institute directors defending their own workplaces. The new legal order gave the Academy's own representative bodies the competence to reshape the inherited institute system. This was a central feature of democratic scientific self-government. It allowed the Academy to participate in its own reduction and reorganisation instead of being passively dismantled from outside. Yet it also meant that the Academy had to take responsibility for painful decisions.

The evaluation process had to operate across very different disciplinary cultures. The natural sciences, technical sciences, social sciences, and humanities could not be judged by identical indicators, especially in 1993, when bibliometric databases were not yet routinely used for institutional evaluation. Experimental physics, molecular biology, mathematics, archaeology, history, sociology, linguistics, and philosophy all produced different kinds of outputs and depended on different infrastructures. A laboratory might be judged through equipment, publications, grants, and international networks. A humanities institute might be judged through editions, archives, monographs, language resources, long-term cultural work, and scholarly rehabilitation after political suppression. The use of three large expert committees reflected this disciplinary complexity. It also revealed the limitations of the first evaluation: it needed to make hard decisions quickly, but it had to do so in a system where mature evaluation instruments were still absent. The evaluation of inherited capacities was therefore both necessary and methodologically imperfect.

The absence of international experts in the first 1993 evaluation is especially revealing. Later evaluation rounds at the Academy increasingly used international expert participation, structured self-assessment, bibliometric information, site visits, and panel reports. The 1995 evaluation, for example, included an evaluation body composed of national and international experts and used detailed self-assessment reports, bibliometric information, presentations, and comments from institutes (*Technopolis Group, 2011*). The contrast with 1993 shows that the first evaluation was transitional. It belonged to the emergency logic of institutional survival rather than to a fully developed evaluation culture. Nevertheless, it created the precedent that the Academy's institutes could be evaluated as units of research quality and strategic value. Later rounds professionalised this precedent, but the principle was established in the first transformation period.

The evaluation of inherited capacities also had a strong personnel dimension. The same international audit reports that, as a result of the first evaluation, 26 institutes were closed and the number of Academy employees decreased by approximately half to about 6,000 people; it also states that publication activity increased after the cuts (*Technopolis Group, 2011*). Other sources give related figures for the broader reduction from the late ČSAV period into the early AV ČR period, but the general picture is consistent: the Academy entered the 1990s through a

severe contraction of staff and workplaces. Such reduction was not merely statistical. It reshaped careers, research groups, technical services, administrative departments, and disciplinary communities. Some employees left science altogether, some moved to universities or other sectors, and some remained in restructured institutes under more competitive conditions. Evaluation therefore changed the human composition of Czech academic science.

The personnel reduction also reflected a new understanding of research employment. Under the socialist system, scientific workplaces often offered relatively stable employment, even when research performance varied. The post-1992 Academy moved towards a model in which researchers and highly educated professional staff would be more regularly assessed. The October 1993 meeting of the Academy Assembly, according to the Czech retrospective account, assigned institute directors the task of ensuring assessment of university-educated employees in scientific departments by 10 February 1994 and regarded it as appropriate for most scientific and highly educated specialist employees to move to fixed-term employment relationships lasting no more than five years (*Technologická agentura České republiky, 2014*). This decision shows that evaluation was not limited to institutes as corporate units. It reached down to teams and individual academic careers.

The December 1993 Academy Council recommendations further deepened this personnel evaluation. The same source notes that the Academy Council, at its 15th meeting on 7 December 1993, adopted detailed and concrete recommendations concerning the evaluation of university-educated employees in scientific departments of Academy workplaces (*Technologická agentura České republiky, 2014*). This was part of the shift from inherited employment structures to a more evaluative research culture. The Academy was beginning to define not only which institutes should survive, but also what kind of professional standards should govern scientific work inside them. The movement towards fixed-term contracts and assessment could be experienced as insecurity, but it also reflected the wider transformation of post-socialist academic employment. The inherited research workforce had to become accountable to new criteria of productivity, quality, adaptability, and international visibility.

The evaluation of inherited capacities also involved the reclassification of research areas. The Academy had to decide how its institutes would be grouped, governed, and compared. The October 1993 Assembly approved principles for the status and activity of Academy sections and their structure, and the section structure effective from 1 January 1994 included areas such as mathematics, physics and informatics, applied physics, earth sciences, chemistry, biology and medicine, humanities, social sciences, and related groupings (*Technologická agentura České republiky, 2014*). This reorganisation mattered because evaluation requires categories. Institutes cannot be assessed fairly unless they are situated in coherent disciplinary or interdisciplinary fields. The creation of sections helped the Academy map its inherited capacities into a new research structure. It also made it possible to distribute representation, funding, evaluation procedures, and strategic planning across areas rather than through a single undifferentiated hierarchy.

At the institute level, the evaluation process was experienced as both opportunity and pressure. The Institute of Photonics and Electronics provides a concrete example. Its history states that the end of the totalitarian regime in 1989 initiated positive changes, that a scientific council was elected in 1990, that the research programme gradually shifted from industrial and applied research towards basic research, and that international cooperation expanded with

the opening of the country. It also states that during 1990–1992 it was necessary to reassess the work of all ČSAV institutes and secure their activity after the division of the republic through the Act on the Czech Academy of Sciences; the institute passed evaluation in 1992 but had to reduce its staff by one third to 128 employees (*Institute of Photonics and Electronics of the CAS, n.d.*). This example shows that a positive evaluation did not protect a workplace from reduction. It meant survival under new constraints.

The same institute history reveals an important qualitative shift in research orientation. The move from industrial and applied research to basic research was not a mere change in vocabulary. It reflected the collapse of many old state-socialist industrial relationships and the need for institutes to justify themselves through scientific originality, grant support, and international cooperation. The newly introduced targeted support of research through scientific grants created a freer research environment but also a more competitive one (*Institute of Photonics and Electronics of the CAS, n.d.*). This was typical of the broader evaluation of inherited capacities. The question was not only whether an institute had good people and equipment. It was also whether it could redefine its programme for a world in which state planning no longer supplied stable assignments and in which international visibility increasingly mattered. Evaluation therefore assessed adaptive potential as well as inherited strength.

The Academy's broader mission confirms why this shift mattered. The present mission statement states that CAS institutes conduct research across a broad spectrum of disciplines, including highly specialised and interdisciplinary research, with the aim of advancing international scientific knowledge while also taking account of the needs of Czech society and national culture (*Academy of Sciences of the Czech Republic, n.d.*). This formulation captures the standard towards which the evaluation of inherited capacities was moving. Institutes had to be both scientifically credible and socially justifiable. They could not be defended only because they had existed under ČSAV. They had to show that they could contribute to international knowledge and to Czech public needs. In the early 1990s, this was a new language of legitimacy for many workplaces.

Evaluation also had to deal with the uneven political history of disciplines. Some natural-science institutes had preserved strong research cultures even under ideological pressure, partly because their subject matter was less directly exposed to Marxist-Leninist orthodoxy. By contrast, several humanities and social-science fields had suffered more directly from censorship, personnel purges, ideological supervision, and institutional closures after 1968. Cidlinská and Linková note that the Academy was able to carry out high-quality scientific work despite ideological pressure, especially in natural sciences, and that it was sometimes called an "Isle of Freedom" because its employees had more room than university academics, who were more closely controlled through their influence on students (*Cidlinská & Linková, 2015*). This observation helps explain why evaluation could not be purely retrospective. A humanities institute damaged by normalisation might appear weaker in immediate output terms, yet its restoration could be necessary for democratic scholarship. Conversely, a technically competent unit shaped by obsolete industrial priorities might have to be reoriented or closed.

The assessment of inherited capacities therefore had a moral dimension that cannot be reduced to productivity. The phrase used by Cidlinská and Linková — rectifying past wrongs and assessing quality — captures the double function of early evaluation (*Cidlinská & Linková, 2015*). Rectification meant dealing with political exclusions, compromised appointments,

damaged disciplines, and disrupted careers. Quality assessment meant asking whether institutes and departments could perform high-level research under new conditions. These two purposes could sometimes support each other, but they could also conflict. A person or field politically wronged under normalisation might still need scientific rebuilding. A unit that functioned efficiently under the old system might have done so because it was protected by political priorities rather than scientific excellence. The early Academy had to navigate these ambiguities without a fully mature evaluative apparatus.

The government's role in the evaluation process was also significant. The Czech research-policy retrospective states that Government Resolution No. 135 of 24 March 1993 requested the President of AV ČR to submit a transformation project containing immediate, medium-term, and long-term goals, as well as an overview of property that could potentially be sold, with possible proceeds at least partly left to the Academy. Government Resolution No. 206 of 28 April 1993 took the transformation project into account and emphasised the need for rapid formulation of the final goal of Academy transformation, the need to examine global division of Academy financial resources among humanities, technical, and natural-science parts, and the need to distinguish Academy research workplaces for further transformation (*Technologická agentura České republiky, 2014*). These decisions show that evaluation was not only an internal academic exercise. It was also part of government policy towards public research and state property.

This government pressure created a tension between scientific self-evaluation and political-economic expectation. The government wanted a smaller, more financially manageable Academy and also looked at property as a possible resource. The Academy wanted to preserve research capacities that could not be judged merely by short-term cost. The same retrospective source notes disagreements between the Research and Development Council and the Ministry of Education, especially over the predetermined science policy proposed by the Ministry (*Technologická agentura České republiky, 2014*). This suggests that early evaluation took place in a contested policy environment. The Academy had to prove that it could reduce and reorganise itself responsibly, while resisting simplifications that might have damaged the integrity of research. The assessment of inherited capacities was therefore also a negotiation over who had the authority to define scientific value.

The role of property in these debates should not be overlooked. Research capacity is often imagined primarily as people and publications, but in the Academy it also included buildings, laboratories, special equipment, libraries, archives, collections, field stations, and technical infrastructure. The government's request for an overview of property that might be sold shows that inherited scientific assets were also being viewed through the lens of public finance and state transformation. This was dangerous because not all scientific infrastructure has obvious market value, and not all property that appears economically burdensome is scientifically dispensable. An institute archive, a specialised laboratory, or an experimental facility may be irreplaceable even if it does not produce immediate income. The evaluation of inherited capacities therefore had to defend the research meaning of property against purely fiscal interpretation. It had to explain why some assets had to remain within the Academy even when the state was under budgetary pressure.

At the same time, the Academy could not credibly claim that every inherited asset was indispensable. Some workplaces had been created for state-socialist priorities that had disappeared. Some facilities overlapped with universities or ministries. Some administrative

structures were too large for the new budget. Some applied research functions no longer had stable users after privatisation and industrial restructuring. Evaluation therefore required a difficult act of discrimination. It had to separate infrastructure necessary for long-term scientific development from property that could be reduced, merged, transferred, or sold without destroying the Academy's mission. This was especially hard because scientific value is often not immediately visible to political or financial actors. The Academy's early self-government had to turn such distinctions into defensible institutional decisions.

The evaluation of inherited capacities also affected the relationship between institutional funding and grant funding. The Academy's present mission statement notes that CAS was the first institution in the Czech Republic to establish its own Grant Agency, supporting research projects selected through peer review involving foreign reviewers, and that Academy funding combines basic institutional financing with target-oriented funding through research and grant projects selected by public competition (*Academy of Sciences of the Czech Republic, n.d.*). This funding pattern developed over time, but its roots lie in the early transformation. Evaluation identified which institutional capacities deserved stable support, while grant mechanisms created incentives for teams to pursue competitive projects. The tension between these two forms of funding became central to Czech research policy. Institutions need stable support for long-term work, but researchers also need competitive project funding to encourage quality, initiative, and international standards.

The inherited research capacities were therefore assessed not only by what they had been, but by whether they could function in a mixed funding environment. An institute that depended entirely on central allocations and had weak publication output, weak grant potential, or weak international links was vulnerable. An institute with strong teams, clear research strategy, external cooperation, and capacity to attract project funding could survive more easily. Yet this logic also created new inequalities. Some fields, especially in experimental natural sciences, had clearer access to international publication systems and external grants. Some humanities fields produced work whose value was harder to capture through grant success or bibliometric measures. The early Academy had to balance these differences. If evaluation became too crude, it could harm disciplines essential to national culture, language, history, and public memory. If it became too protective, it could preserve weak inherited structures. This disciplinary balance became one of the long-term challenges of AV ČR.

The assessment of inherited capacity also involved the future relationship between the Academy and universities. The CAS mission statement notes that researchers from Academy institutes participate in education, especially doctoral programmes, and also teach at universities (*Academy of Sciences of the Czech Republic, n.d.*). In the early 1990s, this cooperation helped justify the continued existence of an institute-based Academy. If the Academy had been seen as isolated from education, critics could have argued more strongly for transferring institutes to universities. Evaluation therefore had to consider not only internal research performance but also the broader role of institutes in training young researchers. A strong institute could contribute to doctoral education, provide advanced equipment, supervise research, and connect students with international networks. In this sense, inherited research capacity was also educational capacity.

The present list of CAS institutes shows how much of the inherited breadth survived later transformations. Today CAS includes institutes across mathematics, physics, computer science, earth sciences, chemistry, biology, medicine, archaeology, history, philosophy,

sociology, psychology, law, philology, art history, ethnology, and other fields (*Academy of Sciences of the Czech Republic, n.d.*). This contemporary structure cannot be read directly back into 1993, because institutes have been renamed, merged, transformed, or created over time. Yet it demonstrates that the early evaluation did not reduce the Academy to a narrow natural-science organisation or a small honorary body. The Academy preserved a broad disciplinary spectrum. This suggests that the evaluation of inherited capacities, however severe, aimed at selection within breadth rather than destruction of breadth itself.

One of the most important outcomes of the early evaluation was the formation of an evaluation culture inside the Academy. The international audit notes that the Academy's tradition of evaluation goes back to the early 1990s and that, in later Czech research policy, only the Academy had a clear internal evaluation tradition of this kind among research institutions examined by the auditors (*Technopolis Group, 2011*). This matters because the first evaluations were born from crisis, but they later became part of institutional identity. The Academy learned to evaluate institutes periodically, invite experts, use self-assessment, examine strategies, and connect results to funding. What began as a survival mechanism became a governance instrument. The evaluation of inherited capacities therefore had consequences far beyond 1993. It shaped how AV ČR would later understand quality, accountability, and scientific planning.

However, the early evaluation also had limitations that should be stated clearly. The 1993 procedure lacked international experts, did not use databases of research results, and relied heavily on personal knowledge and expert judgement (*Technopolis Group, 2011*). This does not make it illegitimate, but it makes it historically situated. In a moment of emergency, personal expertise may be faster and more realistic than elaborate formal metrics. Yet such a method can also reproduce existing networks, disciplinary biases, and uneven visibility. The later introduction of international experts and structured self-assessment in 1995 suggests that the Academy itself recognised the need for more robust evaluation procedures. The 1993 assessment was therefore a beginning rather than a mature model. It should be judged as an emergency instrument of institutional transition, not as a fully developed evaluation system.

The evaluation of inherited capacities also contributed to the Academy's public legitimacy. A public institution financed from the state budget needed to show that it could discipline itself. The Academy's mission statement emphasises that it is primarily financed from the state budget and that its funding pattern conforms to international standards, combining institutional financing and target-oriented project funding (*Academy of Sciences of the Czech Republic, n.d.*). Such a claim would have been weak without the early willingness to assess and reduce inherited structures. In the political atmosphere of the 1990s, a research institution that merely defended all inherited posts and buildings would have struggled to gain public trust. Evaluation allowed AV ČR to argue that it was not preserving socialism under a new name. It was building a public research institution capable of reform.

Yet the human and intellectual costs of this process remained considerable. Closing institutes and reducing staff can remove weak structures, but it can also disrupt teams, break mentorship chains, delay long-term projects, and push talented researchers out of academia. The early 1990s were also a period of economic uncertainty, wage pressure, and new opportunities outside public research. Evaluation therefore operated in a social environment where scientific judgement and labour-market pressure were intertwined. The Academy's transformation may have increased productivity and quality in some fields, but it also changed

the culture of academic employment. The shift towards fixed-term contracts and regular assessment made research careers less protected and more performance-oriented. This was part of the broader post-socialist transition from guaranteed institutional belonging towards competitive professional mobility.

The evaluation of inherited capacities should also be viewed as a defence against two extremes. One extreme would have been liquidation: abolishing the Academy or transferring its institutes without careful assessment. Such a path would have destroyed accumulated scientific capital, especially in fields requiring long-term infrastructure. The other extreme would have been inertia: preserving all inherited units because they had historical continuity or internal defenders. Such a path would have made the Academy financially unsustainable and politically vulnerable. The early evaluation sought a middle path. It preserved the institute-based Academy, but only after reduction, selection, and reorientation. This middle path became one of the defining features of the Czech post-socialist research system.

Thus, the evaluation of inherited research capacities was the central practical mechanism through which AV ČR transformed succession into reform. The Academy inherited a broad and valuable but uneven research system from the Czech part of ČSAV, and it had to decide which institutes, teams, infrastructures, and research orientations could justify continuation under democratic and financially constrained conditions. The assessments of 1990 and 1993 combined quality judgement, moral correction, budgetary necessity, personnel reduction, disciplinary reclassification, and strategic reorientation. They led to the closure, merger, or reorganisation of workplaces, a large decrease in staff, the development of fixed-term employment and individual assessment, and the beginning of a longer Academy evaluation culture. These procedures were not methodologically perfect, especially in 1993, when international review and bibliometric systems were still absent. Nevertheless, they allowed the Academy to avoid both destructive liquidation and passive inheritance. The evaluation of research capacities therefore became one of the foundations of the modern Czech Academy: it preserved the scientific core of the former ČSAV while forcing that core to justify itself through quality, adaptability, public responsibility, and international standards.

2. Restructuring of Departments, Institutes, and Leadership

The restructuring of departments, institutes, and leadership in the Czech Academy of Sciences after 1992 was the organisational core of the Academy's first transformation. The legal establishment of AV ČR secured continuity, but continuity itself did not answer the most practical question: how should a large inherited institute system actually be governed, reduced, reorganised, and led in a democratic Czech Republic? The former Czechoslovak Academy of Sciences had left behind research workplaces with different scientific quality, different political histories, different levels of international visibility, and different degrees of dependence on the planned economy. Some institutes possessed irreplaceable research infrastructure and strong scholarly schools. Others carried administrative duplication, obsolete programmes, or personnel structures shaped by late-socialist institutional inertia. The new Academy therefore had to convert inherited quantity into a smaller and more legitimate structure of research capacity. This restructuring was not a single administrative act, but a process in which the Academy Assembly, Academy Council, President, institute directors, scientific councils, and newly formed research sections all acquired practical meaning. Act No. 283/1992 Coll. had defined the Academy as an institution performing

research through its institutes, but the early 1990s forced the Academy to decide which institutes, departments, and leaders could carry that mission forward (*Czech National Council, 1992*).

The first element of restructuring was legal continuity at the institute level. The Act on the Czech Academy of Sciences did not dissolve the Czech institutes of ČSAV and later recreate them one by one; it provided for their transfer into the new Academy. This was necessary because research workplaces depended on continuous legal existence, employment relations, property use, projects, collections, laboratories, libraries, and internal administrative authority. The Act stated that the Academy performs research through its institutes and that the Academy and its institutes may conclude agreements on international cooperation in scientific activity and technological development (*Czech National Council, 1992*). These clauses preserved the operational status of institutes while making them parts of a new Czech public research framework. Yet such continuity was not the same as institutional immunity. The Academy's governing bodies received the power to reorganise, merge, divide, and dissolve institutions, which meant that the transferred institutes became subjects of reform rather than protected relics of ČSAV. Continuity was therefore the precondition of restructuring, not its opposite.

The transitional leadership arrangement at the beginning of 1993 shows how cautiously the restructuring began. From 1 January to 25 February 1993, before the ordinary leadership of the Czech Academy was elected, the Committee for Managing Institutes of the former Czechoslovak Academy of Sciences acted as the Academy Council under the relevant transitional provision of Act No. 283/1992 Coll. (*Academy of Sciences of the Czech Republic, n.d.*). Jiří Velemínský, from the Institute of Experimental Botany, chaired this committee, and its members represented a wide set of institutes and disciplinary fields. This temporary arrangement was not merely a bureaucratic bridge. It kept the Academy functioning between the legal birth of AV ČR and the constituting of its normal governing bodies. The existence of such an interim committee prevented a leadership vacuum at the very moment when institutes were facing budgetary pressure, administrative transfer, and uncertainty about their future. It also shows that restructuring began with controlled provisionality rather than revolutionary administrative rupture.

The election of the first regular leadership on 25 February 1993 marked the second phase of restructuring. Rudolf Zahradník, from the J. Heyrovský Institute of Physical Chemistry, became President of the Czech Academy of Sciences, while Helena Illnerová from the Institute of Physiology and Václav Pačes from the Institute of Molecular Genetics became Vice-Presidents (*Academy of Sciences of the Czech Republic, n.d.*). This leadership was symbolically important because it connected the new Academy with internationally respected natural-science and biomedical research rather than with the compromised administrative hierarchy of the normalisation period. It also placed the presidency in the hands of a scientist whose institutional authority came from research reputation and academic standing. The Academy Council included representatives of different research fields, including philosophy, plasma physics, physics, information theory, law, biophysics, astronomy, Oriental studies, mathematics, chemistry, and other areas. This composition indicated that leadership restructuring was not only a change of names at the top. It was an attempt to create a representative executive centre for a broad research institution.

The Academy Assembly became the principal arena in which restructuring acquired democratic legitimacy. Archival description of the Academy Assembly identifies it as the supreme self-governing body of AV ČR from 1993 and notes that it consisted of directors of workplaces, elected workplace representatives, university representatives, state representatives, representatives of industry, business and banking, and distinguished domestic and foreign scientists (*Masaryk Institute and Archives of the CAS, n.d.*). The same archival description states that the Assembly adopted Academy statutes, approved annual reports, development concepts, budgets, final accounts, and approved the establishment, organisational changes, and dissolution of Academy workplaces. This institutional design mattered because the fate of institutes was not to be decided only by a ministry or by a closed circle of senior researchers. Restructuring was placed inside a self-governing forum that combined internal representation with external public and scientific presence. This gave reductions and reorganisations a stronger claim to legitimacy, even when they were painful.

The Academy Council was the executive counterpart of this Assembly-based self-government. The archival description of AV ČR records that the Academy Council, active from 1993, was the permanent executive body of the Academy, elected for four years by the Academy Assembly, and that it handled ordinary Academy affairs between sessions of the Assembly, convened Assembly meetings, submitted reports and proposals, and implemented Assembly resolutions (*Masaryk Institute and Archives of the CAS, n.d.*). The present official description similarly states that the Academy Council is the Academy's executive body and consists of elected members of the Assembly, including the President, Vice-Presidents, the President of the Science Council, and other members elected on the basis of proportional representation of research areas (*Academy of Sciences of the Czech Republic, n.d.*). This executive structure was essential for restructuring because an Assembly could authorise changes, but a Council had to manage them in practice. It had to coordinate institute directors, prepare organisational proposals, handle budgetary distribution, negotiate with state authorities, and maintain continuity between sessions. The Council therefore translated the Assembly's authority into everyday institutional management.

The restructuring of departments and institutes was inseparable from the restructuring of scientific fields into research areas and sections. An inherited academy system cannot be reorganised fairly if every institute is treated as an isolated unit. The Academy needed disciplinary and interdisciplinary groupings through which institutes could be compared, represented, funded, and evaluated. The current CAS structure still reflects this logic through three broad research areas: Mathematics, Physics, and Earth Sciences; Life and Chemical Sciences; and Humanities and Social Sciences. Within these areas, institutes are grouped into sections such as Mathematics, Physics, and Computer Science; Applied Physics; Earth Sciences; Chemical Sciences; Biological and Medical Sciences; Bio-Ecological Sciences; Social and Economic Sciences; Historical Sciences; and Humanities and Philology (*Academy of Sciences of the Czech Republic, n.d.*). The exact institutional landscape has changed since 1993, but the underlying logic was already present in the early transformation: the Academy had to convert a set of inherited workplaces into a structured system of research fields. Such grouping made leadership more accountable because members of the Academy Council could be linked to research areas rather than to purely personal networks.

The restructuring of departments was also an internal institute process. Many institutes inherited departments, laboratories, editorial groups, and technical divisions that had been organised around older state-socialist research priorities. Some departments had to be

merged because they were too small or too weak to survive as separate units. Others had to be closed because their research programmes no longer corresponded to the new Academy mission. Still others had to be strengthened because they represented internationally competitive directions or irreplaceable infrastructure. In this sense, restructuring was not only the reduction of whole institutes. It was also a reconfiguration of internal scientific maps. A surviving institute could emerge from the early 1990s smaller, more focused, and more dependent on grant competition than before. The transformation of departments therefore changed the everyday life of researchers more directly than the legal establishment of AV ČR itself.

Leadership renewal at the institute level was one of the most delicate parts of restructuring. Act No. 283/1992 Coll. created transitional continuity for directors and scientific councils, but it also required new procedures for leadership confirmation and appointment. This prevented both extremes: it avoided the immediate removal of all institute leadership, which would have caused chaos, but it also avoided indefinite continuation of ČSAV-era authority. The Act placed institute leadership within the new Academy order, where directors could be appointed, evaluated, and eventually replaced according to new rules. This was crucial because institutes were the Academy's real working units. If institute directors had remained merely inherited managers from the previous system, the democratic legitimacy of AV ČR would have been weak. Leadership renewal therefore had to occur not only in the presidency and Academy Council, but also inside workplaces.

The restructuring of leadership also involved a shift from political-administrative loyalty to scientific and managerial competence. Under state socialism, direct political control varied across fields and periods, but party approval and ideological reliability had often influenced academic careers and leadership positions. After 1989, the legitimacy of directors and senior administrators had to rest increasingly on research quality, institutional competence, international openness, and the ability to lead teams through financial and organisational uncertainty. This was not an easy cultural change. Many directors had scientific authority but limited experience with competitive funding, international evaluation, or strategic management under austerity. Others were administratively experienced but carried the symbolic burden of the old system. The Academy therefore had to create a leadership culture that was neither purely bureaucratic nor purely scholarly. It needed directors who could defend science, manage budgets, reorganise departments, support younger researchers, and represent institutes before the Academy and external partners.

The new governance structure created a more layered leadership system. The President represented the Academy as a whole and stood at the junction between academic self-government and the Czech state. The Academy Council managed current Academy affairs and coordinated executive decision-making. The Academy Assembly approved major institutional changes and gave self-governing legitimacy to restructuring. The Council for Sciences, later described as the body primarily engaged in setting Academy science policy, provided a space for scientific strategy and evaluation (*Academy of Sciences of the Czech Republic, n.d.*). Institute directors and scientific councils operated at workplace level. This layered structure made reform more complex, but also more legitimate. It prevented restructuring from becoming either personal rule by the President or fragmented self-defence by individual institutes.

The restructuring of institutes was also driven by financial compression. The Academy was financed primarily from the state budget, and its funding model combined institutional financing with target-oriented project funding selected through public competition (*Academy of Sciences of the Czech Republic, n.d.*). In the early 1990s, public financing was under severe pressure because the new Czech Republic was carrying out broad economic transformation and state-building. Institute reduction was therefore not merely a matter of scientific taste. It was also a response to a fiscal environment in which the inherited ČSAV structure could not be maintained at its previous size. Yet financial pressure alone could not determine restructuring, because the cheapest solution would not necessarily have been scientifically rational. The Academy had to decide where savings would destroy long-term capacity and where reduction would remove obsolete or duplicated structures. This made restructuring both economic and epistemic.

The restructuring also involved the formation of a more explicit evaluation culture. The Masaryk Institute and Archives identifies the Academy Appraisal Commission as a body established for evaluating the scientific activity of AV ČR workplaces, with archival materials covering the first through 4th rounds of institute evaluation, correspondence, reports, composition of field panels, and summary assessments (*Masaryk Institute and Archives of the CAS, n.d.*). This archival evidence is important because it shows that restructuring did not remain a one-time political decision of 1993. It became supported by evaluative mechanisms intended to examine institutes as scientific organisations. Evaluation created a bridge between leadership and restructuring. Leaders could not simply argue for preservation on institutional loyalty grounds; they had to respond to assessments of scientific activity. The appraisal mechanisms gradually converted the first crisis-driven reductions into a more systematic regime of institutional review.

The international audit of Czech research evaluation later confirmed that evaluation and institutional funding became central problems of Czech research governance. Arnold, Good, Ohler, Tiefenthaler, and Vermeulen's commissioned report examined the Czech research system, including the organisation of research, research strategy, budgets, human-resource management, international collaboration, and evaluation mechanisms (*Arnold et al., 2011*). The report emphasised that research quality cannot be measured only through publications, because the organisation of research, strategies, budgets, human resources, and collaboration fundamentally influence scientific performance. This broader understanding is useful for interpreting the Academy's early restructuring. The Academy was not simply cutting institutes according to output numbers. It was restructuring the organisational conditions under which future research quality would be produced.

The reorganisation of institutes also affected the boundary between basic and applied research. CAS mission statements emphasise that the Academy's primary mission is research across a broad spectrum of natural, technical, social sciences, and humanities, whether specialised or interdisciplinary, with the aim of advancing scientific knowledge internationally while taking account of Czech society and national culture (*Academy of Sciences of the Czech Republic, n.d.*). This mission placed basic research at the centre, but it did not remove applied relevance from the Academy's work. The Academy also fostered collaboration with applied research and industry. In the early 1990s, this balance was difficult because some inherited units had been connected to socialist industrial structures that were being privatised, weakened, or dismantled. Restructuring therefore required distinguishing between applied research with future public or industrial relevance and applied programmes dependent on

vanished planning mechanisms. The Academy's post-1992 structure had to remain useful to society without becoming merely an extension of short-term market demand.

The restructuring of humanities and social-science institutes carried a special political and intellectual meaning. Several fields in the humanities and social sciences had been strongly affected by ideological control, normalisation, censorship, and personnel exclusions. Their restructuring therefore could not be judged only by the criteria used for laboratories or technical institutes. It had to include the restoration of scholarly autonomy, the re-opening of topics suppressed under communism, and the creation of institutional environments for democratic historical, sociological, legal, philosophical, linguistic, and cultural research. The present CAS structure preserves a broad humanities and social-science area, including institutes of sociology, state and law, history, contemporary history, archaeology, philosophy, Czech literature, Czech language, Slavonic studies, Oriental studies, ethnology, art history, psychology, and economics (*Academy of Sciences of the Czech Republic, n.d.*). This breadth suggests that restructuring did not mean sacrificing the humanities to technocratic priorities. Rather, the Academy attempted to preserve a complete national research culture while reducing and reorganising inherited workplaces.

Natural-science and technical institutes faced different pressures. Many of them possessed strong experimental traditions, equipment, and international contacts, but they also carried expensive infrastructures and sometimes old relations with industrial or state-planning priorities. Their restructuring required decisions about laboratories, technical services, instrumentation, and research specialisation. Institutes in physics, chemistry, biology, medicine, earth sciences, mathematics, computer science, materials science, thermomechanics, plasma physics, and related fields could not be assessed only by staff numbers. Their future depended on access to equipment, international collaboration, project funding, and the ability to maintain research groups of viable size. The current list of CAS institutes demonstrates the continuing importance of these fields inside the Academy, but their survival after 1993 required consolidation, managerial adaptation, and competition for resources (*Academy of Sciences of the Czech Republic, n.d.*). The restructuring of natural and technical sciences therefore combined preservation of strong traditions with the necessity of modernisation.

The leadership composition of the first Academy Council reflected the Academy's effort to balance disciplines and institutional interests. The official list of representatives for the period from 25 February 1993 to 27 March 1997 includes Rudolf Zahradník as President, Helena Illnerová and Václav Pačes as Vice-Presidents, and members of the Presidium from philosophy, plasma physics, physics, and Charles University. Other Council members came from Czech literature, information theory and automation, state and law, biophysics, astronomy, Oriental studies, macromolecular chemistry, mathematics, experimental medicine, inorganic chemistry, and later other institutes (*Academy of Sciences of the Czech Republic, n.d.*). This disciplinary spread mattered because the restructuring of institutes could not be perceived as the victory of one scientific bloc over another. The Academy needed a leadership body able to represent the breadth of the inherited institution while making decisions that would inevitably hurt some workplaces. A diverse leadership did not eliminate conflict, but it made restructuring more defensible.

The inclusion of university figures in Academy governance also affected restructuring. The Academy's mission statement notes that researchers of Academy institutes participate in

doctoral education and teaching at universities, and that the Academy promotes international integration and cooperation with applied research and industry (*Academy of Sciences of the Czech Republic, n.d.*). This orientation was important because the post-socialist research system was no longer expected to reproduce the sharp separation between academy research and university teaching typical of the socialist model. Restructuring had to make Academy institutes more open to doctoral training, university cooperation, and shared research environments. Institute leadership therefore had to think beyond internal Academy boundaries. Directors increasingly needed to manage relations with universities, grant agencies, industry, ministries, and foreign partners. The restructuring of leadership was thus also the professionalisation of external academic relations.

The Head Office of the Academy also became part of the restructuring. The Masaryk Institute and Archives describes the Office of the Academy as an internal organisational unit fulfilling professional, economic, control, and organisational tasks as the executive apparatus of the President, Academy Council, its members, and other Academy bodies (*Masaryk Institute and Archives of the CAS, n.d.*). This administrative layer was essential because self-government requires technical support. Decisions about budgets, property, personnel, evaluations, institute documents, international relations, and internal regulations could not be handled only by elected scientists. The Office translated political and scientific decisions into administrative practice. In this sense, restructuring leadership also meant building a modern executive apparatus capable of supporting public research governance.

The archival continuity between ČSAV and AV ČR also reveals the complexity of restructuring. The Masaryk Institute and Archives lists funds for both ČSAV and AV ČR, including collections of basic documents, organisational rules, annual reports, internal regulations, Academy Assembly records, Academy Council records, Head Office documents, and institute fonds. It also records individual institutional continuities, such as the Archaeological Institute of ČSAV, Prague, becoming the Archaeological Institute of AV ČR from 1993 (*Masaryk Institute and Archives of the CAS, n.d.*). Such archival evidence is valuable because it shows restructuring as a documented administrative process rather than a simple change of name. Each institute had files, rules, annual reports, organisational structures, and material records that had to be carried forward, closed, or transformed. The archive itself became a witness to institutional reorganisation.

The restructuring of institutes also had a regional dimension. Although Prague remained the Academy's centre, many institutes and research workplaces were located in Brno, České Budějovice, Ostrava, Průhonice, Řež, Liběchov, Ondřejov, and other locations. The current institute list shows this spatial distribution across Prague and regional centres, including institutes in Brno, České Budějovice, Ostrava-Poruba, Průhonice, Řež, Liběchov, Ondřejov, and Vestec (*Academy of Sciences of the Czech Republic, n.d.*). The early restructuring therefore had to consider not only disciplinary value but also territorial scientific infrastructure. Closing or merging a regional workplace could affect not only one institute but an entire regional research environment. Preserving regional centres helped prevent the Academy from becoming a purely Prague-based learned administration. It also maintained field-specific research capacities tied to local environments, such as ecology, geology, archaeology, biology, and materials research.

The restructuring of leadership also signalled generational change, though not always in a simple chronological sense. Some senior scholars who had been marginalised under the

previous regime returned to public academic authority. Others who had continued working inside ČSAV gained new legitimacy through participation in post-1989 reform. Younger researchers also entered a more competitive environment shaped by grants, international mobility, and shorter-term employment. Leadership renewal therefore involved moral, professional, and generational elements simultaneously. The first leadership of AV ČR had to stabilise the Academy while opening space for future scientific generations. This was difficult because the Academy needed experienced directors to manage crisis, but it also needed to avoid reproducing closed senior hierarchies.

The transformation of leadership also affected the meaning of scientific councils at institute level. Under the new order, scientific councils could not function merely as formal advisory bodies. They were expected to participate in shaping institute direction, proposing leadership, assessing scientific work, and connecting departments with the wider Academy strategy. The Act and later statutes gave scientific bodies an important place within Academy governance, while the Council for Sciences contributed to the preparation and implementation of science policy. This created a multi-level scientific deliberation system. Institute councils discussed workplace-level strategy; research sections and appraisal bodies considered disciplinary quality; the Council for Sciences addressed Academy-wide scientific policy; and the Assembly took major institutional decisions. Such layering was complex, but it helped convert scientific judgement into governance.

Restructuring also changed the Academy's relationship with public accountability. Because AV ČR was financed primarily from the state budget, its internal restructuring could not remain invisible to society. The Academy had to demonstrate that it was willing to reduce weak or obsolete structures, manage public resources responsibly, and develop research with international and national relevance. The mission statement's emphasis on Czech society, national culture, doctoral education, industry cooperation, international projects, and competitive funding shows the wider public frame in which the Academy now operated (*Academy of Sciences of the Czech Republic, n.d.*). Institute restructuring therefore became part of a public argument about the usefulness of basic research. The Academy's leadership had to explain that preserving institutes was not a privilege of scientists but an investment in national knowledge capacity.

The restructuring of departments, institutes, and leadership also prepared the later transformation of Academy institutes into public research institutions. The 2006 Statutes, reflecting later legal amendments, describe the Academy as an organisational body of the Czech Republic whose activities are funded from the national budget and which establishes its institutes as public research institutions (*Academy of Sciences of the Czech Republic, 2006*). This later legal form did not appear suddenly; it developed from the restructuring logic of the early 1990s. Institutes had to become more clearly defined public research bodies, with governance, missions, evaluation, and accountability appropriate to democratic public science. The early restructuring therefore anticipated later legal modernisation. It made possible a system in which institutes were neither old state-socialist departments nor private research companies, but public research institutions with scientific autonomy and public obligations.

The post-1993 restructuring also produced a new vocabulary of leadership. Terms such as Assembly, Council, Science Council, President, institute director, research area, section, evaluation, grant agency, institutional funding, and project funding began to replace the older

language of central planning and political hierarchy. This change of vocabulary mattered because institutional language shapes institutional behaviour. A director who must think in terms of evaluation, international cooperation, grant competition, doctoral training, and public accountability leads differently from a director who mainly administers planned tasks. A Council elected through research-area representation behaves differently from a party-supervised executive. The language of reform did not automatically create perfect governance, but it opened a different institutional horizon. The Academy's restructuring was therefore also a cultural transformation of how scientific authority was imagined.

The difficult point is that restructuring always contains losses as well as gains. Departments disappeared, institutes were abolished or merged, staff left, and some research traditions were weakened or interrupted. At the same time, weaker structures were removed, stronger units were made more visible, leadership gained democratic legitimacy, and the Academy began to operate with clearer scientific priorities. Historical analysis should not romanticise this process as painless modernisation. It was a pressured transformation under fiscal and political constraints. Yet neither should it be reduced to simple austerity. The restructuring of AV ČR was a rational attempt to preserve a viable academy-based research system under conditions in which complete preservation was impossible.

Thus, the restructuring of departments, institutes, and leadership after 1992 transformed the Czech Academy of Sciences from a legally inherited institution into an operationally reconfigured public research system. The process combined temporary continuity, election of new leadership, empowerment of the Academy Assembly, executive coordination by the Academy Council, institute-level leadership renewal, disciplinary regrouping into research areas and sections, and the development of evaluation mechanisms. It reduced and reorganised inherited workplaces while preserving a broad disciplinary spectrum across the natural sciences, technical sciences, humanities, and social sciences. It also changed the meaning of leadership, moving authority away from political-administrative inheritance towards scientific competence, public accountability, research-area representation, and self-governing procedure. The restructuring was difficult because it involved closures, staff reductions, financial pressure, and conflicts over scientific value. Nevertheless, it allowed AV ČR to avoid both passive continuation of ČSAV and destructive liquidation of Czech non-university research. In this sense, organisational restructuring was the practical bridge between legal succession and the emergence of a modern democratic Academy.

3. The Transition From Planned Science to Competitive Research

The transition from planned science to competitive research was one of the deepest transformations in the early history of the Czech Academy of Sciences. The establishment of AV ČR preserved the institute-based structure inherited from the Czechoslovak Academy of Sciences, but it placed that structure into a radically different environment. Under the socialist system, scientific work had been tied to state planning, central allocation, political supervision, and long-term institutional assignments. After 1989, and especially after the creation of the Czech Republic in 1993, research institutes had to operate in a system shaped by public competition, grant evaluation, international cooperation, budgetary constraint, and the need to justify public funding through quality and relevance. This was not only a change in finance. It was a change in scientific culture. Research teams had to learn to formulate projects, compete for funds, document results, respond to peer review, and position

themselves in national and international scientific fields. The Czech Academy therefore moved from a model in which institutes largely received resources because they belonged to a central scientific system towards a model in which institutional support was combined with targeted project funding. The Academy's official mission statement later described this mixed pattern directly: basic institutional financing of institute research objectives remained, but target-oriented financing through projects and grants selected by public competition became increasingly important (*Academy of Sciences of the Czech Republic, n.d.*).

The phrase "planned science" does not mean that individual scientists under socialism lacked creativity or that all research was mechanically dictated by political authorities. Many researchers carried out serious scientific work, and some Czech institutes preserved strong international-quality traditions even under difficult ideological conditions. However, the institutional environment in which they worked was planned in the sense that resources, personnel, research priorities, and organisational structures were strongly mediated by the state and by the Academy hierarchy. Institutes were maintained as parts of a centralised scientific apparatus. Their survival was not ordinarily determined by open competition among project proposals. Their programmes often reflected state priorities, branch plans, technological needs of the socialist economy, or the political acceptability of particular research directions. The post-1992 Academy inherited this system, but it could not preserve its logic. The planned economy was disappearing, federal scientific administration had been abolished, and Czech research had to be integrated into a broader European environment where competition, peer review, publication output, and international collaboration carried increasing weight. Comparative research on science and technology systems in transition identifies the dissolution and fragmentation of socialist science and technology systems as an early stage of transformation, followed by institutional changes, competitive funding, and efforts to build new relationships among science, the economy, and politics (*Meske, 1998*).

The Czech Academy's shift towards competitive research began before the formal birth of AV ČR, but 1993 made it structurally unavoidable. The Academy entered independence after a severe reduction of public resources, institutional evaluations, and closures or mergers of workplaces. The Technology Agency's retrospective account of Czech research policy records that the 1993 state-budget environment reduced Academy expenditure by roughly one third, that the first Academy Assembly abolished 21 Academy workplaces, and that further workplaces were merged or reorganised (*Technologická agentura České republiky, 2014*). This meant that the Academy could no longer function as a protected block of inherited institutes. It had to become selective. Budget pressure alone did not create a healthy research system, but it forced the Academy to distinguish between institutional memory and scientific viability. Research capacity had to be defended by quality, not merely by historical continuity. The transition to competitive research therefore began under crisis conditions, which explains both its necessity and its harshness.

Act No. 283/1992 Coll. gave the Academy the legal framework for this new environment. The Act established the Academy, stated that it performs research through its institutes, and enabled the Academy and its institutes to conclude agreements on international cooperation in scientific activity and technological development (*Czech National Council, 1992*). These provisions preserved institutional stability, but they also opened the Academy towards a broader research space. Institutes were no longer expected to live only inside a domestic planned hierarchy. They could cooperate internationally, participate in projects, and gradually compete for resources outside the basic institutional allocation. The Act also created self-

governing bodies capable of approving budgets, distributing funds, and deciding on the establishment, merger, division, or dissolution of institutions. In this way, the legal successor to ČSAV was equipped not only to preserve research workplaces but also to reallocate resources among them. Competitive research required precisely such internal capacity for selection and adjustment.

The first mechanism of competition was institute evaluation. In the planned system, evaluation had often been embedded in administrative reporting and ideological accountability. In the post-socialist Academy, evaluation gradually became a tool for judging scientific quality, productivity, international visibility, and strategic importance. The early 1993 evaluation was still imperfect by later standards, because it relied heavily on expert judgement and did not yet use the mature international review procedures that would develop later. Nevertheless, it established a crucial principle: institutes could be reviewed as research-performing organisations, and their future could depend on quality assessments. Later studies of the Academy's transformation stress that the radical changes of the 1990s, including a steep decrease in financing, initiated reforms involving personnel reductions, new assessment procedures, plurality of financial sources, support for basic and applied research, business-sector engagement, and new forms of international collaboration (*Filáček, 2023*). The transition to competitive research therefore involved both money and judgement: institutes had to compete not only for funds, but for institutional legitimacy.

The second mechanism was targeted project funding. The Czech research system began to create grant agencies and public competitions that made project proposals, rather than institutional status alone, central to research support. Act No. 300/1992 Coll., on state support for scientific activity and technology development, established the Grant Agency and provided that it would allocate targeted funds on the basis of public competition; it also gave the Agency a special budgetary position for these purposes (*Czech National Council, 1992*). This was a fundamental break with the older funding culture. Research groups could not simply depend on their institute's place in the planned system. They increasingly had to define research questions, justify methodology, estimate costs, and persuade expert reviewers. The Grant Agency of the Czech Republic later presented its mission as support for basic research projects with high potential for world-class results and as promotion of international cooperation and effective use of state funds (*Czech Science Foundation, n.d.*). In the early 1990s, this project logic was new, demanding, and often uncomfortable, but it became one of the basic instruments of Czech post-socialist science.

The Academy itself also developed an internal grant culture. The official CAS mission statement emphasises that the Academy was the first institution in the Czech Republic to establish its own Grant Agency, which supported research projects selected through peer review involving reviewers from abroad (*Academy of Sciences of the Czech Republic, n.d.*). The separate historical page of the Grant Agency of the Academy of Sciences states that the exhibition "Looking Back at the Activities and Selected Projects of the Grant Agency of the Academy of Sciences" mapped the activities of the first grant agency existing in the Czech Republic from its establishment in 1990 until 2013, before its later termination in the context of reform of the Czech research, development, and innovation system (*Grant Agency of the Academy of Sciences of the Czech Republic, n.d.*). This internal grant system was particularly important because it introduced peer-reviewed competition before national grant mechanisms had fully matured. It also gave Academy researchers experience with proposal

writing, external review, and project-based accountability. For institutes accustomed to stable institutional allocations, this was a cultural shift.

The use of foreign reviewers had both practical and symbolic significance. Practically, it helped assess project quality against international standards and reduced the danger that grants would be distributed only through domestic networks or old institutional loyalties. Symbolically, it showed that the Academy wanted to re-enter the wider scientific world after decades of restricted international contact. The presence of foreign review also encouraged researchers to formulate projects in ways intelligible to international peers. This could be challenging for disciplines whose traditions were strongly national, linguistic, archival, or local. Yet even in the humanities and social sciences, international comparison became increasingly important. The Academy's move towards peer-reviewed grants therefore did not simply import a Western funding mechanism; it changed the imagined audience of Czech research. A project had to be meaningful not only inside an institute or national plan, but also within a wider field of scholarly judgement.

The transition to competitive research also changed the time horizon of scientific work. Planned science had often operated through institutional plans and long-term assignments, sometimes rigid and politically directed, but also relatively stable. Project-based research introduced shorter funding cycles, deadlines, progress reports, final evaluations, and the need to apply repeatedly for new support. This created flexibility, but it also increased insecurity. Researchers gained more freedom to propose their own topics, but they also had to compete for resources and justify results more frequently. Institutes gained access to additional money through national and international programmes, but they could no longer assume that institutional financing would cover all ambitions. The CAS mission statement reflects this new mixed model, noting that individual Academy institutes obtain additional financial resources through participation in national and international research programmes (*Academy of Sciences of the Czech Republic, n.d.*). The result was not the disappearance of institutional science, but its exposure to project-based pressures.

The new grant environment also changed the relationship between basic and applied research. Under the socialist system, the official language of science often connected research to economic plans, technological development, industrial branches, or state priorities. After 1993, basic research needed a new form of public justification. The Czech Science Foundation was created as an institution supporting basic scientific research, and its later profile describes support for both experienced and early-career researchers through calls for proposals since its establishment in 1993 (*Czech Science Foundation, n.d.*). This mattered because basic research was not immediately reducible to market utility. It needed competitive funding precisely because public value could not always be measured through short-term application. The transition from planned science to competitive research therefore did not mean abandoning basic research to the market. It meant defending it through peer review, project quality, and public competition.

At the same time, the Academy could not entirely detach itself from applied needs. Its mission included advancement of scientific knowledge at the international level while respecting the needs of Czech society and national culture, and it also recognised cooperation with applied research and industry (*Academy of Sciences of the Czech Republic, n.d.*). This balance was difficult. If the Academy moved too far towards immediate application, it risked losing the long-term basic-research function that justified its public institute structure. If it insisted only on

abstract autonomy, it risked criticism in a society undergoing economic transformation and demanding visible public benefit. Competitive research forced the Academy to articulate both sides more clearly. Projects had to demonstrate originality and quality, but institutes also had to explain why their research mattered for Czech society, culture, technology, health, environment, or education. This dual demand became one of the defining features of post-socialist public research.

The transition also affected research careers. In a planned institutional environment, career progression depended heavily on institute affiliation, seniority, internal hierarchy, political reliability in some periods, and access to stable posts. In a competitive research environment, success increasingly depended on publications, grants, international collaboration, mobility, language skills, and project leadership. This did not happen overnight, and older structures continued to shape opportunities. Nevertheless, the direction of change was clear. Researchers had to become more entrepreneurial in the academic sense: not necessarily commercial entrepreneurs, but authors of proposals, builders of networks, managers of small teams, and competitors for resources. For younger scientists, this could open opportunities that had been blocked by old hierarchies. For others, it created insecurity and pressure. The Academy's transformation therefore reshaped not only institutions but academic subjectivity itself: the researcher was no longer only an employee of an institute but increasingly a project-holder, applicant, collaborator, and evaluator.

The competitive turn also transformed leadership. Institute directors and department heads could no longer manage only internal plans and assigned tasks. They had to support grant applications, encourage publication, build international partnerships, manage limited institutional funds, and sometimes decide which teams had the strongest future potential. Academy leaders had to negotiate state budgets while also strengthening internal evaluation and project funding. The Academy Council and Council for Sciences became important precisely because competitive research required strategic judgement. It was not enough to distribute money according to inherited size. Funding had to be linked to research priorities, institutional assessment, and the capacity of institutes to participate in national and international programmes. The official CAS mission identifies the Council for Sciences as the body primarily engaged in setting the Academy's science policy, which indicates the importance of scientific strategy in the post-planning environment (*Academy of Sciences of the Czech Republic, n.d.*).

The transition from planned science to competitive research did not affect all disciplines in the same way. Experimental sciences often adapted more visibly to grant competition because their outputs could be linked to international journals, equipment needs, collaborative projects, and measurable results. Humanities and social sciences faced a more complex adaptation. Their research often depended on monographs, editions, archives, language resources, national history, legal analysis, cultural interpretation, and long-term scholarly projects. Competitive funding could support these fields, but poorly designed evaluation might undervalue them if it relied too heavily on natural-science publication models. The Academy's broad disciplinary mission therefore required a plural understanding of competition. Competition could not mean imposing identical criteria on molecular genetics and Czech literary history. It had to mean discipline-sensitive assessment of quality, originality, and contribution. This became a lasting challenge for AV ČR and for Czech research policy more broadly.

The shift towards competition also made internationalisation a structural necessity. Under socialism, international cooperation existed but was restricted by political barriers, institutional agreements, and the asymmetries of Cold War science. After 1989, participation in international projects, exchanges, and later European programmes became one of the main ways for Czech institutes to acquire resources, visibility, and standards. The CAS mission statement highlights joint international research projects and scientist exchanges as instruments for integrating Czech science into the international context (*Academy of Sciences of the Czech Republic, n.d.*). Competitive research rewarded those teams able to publish internationally, collaborate across borders, and enter transnational funding networks. This placed pressure on language competence, research management, mobility, and the ability to frame Czech research questions for international audiences. Internationalisation was therefore both opportunity and discipline. It helped Czech science escape provincial isolation, but it also exposed institutes to comparison with better-funded Western research systems.

The emergence of competitive research also altered the meaning of institutional funding. Institutional support did not disappear, and it could not disappear without damaging long-term basic research. The CAS mission statement explicitly describes the Academy's financing as a combination of basic institutional financing and target-oriented project or grant financing selected through public competition (*Academy of Sciences of the Czech Republic, n.d.*). This mixed model was important because project funding alone cannot sustain all necessary scientific infrastructure. Laboratories, libraries, archives, observatories, long-term datasets, language resources, collections, and technical staff require continuity beyond two- or three-year grants. However, institutional funding without evaluation can become inert. The post-1992 Academy therefore had to combine stability with competition. Its problem was not how to replace one model completely with the other, but how to make them mutually corrective.

The Czech Science Foundation represented a nationalisation of competition across institutional boundaries. Its founding legislation created a Grant Agency that could announce public competitions and provide targeted funds for research and development projects proposed by individuals or legal persons (*Czech National Council, 1992*). This meant that Academy institutes, universities, and other research organisations entered a shared funding arena. The Academy's previous privileged position as the central research complex was partly relativised. It remained powerful, but its teams now had to compete with university researchers and other organisations. This was healthy in principle because it encouraged quality beyond institutional boundaries. It also created tensions because universities and Academy institutes differed in infrastructure, teaching obligations, publication cultures, and historical funding bases. Competitive research therefore introduced not only project selection but a new relationship among research institutions.

The internal Grant Agency of AV ČR had a different but complementary role. It allowed the Academy to support promising projects within and beyond its own institutional environment and to develop grant procedures before the national system had fully consolidated. The GAAV historical page describes it as an internal body of the Academy whose mission was to distribute funds set aside from the Academy budget and possibly from other sources on the basis of public competition in research and development; it also notes that it was an open grant agency, allowing legal and physical persons meeting Czech residency or seat requirements to apply (*Grant Agency of the Academy of Sciences of the Czech Republic, n.d.*). This openness is significant because it prevented the Academy's grant system from being purely internal

patronage. It also contributed to the broader spread of competitive research culture in the Czech Republic.

The transition also changed how research results were understood. In a planned system, fulfilment of a plan, completion of assigned tasks, or production of internal reports could satisfy administrative expectations. In a competitive system, research results increasingly had to be communicated through peer-reviewed publications, conference participation, patents or applications where relevant, expert reports, public outputs, and international collaborations. The later GACR evaluation process states that the goal of project evaluation is to support scientific excellence across all fields through peer review, mutual comparison, professionalism, transparency, and independence (*Czech Science Foundation, n.d.*). Although this description reflects a more mature later system, it captures the direction of change that began in the 1990s. Science was no longer evaluated primarily as compliance with a plan, but as quality in comparison with other proposals and results.

This change created new forms of inequality inside the Academy. Teams with strong international networks, English-language publication capacity, and fields well represented in global citation systems adapted more easily. Teams working on national history, Czech language, local archives, or long-term cultural projects faced a different path. Their work could be excellent, but it required evaluation procedures capable of recognising scholarly value beyond quick international journal metrics. This problem was not unique to the Czech Republic. It appeared across countries where competitive funding systems expanded. In the Czech post-socialist context, however, it was intensified by the simultaneous need to restore humanities and social sciences after ideological distortion. Competitive research had to be introduced without damaging the very disciplines needed for democratic cultural self-understanding.

The transition from planned science to competitive research also changed the social contract between the Academy and the state. Under socialism, the Academy's status was tied to the state's ideological and developmental claims. After 1993, the Academy had to justify itself to a democratic state and to taxpayers. It could argue that basic research served long-term public interests, national culture, education, technological competence, and international reputation. But it also had to accept budget scrutiny, external evaluation, and competition for targeted funds. Filáček's later interpretation of the Academy's transformation describes a long movement from "science in society" to "responsible science for society", with institutional change, plurality of financial sources, assessment procedures, and later Strategy AV21 as parts of this development (*Filáček, 2023*). The roots of this later public-responsibility discourse were already present in the competitive turn of the early 1990s.

The new competitive environment did not automatically produce excellence. Competition can reward quality, but it can also create administrative burdens, short-termism, conservative peer review, and pressure to follow fashionable topics. The Academy had to learn how to use competition without allowing it to fragment research strategy. Long-term basic research often requires patience, continuity, and tolerance for uncertain outcomes. Project competitions tend to demand defined objectives, schedules, budgets, and deliverables. The post-1992 Academy therefore had to mediate between the long rhythm of scientific discovery and the shorter rhythm of grant administration. This mediation became one of the central tasks of institute leadership and Academy governance.

The movement from planned to competitive research also affected moral accountability. Planned science under authoritarian conditions had often blurred responsibility, because priorities could be attributed to the state, the party, or central plans. Competitive research made individual and team responsibility more visible. Researchers had to sign proposals, declare objectives, manage funds, report outcomes, and undergo evaluation. Peer review also created a professional community of judgement: scientists evaluated one another's work rather than merely responding to administrative command. This could strengthen autonomy, but it also required ethical standards and conflict-of-interest rules. The later GACR evaluation principles emphasise professionalism, transparency, independence, confidentiality, and exclusion in cases of conflict of interest (*Czech Science Foundation, n.d.*). These principles represent the institutional culture towards which Czech competitive research moved.

The Academy's transition must be placed within the wider Central and Eastern European transformation of science and technology systems. Meske's comparative analysis describes how formerly socialist countries experienced dissolution and fragmentation of old science and technology systems, institutional changes, competitive funding mechanisms, and attempts to reintegrate research with new national innovation systems (*Meske, 1998*). The Czech case fits this pattern but also has its own specificity. Unlike some systems where academy research was more radically weakened, AV ČR preserved a large institute-based public research sector. It then introduced competition inside and around that sector rather than replacing it entirely with universities or private research. The Czech transition was therefore not a simple move from state academy to market science. It was a hybrid transformation from planned institutional science to publicly funded, evaluated, competitive, and internationally connected institute-based research.

The survival of the Academy's institute structure was essential for this hybrid model. A fully market-oriented reform might have dismantled many institutes before competitive mechanisms could mature. A purely conservative reform might have preserved institutes without changing their incentives. The chosen path retained institutional continuity while introducing project competition, peer review, international cooperation, and performance expectations. This was historically prudent because Czech universities were also undergoing transformation and could not instantly absorb all high-level research capacity. The Academy's institutes therefore remained necessary, but their internal life changed. They had to seek grants, compete for evaluation outcomes, collaborate internationally, and justify their public mission. The transition to competitive research thus preserved the Academy by making it less like the old Academy.

One should also note that competitive research changed the emotional atmosphere of scientific work. For many researchers, the end of planned science meant liberation: freedom to choose topics, travel, publish internationally, contact foreign colleagues, and escape ideological supervision. For others, it meant uncertainty: unstable funding, repeated applications, staff cuts, and fear that long-term work would be sacrificed to short-term measurable outputs. Both experiences were real. The early 1990s were not simply a heroic story of modernisation. They were a period of professional anxiety and institutional experimentation. Competitive research expanded autonomy but attached it to new risks. The Academy's task was to make those risks productive rather than destructive.

The transition also affected the Academy's public image. A planned academy could easily be seen after 1989 as a remnant of the old regime, especially if it appeared to defend inherited

privileges. A competitive academy could present itself as reformed, accountable, and open to standards beyond internal hierarchy. Grant agencies, public competitions, peer review, international reviewers, and institute evaluations all helped the Academy argue that it was not merely preserving ČSAV under a new title. They showed that the Academy accepted new rules of scientific legitimacy. This public image mattered because the Academy was financed primarily from the state budget and had to defend its place among universities, ministries, private industry, and emerging research agencies. Competitive research therefore became part of the Academy's political survival strategy as well as its scientific reform.

The longer consequences of this transition became visible in later decades. CAS continued to combine institutional funding with project funding, Academy institutes participated in national and international programmes, and the Czech Science Foundation became one of the key providers of support for basic research. The CAS mission statement still presents institutional financing and target-oriented competition as complementary components of Academy funding (*Academy of Sciences of the Czech Republic, n.d.*). GACR still presents itself as a central institution for the support of basic research through calls for proposals and independent management of resources (*Czech Science Foundation, n.d.*). These later facts show that the competitive turn of the early 1990s was not temporary. It established a durable architecture of Czech research financing and evaluation.

Thus, the transition from planned science to competitive research transformed the Czech Academy of Sciences more profoundly than the legal change of name alone could have done. AV ČR preserved the institute-based research structure inherited from ČSAV, but it inserted that structure into a new environment of public competition, peer review, grant funding, institute evaluation, international cooperation, and budgetary accountability. The shift was driven by the collapse of the socialist planning framework, the creation of a democratic Czech state, severe financial pressure, and the need to reconnect Czech research with international standards. It created opportunities for autonomy, originality, and scientific renewal, but it also introduced insecurity, administrative burden, and unequal adaptation across disciplines. The Academy's success lay in avoiding both extremes: it did not abandon basic research to the market, and it did not preserve planned institutional science unchanged. Instead, it developed a mixed model in which stable public research institutes could compete for targeted funds, undergo evaluation, and participate in national and international scientific programmes. This mixed model became one of the defining characteristics of the modern Czech Academy and one of the main reasons why Czech non-university research survived the post-socialist transition as a strong public institution.

Symbolic Rebirth and Historical Self-Definition

1. AV ČR and Its Declared Historical Predecessors

The symbolic rebirth of the Czech Academy of Sciences after 1992 depended heavily on the way the new institution defined its historical ancestry. AV ČR did not present itself as a body created in an empty institutional landscape, nor did it identify itself only as the administrative

successor to the Czech part of the former Czechoslovak Academy of Sciences. Its official historical narrative deliberately reaches further back, linking the modern Academy to a long chain of Czech learned societies, national scientific institutions, research initiatives, and academy projects. This declaration of predecessors was not merely ceremonial. It helped the Academy solve a delicate legitimacy problem: how to inherit the scientific capacities of ČSAV without appearing to inherit only the socialist model of academic organisation. The answer was to place ČSAV inside a broader genealogy that began in the Enlightenment, passed through the Czech national revival, developed in the late Habsburg monarchy and the First Czechoslovak Republic, was reorganised under socialism, and was finally re-founded in democratic form after 1989. The official history states explicitly that the Czech Academy of Sciences, established on 31 December 1992, claims not only the scientific legacy of the Czechoslovak Academy of Sciences but also that of its earlier predecessors (*Academy of Sciences of the Czech Republic, n.d.*).

The oldest declared predecessor in this genealogy is the Royal Czech Society of Sciences, which existed from 1784 to 1952. The official historical overview describes it as the oldest long-lasting learned society and emphasises that it encompassed both the humanities and the natural sciences (*Academy of Sciences of the Czech Republic, n.d.*). This breadth is significant because it allowed the modern Academy to present itself not simply as a technical research organisation, but as heir to a learned tradition in which natural knowledge, historical scholarship, philology, mathematics, and public intellectual culture belonged to one institutional horizon. The Royal Czech Society was also associated with figures important to Czech learned life, including Josef Dobrovský, Gelasius Dobner, Joseph Stepling, and later František Palacký. In the Academy's self-definition, this predecessor connected AV ČR with the Enlightenment and early modern learned culture of the Czech lands. It provided historical depth, intellectual dignity, and a pre-national foundation for the modern institution. This was especially useful after 1992, because a young Czech state and a newly established Academy could present themselves as continuations of an older learned civilisation rather than merely products of post-communist institutional rearrangement.

The Royal Czech Society also gave the modern Academy a model of disciplinary plurality. Its value for AV ČR's historical memory lies not only in its age, but in its ability to embody the idea that science and scholarship were public cultural activities before they became specialised professional systems. The modern Academy's institute structure is obviously very different from an 18th- or 19th-century learned society. Yet the symbolic bridge is clear: both institutions could be described as organised spaces where knowledge production was given public authority. This matters because AV ČR, after 1992, had to justify why Czech society still needed a central non-university research institution. By invoking the Royal Czech Society, the Academy suggested that organised research and learned cooperation had long been part of Czech public life. The declared predecessor therefore functioned as historical evidence against the idea that the academy model was only a Soviet import. The modern Academy could say, in effect, that the socialist ČSAV was only one episode in a much longer story of institutionalised Czech science.

The next important element in the declared genealogy is Jan Evangelista Purkyně's academy project of 1861–1863. The official history states that Purkyně proposed, in his treatise *Academia*, the establishment of an autonomous non-university scientific institution that would associate research institutes representing the main fields of science at that time. It also notes that this idea of an interdisciplinary research institution corresponds with the concept and

structure of the present Czech Academy of Sciences (*Academy of Sciences of the Czech Republic, n.d.*). This is one of the most important symbolic statements in the Academy's self-definition. Purkyně's project allowed AV ČR to claim that its institute-based structure had a Czech intellectual precedent before the Soviet-style academy model. It linked the modern Academy not only to learned society traditions, but also to a 19th-century vision of organised research institutes outside the university. This was particularly valuable after 1992, when the very existence of a large non-university Academy could be questioned in the name of post-socialist reform.

Purkyně's importance in the Academy's declared ancestry lies in the conceptual form of his proposal. He did not merely imagine a prestigious circle of scholars. He proposed an autonomous institution connecting research institutes across fields. That distinction is crucial. A purely honorary academy would not have justified the survival of AV ČR's institute network after the end of ČSAV. Purkyně's model, as later interpreted by the Academy, made the institute-based character of AV ČR appear historically grounded in Czech scientific thought. This did not mean that the modern Academy was a direct institutional continuation of Purkyně's unrealised project. Rather, the project supplied a legitimising idea: Czech science had long imagined the need for a non-university research centre broader than any single faculty or ministry. The post-1992 Academy could therefore describe its structure as the delayed realisation, under democratic conditions, of an older national-scientific aspiration.

The late 19th-century Czech Academy of Sciences and Arts formed the next major declared predecessor. The official history records that the establishment of the Emperor Franz Joseph Czech Academy for Sciences, Literature and Arts was approved by the Bohemian Diet on 9 October 1888, authorised by Emperor Franz Joseph I on 23 January 1890, and began its activities on 18 May 1891. It was divided into four departments: philosophy, social sciences and history; natural sciences; philology; and fine arts, music and literature (*Academy of Sciences of the Czech Republic, n.d.*). This predecessor was especially important because it embodied the Czech-language and nationally self-conscious dimension of academic institution-building in the late Habsburg monarchy. The Royal Czech Society had retained a bilingual character, while patriotic Czech circles sought a purely Czech-language academy. The Czech Academy of Sciences and Arts therefore represented not only science, but cultural emancipation, linguistic self-assertion, and national scholarly representation.

The role of Josef Hlávka in this genealogy was also central. The official history notes that negotiations for the Czech Academy of Sciences and Arts were initiated by Hlávka, who pledged a major donation to the future academy, and that he became its first chairman from 1890 to 1908 (*Academy of Sciences of the Czech Republic, n.d.*). This detail matters because Hlávka represented the connection between private philanthropy, national culture, architecture, public benefaction, and institutional science. His support showed that Czech scientific institution-building was not only a matter of state power. It also drew on civic initiative, cultural patronage, and the social prestige of learning. For AV ČR after 1992, this predecessor helped broaden the image of academy legitimacy. The Academy could present itself as rooted not only in public law and state financing, but in a historical Czech tradition where science, culture, literature, and public generosity were intertwined. This was a useful symbolic counterweight to the memory of ČSAV as a state-socialist institution.

The Czech Academy of Sciences and Arts also supplied a disciplinary template that resonated with the modern Academy's breadth. Its four departments included both sciences and

humanities, as well as artistic and literary fields. The modern AV ČR is not an arts academy in the same sense, but it preserves a broad research spectrum across natural, technical, social, and human sciences. The 19th-century Academy therefore allowed the modern institution to claim that Czech academic culture had never been reducible to laboratory science alone. It included language, literature, history, philosophy, social thought, and national culture. This point was particularly important after the post-socialist transformation, when budgetary and policy pressures could easily have privileged immediately measurable or technologically useful research. By invoking the Czech Academy of Sciences and Arts, AV ČR could defend the intellectual unity of Czech science and scholarship across disciplinary boundaries.

After the foundation of independent Czechoslovakia in 1918, the predecessor narrative widened further. The official history notes that other scientific institutions were established, including the Masaryk Academy of Labour and autonomous state institutes such as the Slavonic, Oriental, and Archaeological Institutes. It also states that Czech research institutions developed robust international relationships, including affiliation with the International Union of Academies and the International Research Council (*Academy of Sciences of the Czech Republic, n.d.*). This interwar layer was important because it connected the Academy's genealogy with democratic Czechoslovak statehood and international scientific representation. For AV ČR after 1992, the First Republic offered a powerful reference point: it was associated with parliamentary democracy, civic culture, national science, and European engagement. By including interwar institutions among its predecessors, the modern Academy could frame itself as the heir of democratic Czechoslovak scientific modernisation rather than merely of socialist centralisation.

The Masaryk Academy of Labour was especially meaningful in this sequence because it represented technical, economic, and practical scientific organisation in the new republic. The official history describes it as an institution founded in 1920 to organise technical labour operations in Czechoslovakia (*Academy of Sciences of the Czech Republic, n.d.*). Its place in the Academy's declared ancestry demonstrates that AV ČR did not imagine its predecessors only as learned societies in the narrow sense. It also recognised specialised research and technical institutions as part of the lineage leading to the modern Academy. This was important because AV ČR itself functioned as a network of research institutes, many of which dealt with highly specialised scientific and technical work. The interwar predecessor narrative therefore helped connect learned representation with research infrastructure. It made the modern Academy appear as the successor to both scholarly culture and organised applied knowledge.

The autonomous state institutes of the interwar period were equally important. The Slavonic Institute, the Oriental Institute, the Archaeological Institute, and other specialised bodies represented an institutional turn from learned discussion towards professional research workplaces. The official history states that several such institutes, originally falling under the Ministry of Education, Sciences and Arts, were later transferred into the newly founded Czechoslovak Academy of Sciences in 1952–1953 (*Academy of Sciences of the Czech Republic, n.d.*). This fact is crucial for understanding AV ČR's declared predecessors. It shows that ČSAV did not create all research institutions from nothing; it absorbed and reorganised older research bodies. Therefore, when AV ČR claimed predecessors before ČSAV, it was not only making a symbolic argument. It was also recognising real institutional continuities that passed through the socialist academy. The modern Academy inherited not only ČSAV's centralised form, but also older institutes that ČSAV had incorporated.

The post-1945 layer of the predecessor narrative is particularly complex. The official history states that after 1945 several specialised departments of the Czech Academy of Sciences and Arts began to transform into scientific institutes, including the Czech Language Institute, the Nuclear Physics Institute, the Mathematical Research Institute, and the Institute for Czech Literature. It also records that seven central research institutes in biology, chemistry, physics, geology, mathematics, astronomy, and polarography were gradually built around the Scientific Research Centre founded in 1949 (*Academy of Sciences of the Czech Republic, n.d.*). These facts show that the institute-based Academy did not appear suddenly in 1953. It was prepared by post-war institutional developments that created specialised research centres before the formal foundation of ČSAV. For AV ČR, this was an important historical argument because it located institute-based research in a broader Czech and Czechoslovak process, not exclusively in communist institutional design.

The foundation of the Czechoslovak Academy of Sciences in 1952–1953 was, of course, another declared predecessor, but it was also the most problematic one. The official history explains that earlier entities and their research facilities were integrated into the newly founded ČSAV and that the Slovak Academy of Sciences with its research institutes became an autonomous part of the overarching institute (*Academy of Sciences of the Czech Republic, n.d.*). ČSAV was both a research complex and a learned society, and it became the main institutional framework for academic science in socialist Czechoslovakia. For AV ČR, ČSAV was legally and materially indispensable: the new Czech Academy was explicitly established as its Czech successor. Yet the socialist academy also carried memories of ideological control, political purges, normalisation, and centralised governance. The declared ancestry therefore had to include ČSAV without allowing ČSAV to dominate the whole genealogy. This explains why official narratives always place ČSAV among earlier and later institutions rather than presenting it as the sole origin of AV ČR.

The official Academy portrait prepared for ALLEA expressed this balance clearly. It stated that the present-day Academy continues the research traditions and mission not only of the former Czechoslovak Academy of Sciences but also of its predecessors, and it described the Royal Czech Society of Sciences, Purkyně's academy project, the Czech Academy of Sciences and Arts, interwar institutions, and ČSAV as parts of one historical sequence (*Academy of Sciences of the Czech Republic, 2008*). This wording is central to the symbolic rebirth of AV ČR. The Academy did not reject ČSAV, because that would have meant rejecting many institutes, achievements, and scientific careers. At the same time, it did not allow ČSAV to define its identity completely. It presented itself as a modern institutional heir to a plural history of Czech science.

The declared predecessors also served to distinguish two kinds of continuity: legal succession and historical inheritance. Legal succession connected AV ČR most directly with ČSAV through Act No. 283/1992 Coll., which established the Czech Academy, placed its seat in Prague, and defined it as an organisational body of the Czech Republic performing research through its institutes (*Czech National Council, 1992*). Historical inheritance, by contrast, connected AV ČR with learned societies, academy projects, philanthropic foundations, interwar research institutes, and national scientific traditions. This distinction was vital. Legal succession secured property, rights, obligations, institutes, and public status. Historical inheritance secured meaning. The former made the Academy operational; the latter made it legitimate in cultural and symbolic terms.

The 2006 Statutes of the Czech Academy of Sciences later gave this historical self-definition a formal normative expression. In the Preamble, the Academy Assembly declared that it was following an over two-hundred-year tradition of Czech scientific institutions, especially the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy of Sciences, together with the academy project written by J. E. Purkyně between 1861 and 1863 (*Academy of Sciences of the Czech Republic, 2006*). The Statutes also recognised the Academy's mission to enrich human knowledge, serve the welfare of the Czech Republic and its citizens, and function as a national research centre formed by a democratically organised network of autonomous scientific institutions. This wording shows that the declared predecessors were not only a historical list. They became part of the Academy's self-understanding as a democratic and autonomous research system.

The Statutes are particularly revealing because they connect historical continuity with constitutional freedom of scientific research. Their Preamble begins by referring to the constitutionally guaranteed freedom of scientific research and then links that freedom to the long tradition of Czech scientific institutions (*Academy of Sciences of the Czech Republic, 2006*). This sequence is important. It suggests that the Academy's historical predecessors are not honoured simply because they are old. They are honoured because they are interpreted as part of a tradition leading towards autonomous, free, and publicly responsible research. This allows AV ČR to reinterpret the past selectively. The Enlightenment society, the national academy, the interwar research bodies, and even ČSAV are all placed inside a narrative whose endpoint is democratic research autonomy. The declared predecessor is therefore not only a historical ancestor; it is also a symbolic stage in the development of scientific freedom.

The Academy's declared genealogy also helped solve the problem of national identity. AV ČR was established in a newly independent Czech Republic, but the older Czechoslovak Academy had belonged to a common Czech-Slovak state. If the new Academy claimed only ČSAV, it risked appearing as the Czech appropriation of a shared federal institution. By reaching back to specifically Czech learned bodies, such as the Royal Czech Society and the Czech Academy of Sciences and Arts, AV ČR could define a Czech institutional lineage without denying the Czechoslovak layer. This was a delicate but necessary symbolic operation. The Academy had to become Czech in the institutional sense, but it could not erase the Czechoslovak past. Its declared predecessors allowed it to situate Czechoslovakia as one historical phase in a longer Czech scientific tradition.

The genealogy also had a European dimension. The Royal Czech Society belonged to the broader Enlightenment culture of learned societies. The Czech Academy of Sciences and Arts belonged to the late 19th-century European pattern of national academies and learned institutions. The interwar Czech research institutions participated in international scientific bodies. ČSAV, despite Cold War barriers and ideological pressure, maintained areas of scientific contact and produced internationally recognised achievements. The modern AV ČR could therefore present itself as a Czech national institution with European historical depth. This mattered after 1992 because integration into European science was one of the central goals of Czech post-socialist research policy. Historical self-definition supported internationalisation by showing that Czech science had long been connected to wider European scholarly life.

The declared predecessors also allowed the Academy to include both institutional and personal memory. The official historical overview names figures such as Josef Dobrovský,

Gelasius Dobner, Joseph Stepling, František Palacký, J. E. Purkyně, Josef Hlávka, Jaroslav Heyrovský, Otto Wichterle, Eduard Čech, Václav Votruba, Vít Kárník, Vilém Laufberger, and Jan Patočka (*Academy of Sciences of the Czech Republic, n.d.*). This list is not random. It creates a gallery of scientific and intellectual authority that crosses disciplines and political periods. The modern Academy thus claims not only organisations but also lives, reputations, discoveries, and moral examples. In post-communist institutional reconstruction, such personal memory was important because legitimacy had to be restored not only through laws, but through exemplary scientific biographies.

Otto Wichterle occupied a particularly important place in this symbolic sequence. The official history notes that he became the last chairman of ČSAV after the fall of the communist regime and that the purposeful reconstruction of the research organisation began during his chairmanship from 1990 to 1992 (*Academy of Sciences of the Czech Republic, n.d.*). The ALLEA portrait similarly connects his scientific achievement and his role after the revival of democracy (*Academy of Sciences of the Czech Republic, 2008*). Wichterle therefore formed a bridge between the socialist Academy and the democratic Academy. His biography allowed AV ČR to claim continuity with the scientific creativity preserved within ČSAV while also acknowledging the need for democratic renewal. He functioned almost as a living predecessor of the new institution: not a separate organisation, but a person through whom institutional rebirth became morally intelligible.

The Learned Society of the Czech Republic also belongs to this symbolic landscape, although it was not a predecessor in the chronological sense. Act No. 283/1992 Coll. states that the Academy supports the Learned Society of the Czech Republic, a civic association contributing to the free, self-directed advancement of science, and represents it towards similar foreign scientific institutions (*Czech National Council, 1992*). The ALLEA portrait explains that the status of academicians and corresponding members of ČSAV was abolished and replaced by a civic association, the Learned Society, established on 10 May 1994 (*Academy of Sciences of the Czech Republic, 2008*). This is important because it shows how AV ČR reorganised the learned-society element of its heritage. The modern Academy kept the research-institute complex, while the honourific learned function was reconstituted in a civic form. This helped the Academy distance itself from the old socialist hierarchy of academy membership while preserving a space for learned distinction.

The declared predecessors also created a narrative of rupture and continuity at the same time. The Royal Czech Society, Purkyně's proposal, the Czech Academy of Sciences and Arts, interwar research institutes, ČSAV, and AV ČR were very different institutions. They operated under the Habsburg monarchy, the First Czechoslovak Republic, the post-war transition, state socialism, and democratic Czech statehood. Their legal forms, languages, disciplinary structures, and political environments differed profoundly. Yet AV ČR's self-definition emphasises a continuous mission: organised research, learned cooperation, national scientific representation, interdisciplinary inquiry, and public service through knowledge. This narrative does not deny historical breaks. Rather, it interprets breaks as moments through which a deeper scientific tradition survived, changed, and reappeared. Such a narrative was especially valuable after 1992, when the Academy needed to appear both new and old.

The risk of such genealogical self-definition is that it can smooth over tensions. The Royal Czech Society was not the same kind of institution as AV ČR. Purkyně's project was a proposal, not a fully realised predecessor. The Czech Academy of Sciences and Arts was a learned

society with publication and scholarship functions, not a modern research-institute network. ČSAV was created under a totalitarian regime and reorganised science through centralised power. The modern Academy's declared genealogy therefore contains a degree of retrospective construction. But this does not make it false or useless. Institutional identities are always built by selecting meaningful continuities from a complicated past. The important point is that AV ČR used this genealogy to broaden, not narrow, its identity. It did not pretend that the past was simple; it arranged the past into a lineage capable of supporting democratic renewal.

The declared predecessors also helped the Academy defend the unity of science and scholarship. The long line from the Royal Czech Society to AV ČR includes philology, history, mathematics, astronomy, natural sciences, literature, fine arts, technology, archaeology, Oriental studies, Slavonic studies, physics, chemistry, biology, medicine, social sciences, and philosophy. This breadth mattered because the post-1992 Academy faced pressure to prove its usefulness under conditions of economic reform. A narrow utilitarian argument might have privileged only immediately applicable research. The historical genealogy reminded society that Czech scientific culture had always included both knowledge of nature and knowledge of culture. It legitimised the Academy's broad disciplinary spectrum as a historical inheritance rather than an administrative excess. This was particularly important for the survival of humanities and social sciences inside AV ČR.

The predecessor narrative also supported the Academy's claim to be a national research centre. The Statutes describe the Academy as a democratically organised network of autonomous scientific institutions playing an irreplaceable role in research, development, and education in the Czech Republic (*Academy of Sciences of the Czech Republic, 2006*). This is a strong institutional claim, and it requires historical justification. By declaring predecessors across more than two centuries, AV ČR could argue that Czech society had repeatedly created institutions to concentrate, represent, and support scientific work. The modern Academy was therefore not asking for a privilege without precedent. It was continuing a public function that had taken different forms across Czech history. The declared predecessors made the Academy's national role historically plausible.

This historical self-definition was also a way of rebalancing the memory of 1953. The foundation of ČSAV could be interpreted as the moment when older learned societies and scientific institutions were dissolved or absorbed into a socialist academic structure. If that were the only memory, the Academy's institutional continuity would appear compromised from the beginning. By recalling that earlier institutions and research facilities were transferred into ČSAV, AV ČR could interpret the socialist Academy not only as an instrument of rupture, but also as a container of older scientific capacities (*Academy of Sciences of the Czech Republic, n.d.*). This was a subtle but important reinterpretation. It allowed the modern Academy to reclaim what had been absorbed by ČSAV without defending the political conditions of absorption. In other words, AV ČR could say that the scientific heritage inside ČSAV was older and broader than ČSAV itself.

The declared predecessors therefore gave AV ČR a complex institutional identity. It was the legal successor of ČSAV, the heir of the Royal Czech Society of Sciences, the intellectual relative of Purkyně's academy project, the continuation of the Czech Academy of Sciences and Arts, the beneficiary of interwar Czechoslovak research institutions, and the democratic re-founder of academy-based science after 1989. This identity was necessarily layered. It could

not be reduced to a single founding date. The year 1992 marked legal establishment, 1953 marked socialist academy formation, 1890 marked Czech national academy foundation, 1784 marked the long learned-society tradition, and 1861–1863 marked the conceptual anticipation of an autonomous non-university research institution. The modern Academy's symbolic strength lay precisely in the ability to hold these dates together without confusing them.

Thus, AV ČR's declared historical predecessors were not decorative references attached to a newly established institution, but the foundation of its symbolic rebirth after the dissolution of Czechoslovakia. By claiming the Royal Czech Society of Sciences, Purkyně's academy project, the Czech Academy of Sciences and Arts, interwar research bodies, specialised state institutes, ČSAV, and the post-1989 reform legacy, the Czech Academy created a genealogy that legitimised both continuity and transformation. This genealogy allowed the Academy to preserve the scientific capacities inherited from ČSAV while escaping the narrow identity of a socialist successor body. It grounded the institute-based model in older Czech intellectual traditions, defended the unity of natural sciences, humanities, social sciences, and technical research, and connected the modern Academy with democratic public service and European scientific culture. The declared predecessors therefore performed essential institutional work. They transformed succession into heritage, heritage into legitimacy, and legitimacy into a historical argument for the Academy's continuing role in Czech science and society.

2. The Role of History in Legitimising the Modern Academy

History played a constitutive role in legitimising the modern Czech Academy of Sciences. AV ČR was created by law, financed from the state budget, and organised through institutes, councils, assemblies, and statutes, but these legal and administrative forms alone could not fully explain why the institution deserved to exist after the fall of communism and the dissolution of Czechoslovakia. The Academy needed a historical argument strong enough to answer several doubts at once. It had to show that it was not merely a renamed remnant of the socialist Czechoslovak Academy of Sciences. It had to show that a large non-university research organisation was not simply an imported Soviet institutional model. It had to show that Czech science possessed a long public tradition that reached deeper than the political order of 1948–1989. It also had to show that continuity with ČSAV could be accepted without preserving the authoritarian logic of ČSAV. In this situation, history became one of the Academy's most important sources of legitimacy. The official historical overview states that the Czechoslovak Academy of Sciences ceased to exist on 31 December 1992 and that the Czech Academy of Sciences was established on the same date, claiming not only the scientific legacy of ČSAV but also the legacy of earlier predecessors (*Academy of Sciences of the Czech Republic, n.d.*).

This claim was carefully constructed because the Academy's immediate legal predecessor was politically ambiguous. ČSAV had preserved and developed real scientific capacities, and many of its institutes contained serious research communities, valuable infrastructure, and internationally recognised achievements. Yet ČSAV had also been created and governed within a state-socialist system marked by ideological control, centralisation, political purges, and the subordination of scholarship to official doctrine in many fields. If AV ČR had defined itself only as the Czech successor to ČSAV, its legitimacy would have remained too closely tied to the socialist institutional order. If it had denied ČSAV completely, it would have undermined its own legal and material foundation, because its institutes, staff, collections, laboratories, and

archives largely came through the ČSAV structure. Historical self-definition solved this dilemma by distinguishing scientific inheritance from political inheritance. The Academy could inherit the research capacities preserved inside ČSAV while interpreting them as part of a longer Czech tradition of organised science. This distinction made it possible to transform legal succession into cultural legitimacy.

The Academy's use of history therefore involved both inclusion and displacement. ČSAV was included as an indispensable predecessor, but it was displaced from the position of sole origin. The official narrative placed it between older learned societies, 19th-century academy projects, interwar research institutions, post-war scientific institutes, and the democratic reconstruction after 1989. This ordering changed the meaning of succession. AV ČR was not simply "after ČSAV"; it was after the Royal Czech Society of Sciences, after Purkyně's academy project, after the Czech Academy of Sciences and Arts, after the Masaryk Academy of Labour, after specialised interwar institutes, after ČSAV, and after the post-1989 reform of Czech scientific life. The result was a layered genealogy rather than a single-line administrative succession. Such layering gave the modern Academy a deeper historical identity and helped free it from the symbolic burden of having been born only from the socialist academy model. The official CAS history explicitly names older institutions and projects as parts of this longer line, including the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, Purkyně's *Academia*, and interwar research institutes (*Academy of Sciences of the Czech Republic, n.d.*).

The Royal Czech Society of Sciences played a particularly important role in this legitimising history. Founded in 1784, it allowed the Academy to anchor Czech organised science in the Enlightenment and in the early modern learned culture of the Czech lands. This gave AV ČR a chronological depth that reached far beyond both Czechoslovakia and communism. The Royal Czech Society also mattered because it encompassed both the humanities and the natural sciences, thereby supporting the modern Academy's claim to disciplinary breadth. In a post-socialist context, where public funding of large research institutions could be questioned, this older learned tradition suggested that Czech society had long recognised knowledge as a public good. The Royal Czech Society made the Academy's existence appear not as an administrative accident of the 20th century, but as part of a durable cultural pattern. It also allowed the modern Academy to present itself as heir to a learned community that preceded modern nationalism, socialism, and the contemporary Czech state. This was a powerful legitimising resource because it grounded AV ČR in a civilisational and scholarly continuity rather than only in state policy.

The reference to Jan Evangelista Purkyně's academy project gave the modern Academy a different kind of historical justification. Purkyně's 19th-century proposal for an autonomous non-university institution associating research institutes was especially useful because it anticipated the structural principle of the modern Academy. The official history states that Purkyně's *Academia* proposed an autonomous non-university scientific institution composed of research institutes representing the main fields of science, and that this idea corresponds in certain respects with the concept and structure of the present Czech Academy (*Academy of Sciences of the Czech Republic, n.d.*). This connection was strategically important. A common criticism of the academy model in post-socialist countries was that institute-based academies were products of Soviet institutional design. By invoking Purkyně, AV ČR could argue that the idea of a non-university research centre had Czech intellectual roots. The legitimacy of the

institute model was therefore shifted backwards, away from the Cold War and towards 19th-century Czech scientific imagination.

The Czech Academy of Sciences and Arts supplied another legitimising layer. Its foundation in the late 19th century represented Czech-language scientific and cultural self-assertion inside the Habsburg monarchy. In the modern Academy's memory, it showed that institutional science in the Czech lands was inseparable from language, culture, national scholarship, and public benefaction. Josef Hlávka's role as patron and first chairman connected science with civic generosity and national cultural responsibility. This was useful for AV ČR because it broadened the image of science beyond laboratories and state budgets. It showed that Czech academic institutions had historically been built not only by governments, but also by civic ambition, philanthropy, cultural leadership, and the desire to create a national scholarly public. The Czech Academy of Sciences and Arts therefore legitimised AV ČR as a bearer of cultural as well as scientific continuity. It also helped defend the place of humanities and social sciences in the modern Academy.

The interwar period gave the Academy a democratic and European reference point. The First Czechoslovak Republic represented, in Czech historical memory, a period of parliamentary democracy, civic modernisation, and international cultural orientation. By declaring interwar scientific institutions as part of its ancestry, AV ČR could associate itself with democratic Czechoslovak science rather than only with socialist Czechoslovak science. The official history mentions the Masaryk Academy of Labour and autonomous state institutes such as the Slavonic, Oriental, and Archaeological Institutes, and it also notes the international connections of Czech research institutions in this period (*Academy of Sciences of the Czech Republic, n.d.*). This interwar layer mattered after 1992 because the newly independent Czech Republic often looked to the First Republic as a historical source of democratic legitimacy. The Academy's own historical narrative could therefore parallel the broader state narrative: post-communist Czech democracy was not an entirely new invention, but a renewal of interrupted democratic traditions.

The post-war and early socialist layers of history were more difficult to use, but they were indispensable. The official historical overview records that after 1945 several specialised departments of the Czech Academy of Sciences and Arts developed into scientific institutes, including the Czech Language Institute, the Nuclear Physics Institute, the Mathematical Research Institute, and the Institute for Czech Literature. It also states that central research institutes in biology, chemistry, physics, geology, mathematics, astronomy, and polarography were built around the Scientific Research Centre established in 1949 (*Academy of Sciences of the Czech Republic, n.d.*). These facts helped the modern Academy show that institute-based research had been forming even before the formal creation of ČSAV. This was a crucial legitimising argument. It meant that the institute network was not simply imposed by the communist academy after 1953. Rather, ČSAV had absorbed and reorganised research institutions that already possessed scientific substance. AV ČR could therefore defend the continuity of institutes without defending the political framework that later governed them.

The official Statutes of the Czech Academy of Sciences later gave this historical argument normative force. The Preamble refers to the constitutionally guaranteed freedom of scientific research and to an over two-hundred-year tradition of Czech scientific institutions, especially the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, the Czechoslovak Academy of Sciences, and Purkyně's academy project (*Academy of Sciences of*

the Czech Republic, 2006). This is one of the clearest examples of history functioning as institutional legitimation. The Preamble does not present the past as decorative memory. It places the Academy's contemporary mission under the authority of scientific freedom and historical continuity. In other words, the modern Academy's legitimacy is said to arise from both constitutional democracy and the inherited tradition of Czech organised science. These two sources support one another: freedom gives history a democratic meaning, and history gives freedom an institutional depth.

The Statutes also connect this historical continuity with the Academy's public mission. They state that the Academy is engaged through its institutes in research across natural, technical, social, and human sciences, pursues advancement of knowledge at the international level, educates researchers, and applies the results of its work for education, culture, competitiveness, and the solution of current societal problems (*Academy of Sciences of the Czech Republic, 2006*). This formulation turns history into a mandate for public service. The Academy is not legitimate merely because it is old or because its predecessors were prestigious. It is legitimate because it carries a historically formed responsibility to produce knowledge for society. The past therefore supports present usefulness, not nostalgia. The modern Academy's declared historical depth becomes credible only when joined to research quality, education, public culture, and social problem-solving.

History also helped AV ČR legitimate its status as a non-university research institution. In the post-socialist period, it was possible to ask why research should remain concentrated in a separate Academy rather than be transferred primarily to universities. The Academy's historical narrative answered this by showing that non-university organised science had older Czech precedents. Purkyně's academy project, the interwar specialised institutes, the post-war research centres, and the institute complex of ČSAV all suggested that Czech science had repeatedly required institutional forms beyond the university. This did not diminish universities. Rather, it justified a plural research system in which universities and Academy institutes could coexist and cooperate. The official CAS mission still defines the Academy as a complex of public research institutions and notes its role in doctoral education, university teaching, international projects, and cooperation with applied research and industry (*Academy of Sciences of the Czech Republic, n.d.*). History therefore legitimised the Academy not as a rival to universities, but as a complementary research pillar.

The legitimising role of history was also connected with institutional memory after trauma. Czech science had experienced several ruptures: the Nazi occupation, the communist takeover, the Stalinist reorganisation of institutions, the post-1968 normalisation purges, and the post-1989 transformation. A simple narrative of uninterrupted progress would have been historically false. The Academy's more subtle narrative emphasised continuity through rupture. It acknowledged that institutions were dissolved, absorbed, reorganised, and re-founded, but it also suggested that Czech scientific life repeatedly reconstructed itself. This made AV ČR appear as the latest form of a resilient tradition. Such a narrative is typical of institutions emerging from political disruption: they need to show that they survived history without denying history's violence. In this sense, the Academy's history functioned not only as prestige, but as repair. It helped restore a damaged academic identity after decades of ideological distortion.

This repair was especially important in the humanities and social sciences. Fields such as philosophy, sociology, contemporary history, law, and certain areas of cultural studies had

been deeply affected by political supervision, censorship, and personnel exclusions. To legitimise the modern Academy, it was not enough to celebrate continuity in physics, chemistry, or biology. The Academy also had to show that Czech scholarship could recover disciplines whose autonomy had been compromised or broken. Historical self-definition supported this recovery by connecting contemporary humanities institutes to older scholarly traditions before normalisation and before communist ideological control. It also gave institutional recognition to the memory of suppressed scholars and research directions. The modern Academy's legitimacy therefore depended partly on its capacity to make history a form of scholarly rehabilitation. The past was not only an archive; it was a source of moral correction.

The Academy's historical narrative also legitimised disciplinary breadth. The long line from the Royal Czech Society to AV ČR included philology, history, mathematics, natural sciences, fine arts, technology, archaeology, Oriental studies, Slavonic studies, polarography, biology, physics, chemistry, sociology, philosophy, and other fields. This breadth defended the Academy against narrow utilitarian interpretations of research. In the early 1990s, Czech public policy was strongly influenced by economic transformation, budgetary restraint, and market reform. Under such conditions, research without immediate commercial effect could appear vulnerable. Historical self-definition reminded society that Czech scientific institutions had always included the study of language, history, culture, nature, technology, and society together. The modern Academy could therefore argue that its broad structure was not an inefficient remnant, but a historically justified form of national knowledge capacity.

History also helped the Academy frame internationalisation as a return rather than a novelty. The interwar research institutions had belonged to international scientific networks, and older Czech learned societies participated in European learned culture. After 1989, Czech science urgently needed to reconnect with Western and global research communities. The Academy's official mission emphasises international projects and exchanges as instruments of integration into the international context (*Academy of Sciences of the Czech Republic, n.d.*). By invoking earlier international traditions, AV ČR could present post-socialist internationalisation not as a break with national science, but as a restoration of its natural European orientation. This was an important rhetorical and institutional move. It prevented national historical memory from becoming provincial. The Academy's history legitimised openness rather than closure.

The legitimising use of history also involved the careful management of names and dates. The modern Academy's legal beginning was 1992, its operational beginning was 1993, its direct predecessor was ČSAV from 1953, its Czech national-academic predecessor was the Czech Academy of Sciences and Arts from 1890–1891, its learned-society predecessor was the Royal Czech Society from 1784, and its conceptual non-university predecessor was Purkyně's project from 1861–1863. These dates created a symbolic chronology. They allowed AV ČR to say that 1992 was not the beginning of Czech science, but the democratic re-foundation of a much older institutional tradition. This chronology also made the Academy's modernity more persuasive. A modern institution looks less fragile when it can present itself as the latest stage in a long sequence of adaptation. History thus gave AV ČR temporal authority.

At the same time, this use of history required selectivity. Every institutional genealogy selects some predecessors and gives them more meaning than others. AV ČR's narrative highlights institutions that support the ideals of learned autonomy, national culture, interdisciplinary

breadth, public research, and democratic renewal. It says less about institutional conflicts, exclusions, bureaucratic compromises, failed projects, or the political violence through which some earlier bodies were dissolved or absorbed. This selectivity is not necessarily dishonest. It is part of the way institutions build usable histories. However, a critical historical account must recognise that legitimising history is never a neutral catalogue. It is an interpretative construction that organises the past in order to support the present. The modern Academy's genealogy is convincing because it is based on real predecessors, but it is still a deliberate arrangement of memory.

Theoretical studies of collective memory help clarify this point. Institutions often depend on what may be called organised memory: a structured relationship to the past that allows communities to explain themselves, transmit values, and legitimise authority. Hobsbawm and Ranger's concept of "invented traditions" is relevant here not because AV ČR's predecessors were invented, but because modern institutions often formalise selected continuities in order to stabilise identity (*Hobsbawm & Ranger, 1983*). Nora's idea of sites of memory is also useful because academies, statutes, anniversaries, portraits, archives, and official histories become places where institutional memory is preserved and performed (*Nora, 1989*). AV ČR's declared predecessors function in this way. They are not passive historical facts; they are active memory sites through which the Academy narrates its place in Czech science.

The Academy's use of history also made the transition from ČSAV to AV ČR more publicly understandable. Legal succession is difficult for the wider public to interpret. The transfer of property, institutes, rights, obligations, and budget chapters does not create emotional or cultural legitimacy by itself. Historical genealogy does. It tells a story of Czech science that ordinary educated citizens can recognise: Enlightenment learning, national revival, Czech-language scholarship, the First Republic, post-war research, communist distortion, democratic renewal. This story allowed the Academy to present itself in terms broader than institutional self-interest. It became part of Czech cultural memory. That mattered because public research institutions depend not only on laws and budgets, but also on social trust.

The legitimising role of history was also visible in the Academy's relation to archives. The preservation of records of ČSAV and AV ČR, including basic documents, assembly records, council records, institute funds, and historical materials, made institutional memory administratively and scholarly accessible. The Masaryk Institute and Archives of the Czech Academy of Sciences describes fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences, including documents of the Academy Assembly, Academy Council, Office of the Academy, evaluation bodies, and individual institutes (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). Archives are not merely repositories for historians. They stabilise institutional identity by preserving evidence of continuity, change, conflict, and decision-making. In the Academy's case, archival continuity helped transform the post-1992 transition into a documented historical process rather than a vague memory of reform.

History also legitimised the Academy by showing that science had repeatedly served Czech public life beyond narrow political regimes. The Royal Czech Society contributed to learned culture, the Czech Academy of Sciences and Arts supported national scholarship and literature, interwar institutes contributed to state-building and international representation, ČSAV preserved and developed research capacity even under ideological constraint, and AV ČR redefined that capacity under democratic conditions. This long sequence made the

Academy's public funding appear historically grounded. The state was not financing an arbitrary corporation of scholars. It was supporting a public research institution whose predecessors had contributed to education, culture, scientific discovery, technical capacity, and national self-understanding across generations. The Academy's current mission, which links research with education, culture, competitiveness, and current societal problems, continues this logic (*Academy of Sciences of the Czech Republic, 2006*).

The history of predecessors also helped AV ČR navigate the tension between national and universal science. On one hand, the Academy was a Czech institution, financed by the Czech state and responsible to Czech society. On the other hand, science claims universal validity and depends on international communication. The Academy's genealogy allowed both dimensions to coexist. The Czech Academy of Sciences and Arts and the interwar institutes expressed national scholarly self-organisation, while older learned societies and international affiliations connected Czech science to European and global knowledge. The modern Academy could therefore present national responsibility and international excellence as historically compatible. This was crucial after 1992, when the Czech Republic was both consolidating statehood and seeking European integration.

History also legitimised the Academy by helping to redefine autonomy. Under socialism, institutional autonomy had been limited by party-state power. After 1989, autonomy had to be reconstructed, but not as isolation from society. The Statutes connect the freedom of scientific research with public service, education, culture, competitiveness, and societal problem-solving (*Academy of Sciences of the Czech Republic, 2006*). This connection is historically meaningful. The Academy's predecessors were not imagined as private enclaves of scholarship; they were public institutions or public-minded learned bodies. AV ČR could therefore define autonomy as the condition for serving society through independent knowledge, not as withdrawal from responsibility. This understanding of autonomy became central to the modern Academy's legitimacy.

The post-1992 Academy also used history to legitimate institutional reform itself. Reform could have been seen as a betrayal of continuity, especially by researchers attached to inherited institutes. Conversely, continuity could have been seen as resistance to reform by political critics. Historical self-definition allowed the Academy to present reform as part of continuity. Czech scientific institutions had changed repeatedly: learned societies became academies, departments became institutes, autonomous bodies were absorbed into ČSAV, ČSAV was transformed into AV ČR, and the Academy's governance became democratic. This sequence suggested that institutional change was not the opposite of tradition. It was the way tradition survived. Such a view helped the Academy defend restructuring, evaluation, and new governance without appearing to abandon its heritage.

The role of history in legitimisation was therefore dynamic rather than conservative. It did not simply protect the Academy from change. It helped make change intelligible. By placing AV ČR in a long historical sequence, the Academy could argue that it had both the right and the duty to transform itself. The past provided authority, but it also imposed responsibility. If AV ČR was heir to more than two centuries of Czech organised science, then it had to be worthy of that inheritance. It had to maintain quality, autonomy, disciplinary breadth, public service, and international openness. History was thus not only a defence against criticism; it was a standard against which the modern Academy could be judged.

Thus, history legitimised the modern Czech Academy of Sciences by transforming legal succession into cultural, scientific, and democratic continuity. AV ČR used history to show that it was not merely the Czech remnant of ČSAV, but the contemporary form of a much longer Czech tradition of organised scholarship and research. This tradition included the Royal Czech Society of Sciences, Purkyně's academy project, the Czech Academy of Sciences and Arts, interwar research institutions, post-war scientific institutes, ČSAV, and the post-1989 democratic reconstruction of academic life. Through this genealogy, the Academy could preserve the scientific achievements and infrastructure inherited from ČSAV while distancing itself from the ideological and administrative order of state socialism. History also helped legitimate the Academy's institute-based structure, disciplinary breadth, non-university status, public funding, international orientation, and commitment to scientific freedom. In this sense, history was not a passive background to the establishment of AV ČR. It was one of the main instruments through which the Academy explained why it could be both an heir and a new democratic institution.

3. From Socialist Academy to Democratic Research Institution

The transformation from the socialist Czechoslovak Academy of Sciences to the democratic Czech Academy of Sciences was not a clean institutional break, but a carefully managed re-foundation. The new Academy did not emerge by abolishing the entire research inheritance of ČSAV, nor did it simply preserve ČSAV under a different national name. It had to carry forward laboratories, libraries, archives, institutes, research schools, international contacts, and professional communities that had been accumulated over decades, while also rejecting the political and administrative logic through which much of that accumulation had been governed. This is why the history of AV ČR after 1992 must be understood as a transformation of form, legitimacy, and mission rather than as a simple replacement of one organisation by another. The socialist Academy had been part of a centralised state system, while the democratic Academy had to justify itself as a public research institution in a plural society. The old Academy had claimed authority from its position inside the state-socialist scientific order, whereas the new Academy had to claim authority from law, self-government, research quality, public accountability, and international recognition. The official history of the Academy states that ČSAV ceased to exist on 31 December 1992 and that AV ČR was established at the same threshold, claiming both the legacy of ČSAV and the legacy of earlier scientific predecessors (*Academy of Sciences of the Czech Republic, n.d.*).

The socialist Academy had itself been an ambiguous institution. It was created within a political regime that subordinated much of public life to the Communist Party, and it operated inside a planned economy and an ideological state. Yet it also contained serious science, internationally significant achievements, long-term research infrastructures, and scholars who preserved intellectual standards even under pressure. The Academy's later official portrait recalls internationally recognised achievements connected with ČSAV, including the Nobel Prize awarded to Jaroslav Heyrovský and the scientific reputation of Otto Wichterle, while also acknowledging the post-1989 need to reconstruct academic life after ideological pressure (*Academy of Sciences of the Czech Republic, 2008*). This duality matters because the democratic Academy could not build legitimacy by rejecting all of ČSAV as politically contaminated. Such a rejection would have destroyed the very scientific substance that made Czech non-university research viable. At the same time, AV ČR could not treat ČSAV as an

unproblematic predecessor, because democratic science required a different moral and institutional foundation. The transformation therefore required a distinction between scientific inheritance and political inheritance.

The first step in this distinction was legal. Act No. 283/1992 Coll. established the Czech Academy of Sciences, fixed its seat in Prague, defined it as an organisational body of the Czech Republic, and stated that its activities were financed by the Czech state budget (*Czech National Council, 1992*). The Act also stated that the Academy performs research through its institutes and that the Academy and its institutes may conclude agreements on international cooperation in scientific activity and technology development (*Czech National Council, 1992*). These provisions gave the new Academy a public-law identity and ensured that the institute-based research system would not be dissolved in the immediate aftermath of the federation's disappearance. Yet the same legal framework also placed the Academy in the constitutional world of the Czech Republic rather than in the political world of state socialism. The Academy remained public, but its publicness was no longer tied to socialist central planning. It was now tied to democratic law, state-budget accountability, and institutional self-government.

The second step was governance. The democratic Academy needed institutions of internal representation because a research organisation cannot be legitimate only by receiving state funds and preserving old institutes. The Statutes later defined the Academy Assembly as the supreme self-governing body, composed of institute directors, elected representatives of institute researchers, representatives of universities, distinguished domestic and foreign scientists, and other external representatives (*Academy of Sciences of the Czech Republic, 2006*). The Assembly had authority over budgets, fund distribution, establishment, mergers, integrations, splitting and dissolution of institutes, the appointment proposal for the President, and the election or recall of important Academy bodies (*Academy of Sciences of the Czech Republic, 2006*). This was a decisive departure from the older culture of central command. The Academy was not to be governed as a closed administrative hierarchy. Its legitimacy was to arise from representation, voting, deliberation, recorded decisions, and the participation of scientific and public actors beyond the internal apparatus.

The Academy Council and the Council for Sciences reinforced this new order. The Council was defined as the elected executive body of the Academy, accountable to the Assembly and responsible for day-to-day activity, budget proposals, annual reports, and implementation of Assembly resolutions (*Academy of Sciences of the Czech Republic, 2006*). The Council for Sciences was defined as an elected policy body and permanent advisory body concerned with the formulation and implementation of Academy research policy, including participation by institute representatives, university representatives, other research institutions, and distinguished foreign scientists (*Academy of Sciences of the Czech Republic, 2006*). These bodies translated democratic self-government into practical scientific administration. The result was not direct democracy in every research decision, but a layered system in which executive power, scientific policy, disciplinary representation, and institutional accountability were separated and connected. This was essential because a democratic research institution must be able to govern itself without reproducing either bureaucratic centralism or fragmented institute corporatism.

The presidency of the Academy also changed its meaning in the democratic framework. Under the Statutes, the President is appointed and recalled by the President of the Czech Republic from among Assembly members, upon the proposal of the Assembly, after government

discussion; the term is four years, with a maximum of two successive terms (*Academy of Sciences of the Czech Republic, 2006*). This procedure embodies the hybrid nature of AV ČR. The Academy is a public institution of the Czech Republic, but its leadership is not simply imposed by government administration. The academic community proposes the President through its supreme body, and the state confirms the appointment through constitutional procedure. This arrangement replaced political dependence with public recognition and internal legitimacy. It also made the President not only an administrator, but a mediator between science, state, institutes, society, and international partners.

The movement from socialist Academy to democratic research institution also required a change in the meaning of institutes. Under ČSAV, institutes had been elements of a centralised academic structure shaped by the political economy of state socialism. Under AV ČR, they became the working units of a public research institution whose legitimacy depended on scientific quality, international cooperation, public usefulness, and institutional accountability. The Act on the Academy already stated that the Academy performs research through its institutes, and later legal development clarified the position of institutes as public research institutions (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, 2008*). This shift did not abolish the institute-based model. On the contrary, it preserved it. But it changed the conditions under which institutes had to justify their existence. They could no longer rely only on inherited status; they had to operate within evaluation, grant competition, public financing, and strategic research policy.

This transformation was especially visible in the separation between the Academy as a research institution and the learned-society function. The old ČSAV had combined research institutes with the prestige hierarchy of academy membership. After 1989, that model was modified. The later Academy portrait notes that the status of academicians and corresponding members at ČSAV was abolished and replaced by the Learned Society of the Czech Republic, established in 1994 as a civic association (*Academy of Sciences of the Czech Republic, 2008*). This change was symbolically important because it weakened the old honourific hierarchy associated with socialist academy structures. AV ČR could continue as a public research organisation, while learned distinction and scholarly fellowship were placed in a freer civic form. The separation helped the new Academy avoid reproducing the full institutional culture of ČSAV. It also clarified that the modern Academy's main identity lay in research performance, not in academic rank.

The transition also required a new funding culture. In the socialist system, research was embedded in state planning and institutional allocation. In the democratic system, the Academy continued to need institutional support because basic research, archives, laboratories, collections, and long-term infrastructures cannot survive only through short project cycles. Yet institutional funding was increasingly supplemented by targeted support, grant competition, project evaluation, and plural financial sources. Filáček's analysis describes the Academy's transformation as a multi-stage process that produced institutional changes, plurality of financial sources, new methodologies and procedures of science assessment, and eventually the programme "Strategy CAS21 – Top Research in the Public Interest" (*Filáček, 2023*). This longer trajectory shows that the democratic Academy did not merely survive the early 1990s. It gradually developed a new model of responsible public research. The move from planned science to evaluated and competitive research became one of the main ways in which AV ČR distinguished itself from the socialist Academy.

Evaluation was therefore a democratic instrument, not only a managerial technique. The new Academy needed to prove that it could assess its inherited institutes and research capacities according to scientific quality and public responsibility. Cidlinská and Linková note that the first internal research assessment after 1989 served both to rectify past wrongs and to assess quality, and that weak institutes and departments were eliminated during the transformation (*Cidlinská & Linková, 2015*). This combination of moral correction and scientific assessment was central to the post-socialist transition. Evaluation did not only ask whether a workplace was productive. It also asked whether the inherited structure had been distorted by political interference, overstaffing, obsolete priorities, or compromised leadership. In this sense, evaluation became a way of transforming institutional memory into democratic accountability.

The role of archives confirms that the transformation was not an erasure of the socialist period. The Masaryk Institute and Archives of the Czech Academy of Sciences preserves archival fonds of ČSAV for the entire period from 1952 to 1992 and of AV ČR from 1993 onwards; it also notes that institutes of ČSAV and CAS are listed together because many operated continuously despite reorganisation of the Academy's leading bodies (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This archival continuity is historically important. A democratic institution does not become democratic by destroying records of its predecessor. It becomes democratic by preserving, examining, and interpreting them. The continuity of archives allows historians to study both scientific achievements and institutional compromises. It also prevents the transformation from becoming a myth of pure rupture.

The democratic Academy therefore developed through a politics of memory as well as a politics of reform. It had to remember ČSAV without being governed by ČSAV's political logic. It had to honour scientific achievements without silencing the experience of ideological pressure and normalisation. It had to recognise institutional continuity without confusing continuity with innocence. This was particularly important in the humanities and social sciences, where political intervention had often been more direct than in many natural-science fields. Democratic research required the reopening of topics, methods, archives, and intellectual traditions that had been suppressed or distorted. It also required the reintegration of scholars and disciplines damaged by the previous regime. The Academy's transformation was therefore a moral reconstruction of research culture, not only an administrative restructuring.

The history of older predecessors helped the Academy carry out this moral reconstruction. By placing AV ČR in a line that included the Royal Czech Society of Sciences, Purkyně's academy project, the Czech Academy of Sciences and Arts, interwar research institutions, and ČSAV, the Academy could show that the socialist period was not the sole source of Czech organised science. The official history emphasises that many specialised departments and institutes existed before ČSAV and were later integrated into it, including institutes connected with language, nuclear physics, mathematics, literature, archaeology, Oriental studies, Slavonic studies, and historical publishing (*Academy of Sciences of the Czech Republic, n.d.*). This allowed AV ČR to reclaim scientific capacities inside ČSAV as parts of a broader Czech heritage. The democratic Academy could thus inherit institutes through ČSAV while interpreting their deeper origins beyond socialism.

The shift from socialist to democratic institution also changed the relationship between national science and international science. ČSAV had maintained international contacts, but those contacts were shaped by Cold War divisions, political control, and restricted mobility.

AV ČR, by contrast, had to make international cooperation part of its ordinary legitimacy. Act No. 283/1992 Coll. explicitly allowed the Academy and its institutes to conclude agreements on international scientific cooperation and technology development (*Czech National Council, 1992*). This provision was more than a technical legal permission. It signalled that the new Academy would participate openly in the international scientific community rather than operate primarily through the diplomatic channels of a socialist bloc state. International cooperation became a means of quality assurance, professional renewal, and symbolic return to European science.

The democratic Academy also redefined its relationship with universities. Socialist academic systems often separated research and teaching more sharply than many Western models, concentrating basic research in academies and leaving universities burdened by mass teaching and political supervision. AV ČR did not dissolve itself into universities, but it increasingly justified its existence as a partner in doctoral education, research training, and collaboration. The Academy's mission presents its institutes as participants in education, especially doctoral programmes, and as collaborators with universities and applied research (*Academy of Sciences of the Czech Republic, n.d.*). This was a democratic correction to the isolated academy model. The Academy remained non-university, but not anti-university. Its legitimacy depended on being part of a wider research and education ecosystem rather than a separate scientific estate.

The transformation also changed the Academy's public mission. The socialist Academy had often been expected to serve the state's developmental and ideological goals. The democratic Academy had to serve society through independent research, public knowledge, expert competence, culture, education, innovation, and long-term intellectual infrastructure. The Statutes describe the Academy as serving the welfare of the Czech Republic and its citizens and as contributing through research, education, culture, competitiveness, and the solution of current social problems (*Academy of Sciences of the Czech Republic, 2006*). This language is fundamentally different from the language of planned socialist science. It does not subordinate research to a party programme. It connects scientific freedom with public responsibility. The democratic Academy therefore had to be autonomous not because it wished to withdraw from society, but because independent knowledge is necessary for society.

This new public mission also demanded ethical and professional self-regulation. The later Academy portrait lists the Code of Ethics for Researchers and career rules among the basic documents governing the Academy after its legal modernisation (*Academy of Sciences of the Czech Republic, 2008*). These later documents belong chronologically beyond the immediate 1992–1993 foundation, but they express the direction of transformation that began in the early 1990s. A democratic research institution requires more than elected bodies and public financing. It requires standards of authorship, evaluation, professional conduct, career development, and responsibility towards the public and the scientific community. The move towards ethical codification was therefore part of the long transition from institutional survival to institutional maturity.

The transformation from socialist Academy to democratic institution was also visible in the Academy's approach to leadership. The old system had often mixed scientific authority with political reliability and administrative hierarchy. The new system required leaders who could represent science before the democratic state, manage public budgets, support evaluation, negotiate with institutes, and maintain international credibility. Rudolf Zahradník's first

presidency after 1993 symbolised this new leadership model. Otto Wichterle's role in the immediate post-1989 reconstruction symbolised the moral bridge from ČSAV to AV ČR. The official Academy portrait notes that Wichterle became the first President of the Academy after the revival of democracy in the country (*Academy of Sciences of the Czech Republic, 2008*). The importance of such figures lies not only in biography but in institutional symbolism. They helped show that democratic science could be represented by scientific achievement and civic integrity rather than by party-administrative authority.

Yet democratic transformation was not painless. Institutes were evaluated, reduced, merged, or abolished. Staff numbers fell. Careers became less protected. Researchers had to compete for grants, publish internationally, and adapt to new rules of accountability. For some, this was liberation from ideological supervision and bureaucratic stagnation. For others, it was insecurity, loss, and professional disorientation. The transition therefore should not be romanticised as a smooth emancipation. It was a difficult process in which democracy, austerity, autonomy, and competition arrived together. The Academy's achievement was not that it avoided these tensions, but that it survived them while preserving a strong public research sector.

The transformation also had a spatial and institutional dimension. AV ČR preserved a network of research institutes distributed across Prague and other Czech centres, while many institutes continued despite the reorganisation of leading Academy bodies (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This continuity mattered because a democratic research institution cannot exist only as a central office. It must live in workplaces where scientists conduct experiments, edit sources, manage archives, observe natural processes, study society, and train younger researchers. The institute network gave the Academy practical substance. Democratic governance gave that substance legitimacy. The transformation from ČSAV to AV ČR therefore joined continuity of workplaces with transformation of authority.

The Academy's development also illustrates that democratisation in science is not identical with politicisation. The Academy became democratic not by making research dependent on party competition or electoral cycles, but by creating self-governing bodies, transparent procedures, external participation, research evaluation, and public responsibility. The Assembly, Council, Council for Sciences, institute boards, supervisory mechanisms, and grant procedures created a system in which scientific autonomy and public accountability could coexist. This was a difficult balance. Too much state control would have reproduced the logic of political subordination. Too much institutional closure would have reproduced the logic of corporate privilege. The modern Academy sought a middle path: public, autonomous, self-governing, evaluated, and internationally connected. This balance defined its democratic character more deeply than any formal declaration.

The transformation also redefined the Academy's relationship to the Czech state. Under socialism, the Academy belonged to a state that claimed ideological authority over knowledge. After 1992, the Academy belonged to a democratic republic that financed it but did not define scientific truth. This distinction is central. Public funding did not disappear; indeed, the Academy remained financed primarily from the state budget. But the reason for public funding changed. It was no longer justified by the claim that science served a socialist plan. It was justified by the claim that independent research serves public knowledge, national culture, education, innovation, and long-term societal needs. The Academy thus became a public

institution precisely because science has public value, not because science is a branch of political administration.

The modern Academy's identity also depended on accepting that democracy requires plural knowledge. The Academy retained institutes in natural sciences, technical sciences, humanities, and social sciences. This breadth distinguished it from a narrow innovation agency or a purely technological research body. Democratic society needs physics, biology, chemistry, and mathematics, but it also needs history, sociology, philosophy, language research, law, economics, archaeology, psychology, and cultural studies. The Academy's broad institute structure therefore had democratic significance. It preserved a public space for knowledge about nature, society, culture, and human experience together. In this sense, the transition from socialist Academy to democratic research institution was also a transition from ideologically unified knowledge to plural scholarly inquiry.

The long-term trajectory described by Filáček confirms that the transformation did not end in 1993. The movement from institutional change and plurality of financial sources towards assessment procedures and later "responsible science for society" indicates a continuing redefinition of the Academy's public role (*Filáček, 2023*). The modern Academy was therefore not completed by the legal act that established it. It had to become democratic through repeated reforms, evaluations, statutes, public missions, ethical rules, research strategies, and social engagement. This continuing character of transformation is important. The end of the socialist Academy was a date; the building of a democratic research institution was a process.

The transformation from ČSAV to AV ČR can therefore be understood as a conversion of institutional capital. The Academy inherited material capital in the form of buildings, instruments, libraries, archives, and laboratories. It inherited human capital in the form of researchers, technicians, editors, librarians, and research schools. It inherited symbolic capital in the form of scientific achievements and historical predecessors. But all of this capital had to be converted into democratic legitimacy. That conversion required law, governance, evaluation, historical self-definition, ethical norms, internationalisation, and public mission. Without such conversion, the Academy would have remained politically vulnerable as a remnant of the old system. With it, AV ČR became a modern public research institution.

The importance of this conversion is visible in the very phrase "successor institution". AV ČR succeeded ČSAV legally, but it did not simply continue ČSAV politically. It inherited institutes, but it redefined their mission. It inherited archives, but it opened them to historical interpretation. It inherited public financing, but it placed it under budgetary and self-governing accountability. It inherited scientific prestige, but it separated honourific learned representation into the Learned Society. It inherited a central institution, but it connected it with universities, foreign partners, public research policy, and democratic society. Successorship thus meant transformation through inheritance, not identity with the predecessor.

Thus, the passage from the socialist Czechoslovak Academy of Sciences to the democratic Czech Academy of Sciences was one of the central acts of Czech post-socialist scientific reconstruction. AV ČR did not liquidate the scientific substance of ČSAV, because that substance contained indispensable institutes, research communities, infrastructures, archives, and achievements. Yet it did not preserve the socialist Academy's political form, because democratic science required self-government, public accountability, international

openness, ethical standards, competitive funding, and constitutional freedom of research. The transformation was achieved through law, governance reform, evaluation, leadership renewal, separation of the learned-society function, historical self-definition, and a new public mission. It was therefore neither pure rupture nor simple continuity. It was a democratic re-foundation of inherited scientific capacity. In this sense, AV ČR became the institutional form through which Czech academy-based science survived the end of Czechoslovakia and the end of state socialism, while acquiring a new legitimacy as a public research institution of a democratic Czech Republic.

References

Academy of Sciences of the Czech Republic. (2006). *Statutes of the Czech Academy of Sciences*. Approved by Resolution of the Government of the Czech Republic No. 614 of May 24, 2006.

Academy of Sciences of the Czech Republic. (2008). *The Academy of Sciences of the Czech Republic*. ALLEA Biennial Yearbook 2006, updated December 2008.

Academy of Sciences of the Czech Republic. (n.d.). *Academy Council*. CAS.

Academy of Sciences of the Czech Republic. (n.d.). *Mission of the CAS*. CAS.

Academy of Sciences of the Czech Republic. (n.d.). *Representatives of the CAS and its predecessors*. CAS.

Academy of Sciences of the Czech Republic. (n.d.). *Research institutes*. CAS.

Academy of Sciences of the Czech Republic. (n.d.). *Research institutes*. CAS.

Akademický bulletin. (1993). *Ustavující zasedání Akademického sněmu Akademie věd ČR* [Constituting session of the Academy Assembly of the Czech Academy of Sciences]. *Akademický bulletin, 4/93*.

Arnold, E., Good, B., Ohler, F., Tiefenthaler, B., & Vermeulen, N. (2011). *Institutional funding and research evaluation in the Czech Republic and abroad*. Brighton/Vienna: Technopolis Group.

Cidlinská, K., & Linková, M. (2015). *Comparing national academies of sciences in Central and Eastern Europe: The Czech Academy of Sciences: Research careers in their academic setting – national topographies*. MTA Law Working Papers, 2015/31.

Czech National Council. (1992). *Act No. 283/1992 Coll., on the Czech Academy of Sciences* [Zákon České národní rady č. 283/1992 Sb., o Akademii věd České republiky]. Prague: Czech National Council.

Czech National Council. (1992). *Act No. 300/1992 Coll., on state support for scientific activity and technology development* [Zákon České národní rady č. 300/1992 Sb., o státní podpoře vědecké činnosti a vývoje technologií]. Prague: Czech National Council.

Czech Science Foundation. (n.d.). *Evaluation process of standard projects, PIF and international projects*. Prague: Czech Science Foundation.

Czech Science Foundation. (n.d.). *GACR in profile*. Prague: Czech Science Foundation.

Digital Humanities Czech Academy of Sciences. (n.d.). *Institute of Archaeology of the CAS, Prague, v. v. i.*

European Mathematical Society. (n.d.). *Institute of Mathematics of the Czech Academy of Sciences*. EMS Magazine.

Federal Assembly of the Czech and Slovak Federative Republic. (1992). *Act No. 599/1992 Coll., abolishing the Czechoslovak Academy of Sciences and regulating the settlement of property and other rights* [Zákon č. 599/1992 Sb., kterým se zrušuje Československá akademie věd a upravuje způsob vypořádání majetkových a jiných práv]. Prague: Federal Assembly of the Czech and Slovak Federative Republic.

Filáček, A. (2023). Transformation of the Academy of Sciences: From science in society to the responsible science for society. *Teorie vědy / Theory of Science, 45*(2), 253–279. https://doi.org/10.46938/tv.2023.544

Grant Agency of the Academy of Sciences of the Czech Republic. (n.d.). *Grantová agentura AV ČR* [Grant Agency of the Czech Academy of Sciences]. Prague: Czech Academy of Sciences.

Hebáková, L., & Kostić, M. (2009). *ERAWATCH country report 2008: An assessment of research system and policies: Czech Republic*. Luxembourg: Office for Official Publications of the European Communities. https://doi.org/10.2791/728

Hobsbawm, E., & Ranger, T. (Eds.). (1983). *The invention of tradition*. Cambridge: Cambridge University Press.

Institute of Philosophy of the Czech Academy of Sciences. (n.d.). *About us*.

Institute of Photonics and Electronics of the Czech Academy of Sciences. (n.d.). *History of the Institute*. Prague: Institute of Photonics and Electronics of the Czech Academy of Sciences.

Institute of Photonics and Electronics of the Czech Academy of Sciences. (n.d.). *Historie ústavu* [History of the Institute]. Prague: Institute of Photonics and Electronics of the Czech Academy of Sciences.

Institute of Sociology of the Czech Academy of Sciences. (n.d.). *About the Institute*.

Kováč, D. (2010). The transformation of the Slovak Academy of Sciences in the period 1989–1993. *Historický časopis, 58*(Supplement), 109–137.

Kuna, M., Novák, D., Gojda, M., Hasil, J., Kačerik, A., Křivánková, D., & Veleminský, P. (2016). Archaeological Map of the Czech Republic: Current state and future visions of virtual research tools in the Czech Republic. *Internet Archaeology, 43*.

Masaryk Institute and Archives of the Czech Academy of Sciences. (n.d.). *Fondy Československé akademie věd (ČSAV) a Akademie věd ČR (AV ČR)* [Fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences]. Prague: Masaryk Institute and Archives of the Czech Academy of Sciences.

Meske, W. (1998). *Institutional transformation of S&T systems in the European economies in transition*. Berlin: Wissenschaftszentrum Berlin für Sozialforschung.

Nora, P. (1989). Between memory and history: Les lieux de mémoire. *Representations, 26*, 7–24.

Nuclear Physics Institute of the Czech Academy of Sciences. (n.d.). *Mandatory information*. Řež: Nuclear Physics Institute of the Czech Academy of Sciences.

Římanová, J. (2023). *Tvrdohlavé Marie: Životní příběhy žen „generace okouzlené vědou“* [Stubborn Marys: Life stories of women of the “generation enchanted by science”] (Doctoral dissertation). Charles University, Faculty of Humanities.

Rychlík, J. (2017). The “Velvet Split” of Czechoslovakia (1989–1992). In M. M. Stolarik (Ed.), *The Czech and Slovak Republics: Twenty years of independence, 1993–2013* (pp. 17–38). Budapest: Central European University Press.

Rychlík, J. (2018). The “Velvet Split” of Czechoslovakia (1989–1992). *Politeja, 15*(6/57), 169–196.

Slovak Academy of Sciences. (n.d.). *History and present of Slovak Academy of Sciences*. Bratislava: Slovak Academy of Sciences.

Stolarik, M. M. (Ed.). (2017). *The Czech and Slovak Republics: Twenty years of independence, 1993–2013*. Budapest: Central European University Press.

Technologická agentura České republiky. (2014). *1989 + 25 = Výzkum užitečný pro společnost* [1989 + 25 = Research Useful for Society]. Prague: Technologická agentura České republiky.

Technopolis Group. (2011). *International audit of research, development and innovation in the Czech Republic: Final report 3 — The quality of research, institutional funding and research evaluation in the Czech Republic and abroad*. Brighton: Technopolis Group.

Part Four.

The Czech Academy of Sciences after 1993: Structure, Governance, and Research Mission

Chapter Eight

The Institutional Architecture of the Modern Czech Academy of Sciences

Legal Status and Public Research Mission

1. AV ČR as a Public Research Institution

The modern Czech Academy of Sciences occupies a distinctive place in the institutional landscape of Czech research because it cannot be reduced either to a university, to a ministry, to a learned society, or to an ordinary network of laboratories. Its legal architecture is deliberately hybrid: it is a public body rooted in state law, a self-governing scientific corporation in its internal logic, and a founder of specialised research institutes that operate as public research institutions. This hybrid status is one of the most important outcomes of the post-socialist reconstruction of Czech science after the end of the Czechoslovak Academy of Sciences. The Academy did not disappear with the collapse of the socialist regime; rather, it was legally reconstituted in a form that tried to preserve the strongest elements of the institute-based research tradition while removing the ideological and administrative subordination that had marked the ČSAV system. The Act on the Czech Academy of Sciences, adopted in 1992, established the Academy as the Czech successor to the former Czechoslovak Academy of Sciences and placed its seat in Prague (*Czech National Council, 1992*). This was not a symbolic gesture alone, because legal succession created continuity of research capacities, buildings, archives, collections, laboratories, staff, scientific schools, and institutional memory. At the same time, the new framework made clear that the Academy would not be a restored socialist academy under democratic decoration. It would be a public research institution in the broader sense: a publicly funded, legally regulated, nationally responsible, and scientifically autonomous body serving research rather than party-state planning. The conceptual tension built into this arrangement would shape the entire later history of AV ČR. It gave the Academy both protection and responsibility: protection from simple market dissolution, and responsibility before the public, the state, the scientific community, and society as a whole.

A first point of precision is necessary here, because the expression “AV ČR as a public research institution” can easily mislead if it is understood too narrowly. In Czech law, the Academy itself is not merely one *veřejná výzkumná instituce* among others. Act No. 283/1992 Coll. defines the Academy as an organisational body of the Czech Republic, financed from the state budget, and, for budgetary purposes, as having the status of a central authority of the Czech Republic (*Czech National Council, 1992*). Its institutes, however, are established by the Academy as public research institutions, and this creates a two-level institutional structure. The Academy stands above its institutes not as a ministry in the classical administrative sense, but as a statutory founder, coordinator, representative body, and guardian of the research mission. The institutes, in turn, possess their own legal personality and operate within the legal framework of public research institutions. This distinction is crucial because the Academy’s institutional strength lies not in centralised command, but in the regulated autonomy of its institutes. The

Academy is therefore both an institution and an institutional architecture. It is a legal personification of Czech non-university research, while its actual scientific life unfolds through specialised workplaces. This arrangement explains why the Academy can be described at once as a national research organisation, a complex of public research institutions, and a public authority with a specific budgetary status.

The legal transformation of the Academy must be understood against the background of the post-1989 rejection of the socialist model of science administration. Under the Czechoslovak Academy of Sciences, research institutes had been embedded in a hierarchical system where scientific priorities were never entirely separable from ideological and economic planning. The Velvet Revolution opened the possibility of redesigning this model, but it did not remove the practical need for a strong non-university research sector. Czech science had inherited valuable institutes in physics, chemistry, mathematics, biology, archaeology, language studies, history, philosophy, sociology, law, and other disciplines. Many of these institutes had intellectual traditions that long predated the socialist Academy, reaching back to learned societies, national revival scholarship, interwar academic organisations, and specialised research committees. The creation of AV ČR in 1992 therefore represented neither a clean break nor a simple continuation. It was an institutional conversion: a transfer of research capacity from one political order into another legal and democratic framework. The new Academy had to carry the memory of earlier academic forms without reproducing the authoritarian administrative logic of the ČSAV. Its public status was therefore not an accidental technicality, but a constitutional and cultural solution to the problem of how a democratic state should preserve long-term scientific capacity. The Academy became public because science was treated as a public good, but it had to become autonomous because science could no longer be treated as an instrument of political doctrine.

The distinction between public research and state-controlled research lies at the heart of the modern Academy's legal identity. Public funding does not, by itself, define the Academy's intellectual content, nor does state establishment imply direct governmental control over scientific conclusions. The Academy's statutory mission presupposes that the state may create conditions for research while leaving the internal logic of knowledge production to the scientific community. This is one of the lessons learned from the 20th century, when the institutional proximity of science to the state could produce both remarkable infrastructure and serious distortions. The modern Czech model seeks to separate financial responsibility from epistemic command. The Academy receives public support because many forms of fundamental research cannot be sustained through immediate market demand, short-term contracts, or private investment alone. At the same time, its institutes must operate according to scientific standards, peer evaluation, ethical norms, public accountability, and international expectations. The legal structure is therefore neither laissez-faire nor command-administrative. It is a model of publicly supported scientific autonomy. In this sense, the Academy's public character is not the opposite of freedom, but one of the institutional conditions under which long-term research freedom can exist.

Act No. 341/2005 Coll., on public research institutions, gave this model a more precise organisational and legal form. The act defines a public research institution as a legal entity whose principal activity is research, including the provision of research infrastructure, and whose main activity is supported primarily from public funds in accordance with rules on public support (*Parliament of the Czech Republic, 2005*). This definition matters because it connects legal personality, public financing, scientific activity, and accountability in a single institutional

form. It also makes clear that research infrastructure is not secondary to research, but part of the institution's core purpose. Modern science depends on laboratories, collections, archives, databases, observatories, field stations, instruments, libraries, computing capacities, and administrative support. By recognising infrastructure within the principal activity of public research institutions, the law acknowledges that knowledge is produced not only by individual scholars, but by durable institutional environments. For the institutes of AV ČR, this legal form provided a more flexible and more transparent framework than the earlier state-funded organisational model. It allowed institutes to act as legal entities, manage property and contractual relations, publish annual reports, and participate in national and international projects. At the same time, it preserved their public mission and prevented their transformation into ordinary commercial corporations. The result was a form of institutional autonomy that remained anchored in the public sphere.

The reform of public research institutions also marked a broader shift in Czech research governance. The post-socialist state gradually moved away from direct administrative ownership of research units toward a system in which public institutions had legal responsibility, internal bodies, budgets, evaluation procedures, and duties of disclosure. This shift was not merely managerial; it expressed a new understanding of what a research institution should be in a democratic society. It should not be a department of the state in intellectual matters, yet it should not be insulated from public responsibility. It should be free to pursue difficult, uncertain, and long-term research questions, yet it should be able to explain why such research deserves public support. It should cultivate disciplinary excellence, yet it should remain open to collaboration, societal needs, and international standards. For AV ČR, this meant that the institutes became more visible as individual actors, while the Academy retained its integrative and representative function. The public research institution model therefore decentralised legal responsibility without dissolving the Academy's common identity. The Academy became less monolithic than the socialist ČSAV, but more coherent than a loose association of independent laboratories. Its public status became the legal grammar through which this balance was maintained.

The modern Academy's legal architecture also clarifies why it is not a university. Universities combine teaching, degree-awarding authority, student life, academic self-government, and research within the framework of higher education. The Academy, by contrast, is primarily a research organisation, although it contributes to doctoral training, educates researchers, cooperates with universities, and participates in the formation of new scientific generations. Its institutes do not exist to reproduce curricula or administer mass higher education. They exist to sustain concentrated, specialised, and often long-term research capacities. This difference does not imply hierarchy between universities and the Academy. Rather, it reflects a division of labour within the Czech knowledge system. Universities provide the broad institutional framework for higher education and many forms of academic research, while the Academy maintains non-university research institutes whose mission is especially suited to long-horizon scientific work. The Czech model thereby preserves a Central European tradition in which research institutes complement universities rather than simply duplicating them. This tradition was shaped by earlier learned societies, by the interwar development of specialised research bodies, by the socialist institute system, and by post-1989 reforms. In its modern form, however, it is legitimised not by ideology, but by the public value of concentrated research.

The Academy is also not merely a learned society, although it preserves certain representative and symbolic functions associated with learned academies. Historical Czech academic culture included learned societies that selected members, published scholarship, awarded grants, represented national science, and cultivated intellectual prestige. The Czech Academy of Sciences and Arts, for example, was a learned body with important symbolic and cultural functions, and it played a role in publishing, scholarship support, and the national representation of science (*Academy of Sciences of the Czech Republic, n.d.*). The modern AV ČR differs from such bodies because it is a large research organisation built around institutes, employees, laboratories, infrastructure, budgets, and statutory governance. Its purpose is not simply to honour distinguished scholars or represent science ceremonially. It conducts research through institutes and manages a living system of scientific workplaces. Yet the learned-society inheritance is not irrelevant. The Academy continues to embody the idea that science has a public dignity and a national-cultural meaning beyond immediate utility. It supports the Learned Society of the Czech Republic and represents it toward similar foreign scientific institutions, which preserves a bridge between institutional research and the older ideal of free scholarly association (*Czech National Council, 1992*). Thus, the Academy's public research identity contains both practical and symbolic layers.

The legal status of AV ČR must also be read as a response to the problem of disciplinary breadth. The Academy is not a single-field research organisation, nor a sectoral agency devoted to one branch of technology, medicine, or culture. Its statutes define its activity across natural, technical, social, and human sciences, and connect research with the advancement of knowledge at the international level, the education of researchers, and the application of results for education, culture, competitiveness, and the solution of current social problems (*Academy of Sciences of the Czech Republic, n.d.*). This breadth is important because it prevents the Academy from being reduced to an innovation agency or to an archive of national culture. It has observatories and laboratories, but also institutes of history, philosophy, sociology, law, language, literature, archaeology, ethnology, and art history. It works with molecules, plasma, manuscripts, climate systems, demographic trends, legal institutions, ancient landscapes, mathematical models, and linguistic structures. Such diversity is difficult to maintain in a purely project-based or market-driven environment. The public research institution model gives the Academy a legal basis for sustaining areas whose value is long-term, cumulative, and not always immediately measurable. In this sense, public status protects disciplinary plurality. It allows the Academy to serve not one ministry, one market, or one policy cycle, but the wider horizon of knowledge.

The Academy's official presentation as a complex of public research institutions also reveals the importance of scale. The contemporary AV ČR is described as being set up as a complex of 54 public research institutions and employing thousands of staff, more than half of whom are researchers with university degrees (*Academy of Sciences of the Czech Republic, n.d.*). These figures are not merely administrative statistics. They indicate that the Academy is one of the structural pillars of the Czech research system. Its institutes are distributed across disciplines and locations, with a strong concentration in Prague but also significant workplaces in Brno, České Budějovice, Ostrava, Ondřejov, Průhonice, Řež, and other places. This geography matters because the Academy is both national and specialised. It is not simply a Prague institution, although Prague remains its administrative and historical centre. Its institutes connect regional scientific capacities with national coordination and international research networks. Public status helps maintain this distributed architecture, because it allows the

Academy to sustain institutes according to scientific and national needs rather than only according to immediate regional market demand. The Academy's legal form therefore supports a territorial as well as disciplinary infrastructure of research. It gives Czech science a durable institutional map.

The public research institution model also affects the relationship between the Academy and its employees. Researchers in AV ČR institutes work within institutions that are public in purpose but professional in scientific culture. Their careers are shaped by evaluation, project funding, publication standards, international collaboration, and institutional strategies. At the same time, they work in organisations whose existence is not dependent solely on student enrolment or private contracts. This creates a different rhythm of academic labour from that found in universities or industry. The Academy can support research teams whose projects require long preparation, specialised equipment, field continuity, archival expertise, or sustained theoretical development. It can also maintain scientific services and infrastructures that would be difficult to justify under short-term commercial criteria. Yet public status does not remove pressure. Institutes must demonstrate quality, relevance, ethical responsibility, and efficient use of public resources. Researchers must therefore navigate a dual expectation: to contribute to international science and to justify the public trust invested in their institutions. This duality is one of the defining features of the modern Academy.

The legal framework of AV ČR also shapes its relation to property, budgets, and accountability. Public research institutions are not private owners in the ordinary commercial sense, because their assets and resources are linked to their public mission. Act No. 341/2005 Coll. requires public research institutions to use property for the implementation of their principal activity, and it regulates the relationship between principal activity, additional activity, and other activity (*Parliament of the Czech Republic, 2005*). This means that laboratories, libraries, land, collections, instruments, buildings, and intellectual outputs are not merely organisational possessions. They are entrusted assets within a system designed to serve research. Budgetary rules, annual reporting, audits, supervisory boards, and founder responsibilities create a chain of accountability. For the Academy's institutes, such mechanisms provide transparency without abolishing scientific autonomy. They also make the institutes legible to the state and to society. This is important because public trust in science depends not only on scientific prestige, but also on credible institutional stewardship. The Academy's autonomy is therefore inseparable from regulated responsibility.

The public character of the Academy also influences its internal governance. Act No. 283/1992 Coll. identifies the Academy Assembly as the supreme self-governing body and establishes the Academy Council, the President, and the Council for Sciences as central bodies of the Academy (*Czech National Council, 1992*). Although the detailed discussion of governance belongs to the later section on internal organisation, the legal point is already relevant here. A public research institution of this kind cannot function only through managerial appointment from above. It requires representative scientific bodies, procedures for deliberation, and mechanisms by which institutes and external actors participate in institutional direction. The Academy Assembly includes institute directors, representatives of universities, distinguished scientists, elected representatives of institutes, and representatives of state administration, industry, commercial circles, and banks (*Czech National Council, 1992*). This composition reveals the Academy's hybrid legitimacy. It is self-governing because scientists and institutes participate in its direction. It is public because universities, state representatives, and broader

social actors are not entirely absent from its institutional horizon. It is national because it represents more than one laboratory or one discipline.

This model of governance reflects a careful attempt to avoid two opposite dangers. One danger would be bureaucratic capture, in which the Academy became only an administrative instrument of government. The other danger would be corporate closure, in which the Academy became a self-protective community answerable only to itself. The legal design seeks a middle path. The Academy has its own bodies and scientific councils, but its statutes require government approval, its budget is public, its institutes report on activities, and its mission is tied to national and societal development. This architecture can produce tensions, especially when public budgets are constrained, research evaluation systems change, or political authorities demand more immediate economic returns. Yet those tensions are not accidental failures of the model. They are built into the very idea of a public research institution in a democratic state. Science must be free enough to criticise, discover, and pursue the unknown, but public enough to explain why its freedom deserves collective support. The Academy's legal status gives institutional form to this tension. It turns the tension into a system of governance rather than leaving it as a political improvisation.

The Academy's public status also plays an important role in international cooperation. Act No. 283/1992 Coll. explicitly provides that the Academy and its institutes may conclude agreements on international cooperation in scientific activities and technological development (*Czech National Council, 1992*). This provision is significant because the Academy's national public mission is not inward-looking. Modern science is transnational by method, communication, standards, competition, and infrastructure. AV ČR can serve Czech society precisely because it is connected to international science. Its institutes participate in European projects, global disciplinary networks, international infrastructures, bilateral cooperation, scholarly exchange, and publication systems. Legal capacity for international agreements therefore belongs to the Academy's basic institutional identity. It allows Czech public research to enter international circuits without losing its national anchoring. This is one of the major differences between public research and parochial state science. The Academy is public not because it is closed within the state, but because it allows Czech society to participate in the international production of knowledge.

The post-2005 public research institution framework also gave the Academy's institutes a legal form suitable for European research governance. European research policy increasingly requires institutions to compete for grants, manage projects, employ international researchers, handle intellectual property, fulfil open science obligations, cooperate with universities and companies, and demonstrate responsible use of public resources. A purely ministerial institute would have difficulty operating flexibly in such an environment. A purely private entity would lack the public mission and stability needed for fundamental research. The *v. v. i.* form helps bridge these requirements. It allows institutes to act in contracts, join consortia, manage research outputs, and maintain infrastructure, while remaining publicly oriented organisations. This is why the Academy's legal architecture should be viewed not only as a national solution after socialism, but also as an adaptation to the European Research Area. The modern Academy is legally Czech, historically Central European, and operationally European. Its public research status enables all three dimensions to coexist.

A further feature of the Academy's legal identity is its connection to knowledge transfer and application, although it remains fundamentally a research institution rather than a

commercialisation agency. The statutes state that the Academy applies and disseminates the results of its activities for the advancement of education, culture, competitiveness, and the solution of current problems of society (*Academy of Sciences of the Czech Republic, n.d.*). This wording is carefully balanced. It does not subordinate research to immediate utility, but it also rejects the idea that publicly funded science has no obligation to society. The Academy's institutes may conduct fundamental research whose practical value emerges only after many years. They may also contribute directly to applied problems in medicine, materials, energy, climate, law, language policy, public administration, cultural heritage, security, and technological development. The public research institution form is suitable precisely because it can contain this range. It does not force a rigid opposition between pure and applied science. Instead, it treats the public value of science as a continuum from fundamental understanding to social use. This theme will become even more important in the later discussion of fundamental research, applied relevance, and public interest.

Recent developments in Czech research legislation further confirm that the Academy operates within a changing policy environment. In 2025, Act No. 328/2025 Coll., on research, development, innovation and knowledge transfer, was adopted and published, with full entry into force scheduled for 1 January 2027 and some provisions taking effect earlier or later (*Library of the Czech Academy of Sciences, 2025*). This new law does not erase the Academy's historical identity, but it changes the surrounding landscape in which public research organisations must operate. It places stronger emphasis on innovation, knowledge transfer, open science, and the practical circulation of research results. For AV ČR, this means that the legal meaning of public research continues to expand. Public research is no longer only the production of scholarly knowledge under public funding. It also includes the responsible sharing of data, cooperation with external partners, participation in societal problem-solving, and the creation of pathways from discovery to use. At the same time, the Academy's identity as a guardian of fundamental research remains essential. The challenge is not to replace curiosity-driven science with innovation rhetoric, but to ensure that long-term scientific excellence can speak effectively to contemporary public needs.

The Academy's public research status also gives it a special role in preserving areas of knowledge that might otherwise be vulnerable. Humanities and social sciences offer a clear example. Institutes devoted to history, archaeology, philosophy, Czech language, literature, ethnology, art history, sociology, law, psychology, and related fields do not always fit easily into narrow economic metrics. Their value often lies in cultural memory, critical reflection, language development, legal understanding, social diagnosis, and the interpretation of collective experience. A purely market-based system would struggle to maintain such fields at a high institutional level. A purely university-based system might be overburdened by teaching obligations and fluctuating student demand. The Academy's public research model allows these fields to exist as research-intensive institutions. This is particularly important for a country whose modern national identity was historically intertwined with language, historical scholarship, cultural institutions, and learned societies. The Academy thus continues a national-cultural mission in a democratic and scholarly form. It does not preserve culture as ideology, but as a domain of research, interpretation, and public knowledge.

The natural and technical sciences show another side of the same public logic. Laboratories in physics, chemistry, biology, medicine, mathematics, computer science, geosciences, atmospheric research, and engineering often require expensive instruments, stable teams, long-term infrastructure, and international collaboration. Their research may generate

applications in health, energy, materials, climate adaptation, digital technologies, biotechnology, and security, but many discoveries cannot be predicted in advance. Public research institutions make it possible to sustain such capacities even when immediate commercial demand is uncertain. The Academy's institutes therefore serve as reservoirs of expertise and infrastructure that the state, universities, companies, and society may need in unexpected moments. The COVID-19 pandemic, energy crises, climate risks, technological dependence, demographic change, and information security all demonstrate why countries need durable public research capacity. The Academy's legal status helps ensure that such capacity does not vanish between policy cycles or market booms. It allows the Czech Republic to maintain scientific preparedness. In this respect, AV ČR is not only a producer of research outputs, but an institutional memory and reserve of expertise.

The Academy's public status also has implications for evaluation. Public funding requires mechanisms for judging quality, relevance, performance, and strategic development. Yet research evaluation in an institution such as AV ČR cannot be reduced to simple numerical indicators. Different fields produce different types of outputs, use different time horizons, and address different audiences. A mathematical breakthrough, a monograph on medieval history, a patentable biochemical process, a long-term ecological dataset, a critical edition of a text, and a policy-relevant sociological analysis cannot be evaluated by one crude measure. The public research institution model therefore requires evaluation procedures sensitive to disciplinary diversity and institutional mission. The Academy must demonstrate excellence, but excellence itself must be interpreted through scientific peer judgement and field-specific standards. Public accountability becomes meaningful only when it respects the nature of research. Otherwise, evaluation would become another form of bureaucratic distortion. The Academy's challenge is to remain publicly accountable without allowing public accountability to become intellectually reductive.

Another important dimension is the Academy's capacity to act as a founder. Because the Academy establishes its institutes as public research institutions, it does not merely represent them externally; it shapes the institutional conditions of their existence. Founder responsibility includes decisions about establishment, transformation, consolidation, dissolution, strategic orientation, budgetary distribution, and oversight within the limits of law and statutes. This gives AV ČR a role that differs from both a ministry and a federation. It has more scientific legitimacy than an external administrative authority, but more coordinating power than a loose association of autonomous institutes. This founder role is one of the institutional innovations of the post-1992 Academy. It permits system-level decisions while preserving institute-level legal personality. It also creates a channel through which disciplinary development can be managed over time. New research priorities, interdisciplinary needs, infrastructure questions, demographic pressures, and international opportunities can be addressed within a common Academy framework. The Academy's public research identity is therefore dynamic, not merely descriptive.

The term "public" in the Academy's legal status also has an ethical meaning. Public research institutions are expected to serve society not only through useful results, but through integrity, transparency, and trustworthiness. Scientific misconduct, conflicts of interest, irresponsible use of data, poor supervision, or opaque management can damage public confidence in research. AV ČR has therefore developed ethical frameworks and bodies concerned with scientific integrity, and these belong naturally to its public mission. The public pays for research, but more importantly, the public grants research a special authority in matters of

truth, evidence, and expertise. That authority must be earned continually. The Academy's institutes must therefore cultivate an internal culture in which scientific freedom is accompanied by responsibility. In this sense, public status is not merely a financial arrangement. It is a normative commitment to reliable knowledge. The Academy's legitimacy rests on the belief that publicly supported science can be both independent and trustworthy.

The Academy's identity as a public research institution also affects how it represents Czech science abroad. In many international contexts, national academies serve as symbolic representatives of scholarly excellence, while research organisations serve as operational participants in projects. AV ČR does both. It carries the historical name and prestige of an academy, but it also manages a large network of active research institutes. This dual role gives it a distinctive profile among European scientific institutions. It can speak as a national academy in matters of scientific culture and institutional representation, while also acting as a major research performer in specific disciplines. This combination is historically rooted in the Czech experience, where learned representation and institute-based research gradually converged across the 20th century. The modern legal framework did not invent this convergence, but it made it governable under democratic conditions. As a result, AV ČR can connect symbolic authority with empirical research capacity. That connection is one of its strongest institutional assets.

The Academy's public research status should also be seen as part of the Czech state's broader effort to build a knowledge-based society. National strategies such as the Research, Development and Innovation Policy 2021+ and the RIS3 strategy place research and innovation within the long-term transformation of competitiveness, economic structure, regional development, and social resilience (*Council for Research, Development and Innovation, 2020*; *Ministry of Industry and Trade of the Czech Republic, 2021*). AV ČR is not the only actor in this system, and it does not replace universities, grant agencies, technology agencies, ministries, companies, or regional innovation centres. However, it provides a base of long-term expertise that many of these actors cannot generate alone. Its institutes contribute to the scientific foundations upon which later innovation, policy, education, and cultural understanding depend. This is why public research institutions are strategically different from short-term project contractors. They accumulate competence across decades. The Academy's place in Czech research policy is therefore structural rather than episodic. It is part of the country's long-term intellectual infrastructure.

At the same time, the Academy's public role exposes it to recurring political debates. Questions of state budget allocation, institutional funding, evaluation methodology, applied relevance, regional impact, and cooperation with industry often become politically sensitive. Some critics may view academy institutes as expensive remnants of an older research model, while supporters emphasise their irreplaceable role in fundamental research and national expertise. Such debates are not unique to the Czech Republic. Across Europe, non-university research organisations must constantly justify their missions in environments shaped by fiscal pressure, innovation agendas, and changing political expectations. The Czech Academy's answer cannot be nostalgia for past prestige alone. It must show that public research institutions remain necessary precisely because contemporary societies face complex problems that cannot be solved by universities, markets, or ministries acting separately. Long-term climate knowledge, advanced materials, biosecurity, legal expertise, digital systems, cultural memory, demographic analysis, and language resources all require institutional

continuity. The Academy's legal status gives it a platform from which to defend that continuity. But the defence must always be renewed through quality, openness, and public relevance.

The modern Academy is therefore best understood as a post-socialist democratic reconstruction of an older Central European research tradition. It inherited institute-based research from the ČSAV, symbolic and cultural functions from learned academies, disciplinary breadth from national scholarship, and public responsibility from the democratic state. Its legal form after 1992 and especially after the public research institution reforms of 2005 gave these elements a workable structure. The Academy is public because its mission belongs to society; it is research-oriented because its value rests on the production of knowledge; it is institutional because science requires durable organisations; and it is autonomous because genuine research cannot be commanded into truth. These elements cannot be separated without damaging the whole. A merely public Academy without autonomy would risk politicisation. A merely autonomous Academy without public accountability would risk social isolation. A merely research-performing Academy without historical identity would lose cultural legitimacy. A merely symbolic Academy without institutes would lose practical scientific power. The modern AV ČR is important because it holds these dimensions together.

Thus, AV ČR as a public research institution should be interpreted not as a simple legal label, but as a complex institutional settlement produced by the Czech experience of empire, national revival, democratic state-building, socialist centralisation, post-1989 transformation, and European integration. Its present status expresses a deliberate balance between state responsibility and scientific autonomy, between institute-level legal personality and Academy-wide coordination, between fundamental research and public relevance, and between national continuity and international openness. The Academy's institutes operate as public research institutions because Czech law recognises that advanced research requires stable organisations, public support, transparent governance, and disciplinary freedom. The Academy itself provides the statutory, budgetary, representative, and strategic frame within which these institutes can function as a national system rather than as isolated workplaces. This structure gives modern Czech science one of its most important institutional pillars. It preserves the long memory of Czech scholarly life while adapting it to democratic legality, European research standards, and contemporary societal needs. For this reason, the public research status of AV ČR is not merely the beginning of its modern institutional description. It is the key to understanding how the Academy survived the end of the socialist system, transformed its internal logic, and became a central institution of Czech public knowledge.

2. The Academy's Mission in Czech Law and Public Policy

The mission of the Czech Academy of Sciences is not expressed in one isolated legal sentence, nor can it be understood only through the rhetoric of institutional self-presentation. It is constructed at the intersection of law, statutes, research policy, public finance, scientific self-government, and the long cultural memory of Czech learned institutions. The Academy's mission is therefore both normative and practical: normative because it defines why the Academy exists in a democratic state, and practical because it shapes budgets, institutes, research programmes, international cooperation, evaluation, and public accountability. The legal text of the Act on the Czech Academy of Sciences provides the constitutional-like institutional foundation, while the Statutes translate this foundation into a broader mission of knowledge, public service, autonomy, and national responsibility (*Czech National Council,*

1992; *Academy of Sciences of the Czech Republic, n.d.*). In this sense, the Academy's mission is not simply to "do research". It is to maintain a public institutional space in which research can be pursued at a high international level, across the full disciplinary spectrum, and in a way that serves the Czech Republic without becoming politically subordinate to the state. This balance is delicate, and it is historically significant. After the fall of the socialist system, Czech science needed a legal mission that would preserve the strong institute-based research tradition but remove the old logic of ideological planning. The modern Academy emerged precisely from that need. Its mission in Czech law and public policy is thus a democratic redefinition of an older research structure.

The first layer of this mission is found in Act No. 283/1992 Coll., which established the Czech Academy of Sciences as the Czech successor of the former Czechoslovak Academy of Sciences. The Act states that the Academy performs research through its institutes and that the Academy and its institutes may conclude agreements on international cooperation in scientific activities and technological development (*Czech National Council, 1992*). These provisions are brief, but they are institutionally dense. They define the Academy not as a symbolic corporation of scholars, but as a research-performing organisation acting through institutes. They also make international cooperation part of its legal personality from the beginning. This is important because modern scientific legitimacy depends not only on national usefulness, but also on participation in the international circulation of knowledge. The Act also places the Academy within the public structure of the Czech Republic by defining it as an organisational body financed from the state budget and by giving it, for budgetary purposes, the status of a central authority (*Czech National Council, 1992*). The mission of the Academy is therefore public before it is managerial. It is anchored in state responsibility for research, yet it is not reducible to government administration. The law gives the Academy a stable public foundation so that scientific work can continue beyond short-term political or market fluctuations.

The statutory formulation of the Academy's mission is richer and more programmatic. The Statutes state that the Academy, through its institutes, is engaged in research in a broad range of natural, technical, social, and human sciences; pursues the advancement of understanding at the international level; educates researchers; and propagates and applies the results of its activities for the advancement of education, culture, and competitiveness of the Czech Republic, as well as for the solution of current problems of society (*Academy of Sciences of the Czech Republic, n.d.*). This formulation is central for understanding the Academy's present identity. It unites four dimensions that are sometimes separated in policy debates: fundamental knowledge, international excellence, researcher formation, and public relevance. The Academy is not legally imagined as a closed contemplative body, nor as a narrow instrument of innovation policy. It is expected to produce knowledge, train scientific generations, serve national culture, support competitiveness, and respond to societal problems. This is a broad mission, but its breadth is not accidental. It reflects the Academy's position as a national research centre rather than as a single-purpose agency. The mission allows the Academy to work simultaneously on theoretical physics, molecular biology, language resources, archaeological heritage, climate change, legal institutions, artificial intelligence, social inequality, and memory studies.

The preamble to the Statutes adds a crucial historical and civic dimension. It refers to the constitutionally guaranteed freedom of scientific research, to the tradition of Czech scientific institutions over more than two hundred years, and to the basic mission of the Academy to

enrich human knowledge and serve the welfare of the Czech Republic and its citizens (*Academy of Sciences of the Czech Republic, n.d.*). This language is not merely ceremonial. It places the Academy within a long genealogy that reaches back to the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy of Sciences. At the same time, it explicitly connects this genealogy with democratic freedom of research. The Academy is therefore presented as a successor institution, but not as an uncritical heir. The inheritance is filtered through constitutional freedom and public welfare. This gives the Academy's mission a distinctive moral tone: it must carry the cultural memory of Czech science, but it must do so in a democratic, open, and internationally accountable form. The preamble also describes the Academy as a national research centre and a democratically organised network of autonomous scientific institutions (*Academy of Sciences of the Czech Republic, n.d.*). The phrase is particularly important because it rejects both extreme centralism and institutional fragmentation. The mission of AV ČR is to be national, democratic, networked, and autonomous at the same time.

This statutory mission also clarifies the meaning of service to the state. The Academy serves the Czech Republic not by producing politically convenient conclusions, but by sustaining independent expertise under public law. This distinction is essential in the institutional history of Czech and Czechoslovak science. During the socialist period, service to society was often interpreted through the language of socialist construction, planned economy, and ideological loyalty. In the modern Academy, service to society is redefined through scientific quality, public benefit, and democratic accountability. The Academy's research may support policy, industry, education, culture, health, environmental protection, or technological development, but its epistemic authority rests on research standards rather than political instruction. This is why the mission contains both public orientation and international scientific standards. A national research institution must not become provincial, and a publicly funded institution must not become servile. The Academy's mission in law attempts to prevent both dangers. It makes the Academy publicly responsible without making it intellectually dependent. That balance is one of the most important achievements of the post-1989 transformation.

The mission also includes education, but in a form distinct from the university mission. The Academy does not exist primarily to provide mass higher education, award degrees across large student populations, or reproduce a curriculum. Its educational role is concentrated in the formation of researchers, especially through doctoral training, cooperation with universities, supervision, specialised courses, research schools, and the integration of young scholars into research teams (*Academy of Sciences of the Czech Republic, n.d.*). This educational mission has a strategic character. It ensures continuity of scientific expertise, transfers tacit knowledge, and connects research infrastructure with the development of human capital. In this respect, the Academy's mission complements that of universities rather than competing with it. Universities educate broad academic communities, while the Academy provides research-intensive environments where doctoral students and early-career researchers can enter advanced scientific work. This division of labour is especially important in disciplines that require laboratories, archives, long-term datasets, field stations, instruments, or highly specialised supervision. The Academy's role in education is therefore less visible to the general public than university teaching, but it is crucial for the reproduction of Czech scientific capacity.

The mission in public policy is broader than the mission in the founding Act, because Czech research policy places the Academy within a national system of research, development,

innovation, and knowledge transfer. The National Research, Development and Innovation Policy of the Czech Republic 2021+ defines itself as the overarching strategic document for the development of all components of research, development, and innovation in the Czech Republic (*Council for Research, Development and Innovation, 2020*). Its vision is to contribute through effective support and targeting of research, development, and innovation to the prosperity of the Czech Republic as a knowledge-based and innovation-capable economy and society (*Council for Research, Development and Innovation, 2020*). This policy language does not mention the Academy alone, but it creates the environment in which the Academy's mission is interpreted. AV ČR becomes one of the principal public institutions capable of delivering excellence, interdisciplinarity, long-term expertise, and international cooperation within this national framework. The Academy's legal mission, therefore, is not isolated from policy priorities. It is translated into national expectations concerning quality, human resources, cooperation with the application sphere, innovation potential, and responses to global risks. The Academy must remain a centre of fundamental research, but it must also function as an actor in the knowledge-based state.

The National RDI Policy 2021+ is important because it describes research policy not merely as a technical matter of grants and institutions, but as part of national development. It identifies key areas such as governance and financing of the research system, motivation for research careers, human-resource development, quality and international excellence, cooperation between research and application spheres, and the innovation potential of the Czech Republic (*Council for Research, Development and Innovation, 2020*). Each of these areas touches the Academy's mission. Governance and financing affect institutional stability. Research careers concern the Academy's ability to attract and retain excellent researchers. International excellence directly corresponds to the statutory requirement that the Academy advance knowledge at the international level. Cooperation with application spheres connects with the statutory duty to apply results for competitiveness and societal needs. Innovation potential gives public policy a vocabulary through which basic research can be connected to future economic and technological development. The Academy is not identical with the national RDI system, but it is one of its long-term pillars. Its mission is therefore interpreted by government policy as part of a wider national ambition to strengthen knowledge, resilience, and competitiveness.

At the same time, the Academy's mission cannot be collapsed into innovation policy. This is a frequent risk in contemporary research governance, where public authorities may be tempted to judge research mainly by short-term economic indicators. The statutory mission of AV ČR is wider and older than the innovation vocabulary. It includes education, culture, scientific understanding, and societal problems, not only industrial competitiveness. This matters especially for humanities, social sciences, and fundamental natural sciences, whose value often cannot be measured through immediate commercialisation. A study of medieval manuscripts, a long-term demographic analysis, a mathematical theorem, a linguistic dictionary, a reconstruction of archaeological settlement, or a theory in cosmology may not produce a marketable output in the short term. Yet such work belongs fully to the Academy's mission. Czech public policy may increasingly emphasise innovation and knowledge transfer, but the Academy's legal identity preserves a broader conception of public knowledge. Its mission is to keep the intellectual ecosystem from becoming too narrow. In this sense, the Academy acts as a corrective to a purely utilitarian understanding of research.

Strategy AV21 shows how the Academy has tried to reinterpret its mission in a more outward-facing form. Its motto, "Top research in the public interest", condenses the Academy's effort to connect excellent science with contemporary societal challenges (*Academy of Sciences of the Czech Republic, 2017*). The strategy was adopted as a programme framework in the middle of the 2010s, and it was designed to mobilise interdisciplinary cooperation among institutes around issues such as energy, health, digital technologies, public policies, environment, memory, society, and culture. It did not abolish the centrality of basic research; on the contrary, it explicitly respected basic research as the core of scientific development (*Academy of Sciences of the Czech Republic, 2017*). Its significance lies in the fact that it transformed the statutory mission into a strategic language understandable to policymakers, partners, and the public. The Academy presented itself not only as a guardian of scientific excellence, but also as an institution capable of identifying social challenges and organising knowledge around them. This was an important step in the evolution of the Academy's public role. It made the mission more communicative, more interdisciplinary, and more visibly connected to the needs of society.

Strategy AV21 also reveals that the Academy's mission depends on internal coordination. The Academy is a network of autonomous institutes, and autonomy can easily produce disciplinary separation. A public mission, however, requires more than excellent isolated institutes. It requires mechanisms by which knowledge from different fields can be brought together around complex problems. Climate change, pandemics, artificial intelligence, ageing, energy transition, cultural identity, security, and democratic governance cannot be understood by one discipline alone. Strategy AV21 therefore became a practical instrument for translating the legal mission into interdisciplinary research programmes. Its research programmes were designed through discussions between the Academy leadership and institute directors, with attention to trends in global science, social relevance, and national priorities of oriented research (*Academy of Sciences of the Czech Republic, 2017*). This procedure is important because it shows how mission is made operational. The law defines the Academy's purpose, but strategic programmes convert that purpose into coordinated research action. In this sense, public policy enters the Academy not only from outside, through government documents, but also from within, through the Academy's own strategic self-definition.

The mission in Czech law also includes international integration. Act No. 283/1992 Coll. explicitly authorises the Academy and its institutes to conclude agreements on international cooperation in scientific activities and technological development (*Czech National Council, 1992*). The Statutes further state that the Academy pursues the advancement of knowledge at the international level and is guided by internationally recognised standards of scientific work (*Academy of Sciences of the Czech Republic, n.d.*). This is not a decorative phrase. It is a legal and policy condition of contemporary scientific legitimacy. Public research institutions cannot serve their country well if they are isolated from international science. The Academy's mission requires publication in international venues, participation in European and global projects, researcher mobility, access to large infrastructures, and cooperation with foreign institutions. International integration is also a safeguard against intellectual provincialism and political pressure. It embeds Czech research in comparative standards and transnational peer judgement. Thus, the Academy's national mission is fulfilled precisely by being international. Its task is not to produce "national science" in a closed sense, but to enable Czech society to participate in universal scientific knowledge.

The Academy's mission is also shaped by the principle of scientific integrity. The Code of Ethics for Scientific Research of the Czech Academy of Sciences, effective from 2024, lists values such as freedom of research, fairness, equal opportunities, responsibility, honesty, diligence, trust, and respect for others (*Academy of Sciences of the Czech Republic, 2024*). These values are not external ornaments added to research after the fact. They are part of the Academy's public legitimacy. A public research institution receives authority, money, and trust from society; in return, it must produce knowledge according to ethical standards. Scientific freedom without integrity would become privilege. Public relevance without honesty would become propaganda. International cooperation without trust would become fragile. The Academy's mission therefore includes a moral dimension that connects the individual researcher to the institutional whole. The Code of Ethics translates this moral dimension into expectations for everyday research practice. It shows that the Academy's mission is not only legal and strategic, but also professional and ethical.

Open science has become another contemporary expression of the Academy's mission. The Open Science Principles of the Czech Academy of Sciences, approved in 2024, state that the Academy strives to ensure that the results of scientific activities of its institutes have the widest possible benefits for society, and that open exchange of knowledge, sharing, and collaboration are important for science (*Academy of Sciences of the Czech Republic, 2024*). This reflects a significant shift in the public understanding of research. In earlier periods, public research could be justified by institutional existence and expert authority alone. Today, it is increasingly expected to be accessible, reusable, transparent, sustainable, and reproducible. Open science therefore links the Academy's public mission with new standards of knowledge circulation. It does not mean that every dataset, publication, or result can be made instantly and freely available without legal, ethical, or technical limitations. It means that the default direction of public research is toward openness wherever possible. This principle strengthens the Academy's social legitimacy because publicly supported research should, as far as responsibly possible, return knowledge to the public sphere. Open science thus becomes a modern form of the Academy's older mission to enrich human knowledge.

The new Act No. 328/2025 Coll., on research, development, innovation and knowledge transfer, confirms the movement of Czech research policy toward a broader and more integrated framework. The Act regulates rights and obligations of persons and state organisational units engaged in publicly supported scientific activity, the protection of scientific integrity and research ethics, state budget expenditure on research, development, innovation and knowledge transfer, information provision, and the competence of public administration bodies in this field (*Parliament of the Czech Republic, 2025*). It also defines knowledge transfer as a process of obtaining, collecting, and sharing knowledge, including skills, in economic and non-economic activities (*Parliament of the Czech Republic, 2025*). Although its full legal effects unfold in stages, this Act marks a significant policy shift. It places knowledge transfer alongside research, development, and innovation as a central category of public science governance. For the Academy, this does not replace the statutory mission of fundamental research. Rather, it expands the policy environment in which that mission is expected to operate. The Academy's future public role will increasingly depend on its ability to combine excellent research with responsible knowledge transfer.

This development is consistent with the Academy's own mission but also creates tension. Knowledge transfer can enrich public research by connecting discoveries with education, public administration, industry, medicine, culture, and civil society. It can help the Academy

demonstrate that fundamental expertise has consequences beyond academic publication. However, knowledge transfer can also be misunderstood as immediate commercialisation or as pressure to privilege short-term applied outputs. The Academy's mission requires a more sophisticated interpretation. Knowledge transfer should include technology transfer, but also policy advice, public communication, educational materials, cultural interpretation, open data, expert reports, standards, methods, databases, and long-term advisory capacity. In humanities and social sciences, transfer often takes the form of interpretation, public memory, legal expertise, linguistic resources, and critical analysis. In natural and technical sciences, it may take the form of patents, prototypes, methods, instruments, spin-offs, environmental models, or medical applications. A mature public policy framework must recognise this diversity. The Academy's mission is strong precisely because it can translate knowledge into many forms of public value.

The Academy's mission in Czech law and public policy also involves collaboration with other sectors. The official mission description stresses cooperation with domestic and foreign organisations and individuals who participate in, support, or utilise research activities (*Academy of Sciences of the Czech Republic, n.d.*). Public policy adds cooperation between research and application spheres as one of the key areas of national development (*Council for Research, Development and Innovation, 2020*). This does not turn the Academy into a service provider for industry or government. Rather, it recognises that advanced research problems often require interaction among institutes, universities, ministries, companies, hospitals, schools, municipalities, museums, archives, and international partners. The Academy's mission is therefore relational. It exists within an ecosystem, not in isolation. Its public value depends partly on its capacity to connect specialised knowledge with users who cannot produce that knowledge themselves. This relational mission is especially important in a small or medium-sized country. The Czech Republic cannot afford to fragment expertise into sealed institutional compartments. AV ČR helps create a national space in which expertise can circulate.

The cultural dimension of the Academy's mission deserves particular attention. The Statutes explicitly mention education and culture alongside competitiveness and social problems (*Academy of Sciences of the Czech Republic, n.d.*). This wording preserves an older Czech understanding of science as part of national culture. From the national revival through the interwar republic and into the present, scholarship in language, history, literature, archaeology, ethnology, art history, philosophy, and law has helped define the intellectual self-understanding of Czech society. In the socialist period, this cultural function was often distorted by ideological frameworks, but it was not destroyed. In the modern Academy, the cultural mission is rearticulated as scholarly, pluralistic, and democratic. The Academy's humanities and social-science institutes do not merely conserve heritage; they investigate, interpret, critique, and contextualise it. This work is public in a deep sense because societies need reliable knowledge about their own past, language, values, conflicts, and institutions. The Academy's mission therefore includes the care of cultural memory, but not as antiquarian preservation alone. It treats cultural memory as a field of research necessary for democratic self-understanding.

The competitiveness dimension of the mission also requires careful interpretation. The Statutes connect the application of research results with the competitiveness of the Czech Republic (*Academy of Sciences of the Czech Republic, n.d.*). In public policy, competitiveness is often associated with innovation, industrial performance, technological development, and

economic growth. These are legitimate concerns, especially for a country integrated into European and global markets. Yet the Academy's contribution to competitiveness is often indirect and long-term. It lies in high-level knowledge, human capital, research infrastructure, scientific reputation, international networks, analytical capacity, and the ability to generate discoveries whose applications may appear only later. Public research strengthens competitiveness not only by producing immediate technologies, but also by increasing the intellectual depth of society. A country with strong science can better absorb external technologies, participate in international projects, train specialists, evaluate risks, and formulate evidence-based policies. The Academy therefore supports competitiveness through a broad knowledge infrastructure. Its mission should not be narrowed to commercial outputs, even when those outputs are valuable.

The mission of the Academy also includes a public-policy function that is becoming more visible. The Statutes state that the Academy actively participates in the formation of research and development policies of the Czech Republic and the European Union, and that in developing its policy and programmes it is guided by the needs of science, technology, culture, Czech and EU research policies, and internationally recognised scientific standards (*Academy of Sciences of the Czech Republic, n.d.*). This gives the Academy a role not only as a recipient of policy, but as a participant in policy formation. It may provide expertise, analysis, institutional experience, and scientific judgement to public authorities. This role is especially important when policy problems involve long-term evidence rather than short political cycles. Energy, climate adaptation, biodiversity, public health, digitalisation, demographic ageing, migration, education, security, and cultural heritage all require informed public decision-making. The Academy's mission includes the capacity to speak to such problems from a position of research-based expertise. This does not mean that scientists replace politicians. It means that democratic policy should be informed by institutions capable of producing and evaluating knowledge.

The mission also contains an element of representation. AV ČR represents Czech science in relations with foreign institutions, supports scientific societies, establishes Czech national committees in international scientific unions, and participates in international scientific life (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). This representative function connects the modern Academy to the older learned-academy tradition. However, representation today is not purely ceremonial. It has practical consequences for international cooperation, scientific diplomacy, access to infrastructures, participation in expert bodies, and the visibility of Czech research. In small and medium-sized research systems, institutional representation can strongly influence international positioning. The Academy's mission therefore includes the task of making Czech science visible and credible abroad. This is especially important after the historical ruptures that affected Czech and Czechoslovak science in the 20th century: occupation, war, communist takeover, ideological purges, normalisation, post-1989 transformation, and European integration. The modern Academy represents not only current research performance, but also the recovered continuity of Czech scientific culture.

Public finance is another implicit component of the mission. Because the Academy is financed primarily from the state budget, its mission must be understandable to citizens and public authorities. However, public funding should not be interpreted as a simple purchase of services. Many of the Academy's most valuable contributions are uncertain, long-term, and cumulative. The public pays not only for immediate outputs, but for the maintenance of

research capacity that may become essential in future crises or opportunities. This is why institutional funding remains important alongside project funding. Targeted grants can stimulate competition and focus, but stable institutional support allows institutes to maintain expertise, infrastructure, doctoral training, and long-term research agendas. The Academy's mission therefore depends on a mixed funding philosophy. It requires enough institutional stability to sustain depth and enough competitive funding to encourage excellence and openness. Czech public policy has repeatedly moved between these two poles. The Academy's task is to show that both are necessary for a healthy research system.

The Academy's mission is also shaped by the problem of evaluation. Public policy requires evidence that institutions use resources effectively, produce high-quality research, and contribute to national goals. Yet evaluation must respect the Academy's disciplinary plurality and long-term mission. A physics institute, a historical institute, a biological centre, a legal research institute, and an institute of Czech language cannot be judged by identical output patterns. The mission in law is deliberately broad, and evaluation must be equally sophisticated. International peer review, field-sensitive indicators, qualitative assessment, societal relevance, and institutional strategy all need to be combined. If evaluation becomes too narrow, it may distort the mission by rewarding only easily measurable outputs. If evaluation is too weak, it may fail to protect public trust. The Academy's mission therefore requires an evaluation culture that is rigorous without being mechanical. This is one of the central governance problems of modern public research.

The mission of AV ČR also helps define the relationship between autonomy and accountability. Autonomy is necessary because research cannot be planned like routine administration. Scientific questions emerge from disciplinary development, unexpected discoveries, methodological changes, and international debate. Researchers must be free to challenge assumptions, criticise established views, and pursue problems whose value is not immediately obvious. Accountability is necessary because the Academy operates under public law, uses public resources, and claims public authority. The mission of the Academy therefore does not choose between autonomy and accountability. It integrates them. The Academy should be autonomous in the production of knowledge and accountable in its use of public trust. This integration distinguishes democratic public research from both political command science and private research secrecy. It is one of the defining features of the modern Czech Academy.

The Academy's mission in law and public policy can thus be understood as a layered institutional compact. The founding Act establishes the Academy, its public status, its institute-based mode of research, its international cooperation, and its relation to the state budget. The Statutes articulate the broader mission of knowledge, welfare, autonomy, education, culture, competitiveness, and social problem-solving. National RDI policy places the Academy within the development of a knowledge-based, innovative, internationally competitive Czech society. Strategy AV21 translates this mission into interdisciplinary programmes oriented toward public interest. Ethical and open science documents update the mission for contemporary expectations of integrity, transparency, accessibility, and reproducibility. The new legal framework on research, development, innovation, and knowledge transfer further expands the policy context in which the Academy must operate. These layers do not always speak in the same vocabulary, but they form a coherent picture. The Academy is expected to be excellent, autonomous, useful, ethical, open, international,

and publicly accountable. Its mission is demanding because it is historically and institutionally rich.

Thus, the mission of the Czech Academy of Sciences in Czech law and public policy is not a static declaration, but an evolving framework that connects the Academy's post-1989 legal reconstruction with the contemporary needs of a democratic knowledge society. The Academy exists to conduct research through autonomous institutes, to advance knowledge at the international level, to educate researchers, to serve education and culture, to strengthen competitiveness, to address social problems, and to participate in the formation of research policy. Its mission preserves the long continuity of Czech learned life while adapting it to democratic legality, European research standards, open science, knowledge transfer, and public accountability. The central meaning of this mission lies in balance: between fundamental research and practical relevance, between national service and international science, between autonomy and responsibility, between disciplinary depth and interdisciplinary response, and between cultural memory and future-oriented innovation. AV ČR is therefore not merely an institution that performs research. It is one of the legal and policy mechanisms through which the Czech Republic maintains the public value of knowledge itself.

3. Fundamental Research, Applied Relevance, and Public Interest

The relationship between fundamental research, applied relevance, and public interest lies at the centre of the modern Czech Academy of Sciences' institutional identity. It is also one of the most sensitive questions in the history of post-socialist science, because it touches the boundary between intellectual freedom and public responsibility. The Academy exists in a public legal framework and is financed primarily from public funds, but its deepest justification cannot be reduced to the immediate production of practical solutions. Its mission rests on the conviction that societies need institutions capable of pursuing knowledge before its usefulness is fully visible. At the same time, the Academy cannot present fundamental research as an isolated activity detached from education, culture, policy, economy, health, environment, and the general welfare of citizens. The Statutes of the Czech Academy of Sciences therefore formulate the mission in a deliberately broad way: the Academy advances understanding at the international level, educates researchers, and applies and disseminates results for education, culture, competitiveness, and the solution of current social problems (*Academy of Sciences of the Czech Republic, n.d.*). This legal and statutory language avoids a simple opposition between "pure" and "useful" science. Instead, it suggests that fundamental research and public relevance are connected through time, institutions, expertise, and social trust. The Academy's public mission is thus not to abandon basic research for application, but to show why basic research itself is one of the conditions of a mature public life.

The phrase "fundamental research" has a particular institutional resonance in the Czech context. It evokes not only curiosity-driven science in the abstract, but also the historical experience of research traditions that survived political rupture, ideological pressure, administrative reforms, and repeated redefinitions of usefulness. In the 20th century, Czech and Czechoslovak scientific institutions were often asked to prove their value to the state, to the economy, to national culture, or to ideological projects. The socialist Academy especially inherited and intensified the idea that research should serve planned social development, although many research teams continued to produce work whose value exceeded the ideological framework around them. After 1989, the problem had to be reformulated. A

democratic state could no longer demand ideological service from science, but it could legitimately expect publicly funded research to contribute to society. The modern Academy therefore developed a new language of public relevance that differs from socialist utility. It is not based on political command, but on the public value of independent expertise. It is not a return to the 19th-century learned ideal of scholarship completely outside economic and social needs, but neither is it a submission of science to short-term policy and market demands. AV ČR is important precisely because it institutionalises this middle position.

The Academy's Concept for Development of Activities gives one of the clearest contemporary expressions of this balance. It states that the main mission of the Academy and its institutes is to conduct high-quality scientific research at the frontier of knowledge while respecting society's current and anticipated needs (*Academy of Sciences of the Czech Republic, 2022*). This formulation is carefully constructed. The phrase "frontier of knowledge" protects the ambition of fundamental research, because it places discovery, explanation, theory, method, and originality at the centre of the Academy's work. The reference to current and anticipated needs gives the mission a public and temporal horizon. The Academy is not asked merely to respond to what is already demanded by government, industry, or media attention. It is expected to recognise future needs, emerging risks, and problems that may not yet be politically visible. This is one of the defining functions of long-term research institutions. They do not simply answer existing questions; they often help society understand which questions are becoming important. In this sense, fundamental research is not passive in relation to public interest. It can enlarge the public's horizon of awareness.

The same Concept also recognises that socio-economic benefit can arise in any scientific discipline, whether research is declared basic or applied, and whether the benefit is targeted from the beginning or appears as a by-product (*Academy of Sciences of the Czech Republic, 2022*). This statement is especially significant because it rejects the naïve linear model according to which basic research first produces knowledge, applied research then develops it, industry commercialises it, and society later receives benefits. In practice, the relation is more complex. Applied problems can generate new fundamental questions, while theoretical discoveries may unexpectedly become foundations for technology, medicine, public policy, or cultural interpretation. A mathematical method may later transform data science. A study of cellular mechanisms may become relevant for therapy. Research in linguistics may support digital language technologies. Historical and legal research may become crucial for public administration, cultural diplomacy, or national memory. Environmental research may begin with basic observation but become indispensable for climate adaptation. The Academy's mission depends on this nonlinear understanding of knowledge. It allows public research to remain open to unforeseen consequences.

This nonlinear relation between discovery and application is one reason why public support for fundamental research remains necessary. Industrial research is often shaped by shorter time horizons, identifiable products, proprietary knowledge, and measurable return on investment. Such research is essential, but it cannot replace institutions that are able to pursue uncertain, risky, long-term questions. The Academy's Concept explicitly notes that public support allows research to address topics and problems beyond the scope of industrial research motivated by short-term returns, including riskier projects whose use may only appear in a more distant future (*Academy of Sciences of the Czech Republic, 2022*). This argument is not a defensive excuse for academic isolation. It is a sober description of how advanced knowledge develops. Many areas of science require years or decades before their relevance becomes evident. Public

research institutions therefore act as temporal bridges between present uncertainty and future capacity. They maintain expertise before society knows exactly how it will need it. This is why the Academy's fundamental research is a public asset, not a private intellectual luxury.

The public interest served by AV ČR is therefore not identical with immediate public demand. Public demand may be shaped by electoral cycles, media crises, economic pressure, or fashionable technologies. Public interest is broader and deeper. It includes the long-term intellectual, cultural, environmental, technological, medical, and democratic capacities of society. A scientific institution can serve public interest precisely by refusing to be governed entirely by short-term public demand. This is especially important in areas where knowledge is difficult, unpopular, slow, or initially abstract. Climate science, demographic research, biodiversity monitoring, pandemic preparedness, historical memory, legal analysis, and critical social research may all produce uncomfortable conclusions. Their public value lies not in confirming expectations, but in providing reliable knowledge. The Academy's mission therefore requires both responsiveness and independence. It must listen to society, but it must not reduce scientific truth to social applause.

Strategy AV21 expresses this balance through the motto "Top research in the public interest" (*Academy of Sciences of the Czech Republic, 2017*). The phrase is concise, but institutionally rich. "Top research" signals excellence, international quality, peer recognition, disciplinary depth, and methodological seriousness. "Public interest" signals social responsibility, relevance, accessibility, and the Academy's obligation to contribute to the life of the Czech Republic. The motto does not say "applied research instead of basic research", nor does it say "basic research without public relevance". It places excellence and public interest in the same formula. This is an important development in the Academy's post-socialist self-definition. It enables AV ČR to defend fundamental research while avoiding the impression that fundamental research is indifferent to society. It also gives a public language to the Academy's interdisciplinary programmes. The motto is not merely a slogan; it is a conceptual bridge between the Academy's legal mission and its strategic communication.

Strategy AV21 was designed as a set of coordinated research programmes involving closely cooperating institutes of the Academy. Its framework emphasises contemporary problems and challenges, practical application of research results in economically and socially important areas, and collaboration with the application sector, while also explicitly respecting the key role of basic research as the core of the development of all scientific disciplines (*Academy of Sciences of the Czech Republic, 2017*). This combination is crucial. It means that applied relevance is not treated as an external demand imposed on fundamental science, but as one of the possible expressions of scientific maturity. The Academy's institutes are encouraged to connect their knowledge to societal challenges without dissolving disciplinary foundations. The strategy therefore functions as a mediating mechanism. It translates the Academy's broad mission into programmes that can be understood by policymakers, industry, public institutions, universities, media, and citizens. At the same time, it keeps the internal scientific logic of research intact. The result is not a replacement of fundamental research by "project usefulness", but a structured effort to make fundamental expertise socially legible.

The research programmes of Strategy AV21 show the breadth of what public interest can mean. They include themes related to the digital era, energy, nuclear systems, materials, health, food, biodiversity, ecosystems, public policies, communication, memory, conflict, space, and light-based technologies (*Academy of Sciences of the Czech Republic, 2017*). This list is revealing

because it includes both technological and humanistic concerns. Public interest is not limited to patents, industrial competitiveness, or medical products. It also includes memory, language, communication, policy, social cohesion, cultural identity, and the capacity to understand conflict. In this sense, AV ČR's concept of public interest is wider than the language of innovation alone. It recognises that societies are not only economies; they are also cultures, legal orders, linguistic communities, ecological actors, historical communities, and democratic publics. The Academy's institutional advantage lies in its disciplinary breadth. Because it includes natural, technical, medical, social, and human sciences, it can treat public interest as a multi-dimensional problem rather than as a narrow economic category.

This wide understanding of public interest is especially important for the humanities and social sciences within the Academy. These fields are sometimes forced to justify themselves in a policy environment dominated by technological innovation and measurable economic impact. Yet the public relevance of humanities and social sciences is often profound precisely because it concerns the conditions under which public life is understandable. Historical research clarifies collective memory and the interpretation of political experience. Linguistics supports language culture, education, digital resources, and communication technologies. Legal research contributes to the analysis of institutions, rights, regulation, and public administration. Sociology and economics help diagnose inequality, demographic change, labour markets, trust, social cohesion, and policy outcomes. Philosophy and ethics contribute to debates about technology, responsibility, freedom, and the meaning of human action. Archaeology, art history, ethnology, and literary studies preserve and reinterpret cultural heritage. Such fields may not always produce immediate commercial outputs, but they produce public understanding. For a democratic society, this is not ornamental knowledge; it is civic infrastructure.

The natural, technical, and medical sciences demonstrate another route from fundamental research to public benefit. Research in physics, chemistry, biology, mathematics, computer science, engineering, geosciences, and biomedical fields often begins with specialised questions that are incomprehensible to the general public. Yet such research can later become central to diagnostics, materials, environmental modelling, renewable energy, data analysis, pharmaceuticals, nanotechnologies, and security. The Academy's public relevance therefore depends partly on its capacity to sustain fields whose applications cannot be predicted at the moment of discovery. Long-term research teams, specialised instruments, large datasets, and international infrastructures make this possible. The public may notice the Academy most clearly during crises, when expert knowledge becomes urgently needed. However, the expertise used in crises is usually built before the crisis appears. Public interest is therefore served by preparedness, not only by response. AV ČR's fundamental research functions as a reserve of national competence.

The relation between fundamental research and applied relevance also has an educational dimension. The Academy educates researchers, participates in doctoral training, and provides research environments in which young scientists learn not only techniques, but also intellectual habits. In this context, applied relevance is not simply the transfer of results to external users. It is also the formation of people capable of moving between deep research and practical problems. A doctoral student trained in an Academy institute may later work in a university, company, ministry, hospital, museum, archive, international organisation, or technology firm. The public benefit of fundamental research thus travels through human capital. It is embodied in researchers who carry methods, standards, critical thinking, and

specialised expertise into different parts of society. This is one of the least visible but most important contributions of AV ČR. The Academy serves public interest not only through publications and projects, but through the formation of scientific judgement.

Applied relevance in the Academy's mission is therefore not restricted to commercialisation. Knowledge and technology transfer includes patents, licences, spin-offs, contracts, prototypes, and cooperation with companies, but it also includes expert opinions, standards, methods, databases, policy documents, public lectures, educational materials, exhibitions, media communication, and advisory work. The Concept for Development of Activities explicitly mentions the transfer of knowledge and technology into economic practice, expert opinions for decision-makers, educational activities for the public, and interaction with social stakeholders (*Academy of Sciences of the Czech Republic, 2022*). This broader view is essential because the Academy's institutes produce many kinds of knowledge. A laboratory may transfer a method to industry. A legal institute may advise public authorities. A historical institute may contribute to education and public memory. A sociological institute may inform social policy. An environmental institute may support regional planning. The Academy's public relevance is therefore plural, and the institutional system must be capable of recognising this plurality.

The new Czech legal framework on research, development, innovation, and knowledge transfer strengthens this tendency. Act No. 328/2025 Coll. places knowledge transfer directly into the title and scope of the new research law, and the Academy's Open Science portal notes that the Act will significantly reshape the Czech research environment, replacing the earlier Act No. 130/2002 Coll. and introducing open science into statutory language (*Parliament of the Czech Republic, 2025*; *Library of the Czech Academy of Sciences, 2025*). This development matters for AV ČR because it changes the policy environment in which the Academy must articulate public relevance. Knowledge transfer is no longer an optional supplement to research; it becomes part of the expected public function of research institutions. At the same time, the Academy must ensure that transfer is understood in a way compatible with fundamental research. Transfer should not mean the immediate conversion of every research activity into a market product. It should mean the responsible circulation of knowledge into places where it can create intellectual, social, cultural, technological, or economic value. This interpretation protects the Academy's research freedom while strengthening its public role.

Open science is closely connected with this broader understanding of public interest. The Academy's Open Science Principles state that the Academy seeks to ensure that the results of scientific activities of its institutes have the widest possible benefit for society and that open exchange of knowledge, sharing, and collaboration are important for science (*Academy of Sciences of the Czech Republic, 2024*). This principle modifies the older model of public research. It is no longer enough for research to be publicly funded and internally excellent. There is a growing expectation that publications, data, methods, and outputs should be accessible where legal, ethical, and technical conditions allow it. Open science does not abolish intellectual property, privacy, security, or disciplinary differences. It does, however, shift the moral default of public research toward accessibility and reuse. For AV ČR, open science reinforces the public-interest dimension of fundamental research. Knowledge generated with public support should, as far as responsibly possible, return to the public domain of learning, verification, and further discovery.

The Academy's public interest mission also involves expert advice for decision-making. The Concept for Development identifies the use of research capacity for the preparation of source documents for informed political decision-making as one of the Academy's long-term objectives (*Academy of Sciences of the Czech Republic, 2022*). This role is increasingly important in contemporary societies. Public authorities face problems that require specialised, interdisciplinary, and long-term knowledge: pandemics, climate adaptation, biodiversity loss, energy transition, digital regulation, demographic ageing, education reform, migration, public health, and security. The Academy cannot and should not replace political responsibility. Scientific expertise does not decide values, priorities, or democratic choices by itself. However, public decision-making without research-based knowledge becomes vulnerable to improvisation, ideology, lobbying, and misinformation. The Academy's public mission includes the ability to provide evidence, analysis, scenarios, and critical assessment. In this sense, fundamental research becomes relevant because it creates the background knowledge from which competent advice can be drawn.

The national RDI policy framework reinforces the same logic. The National Research, Development and Innovation Policy of the Czech Republic 2021+ describes itself as the overarching national strategic document for advancing all components of research, development, and innovation in the Czech Republic, with a vision of prosperity based on knowledge, innovation, quality living conditions, and recognition in the European and global community (*Council for Research, Development and Innovation, 2020*). The policy identifies quality and international excellence, cooperation between research and application spheres, human resources, governance, funding, and innovation potential as key areas (*Council for Research, Development and Innovation, 2020*). AV ČR's mission intersects with each of these priorities. It contributes to excellence through its institutes and international networks. It contributes to human resources through researcher training. It contributes to application through Strategy AV21, transfer activities, expert advice, and cooperation with external partners. It contributes to governance because it participates in the formation of research policy. Yet its role remains distinct from that of a grant agency, ministry, university, or company. The Academy provides long-term research capacity within the national system.

RIS3 strategy adds another dimension by focusing resources on oriented and applied research and innovation within promising priority areas, building on national and regional strengths (*Ministry of Industry and Trade of the Czech Republic, 2021*). This policy logic is important because public research does not exist in an abstract national space; it also interacts with regional capacities, industrial structures, European funds, and smart specialisation priorities. The Academy's institutes may contribute to these priorities through materials research, energy systems, biotechnology, digital technologies, environmental science, medical research, social analysis, and cultural expertise. However, the Academy's relation to RIS3 should not be understood as subordination. Smart specialisation identifies areas where research and innovation resources can be strategically targeted, while the Academy preserves a wider and deeper research base. The two logics can support one another if the policy system recognises their difference. Fundamental research supplies the intellectual reservoir from which future specialisations may emerge. Applied relevance gives fundamental research channels through which it can influence economic and social transformation.

The issue of public interest also changes how interdisciplinary research is understood. Interdisciplinarity is sometimes celebrated as a fashionable policy term, but for the Academy it follows from the nature of public problems. Problems such as climate change, digitalisation,

public health, energy security, social trust, cultural memory, and technological regulation do not respect disciplinary boundaries. The Academy's institute system, covering almost all broad fields of science, gives it a rare capacity to combine expertise across domains. Strategy AV21 was built precisely to use this capacity through coordinated programmes involving several institutes (*Academy of Sciences of the Czech Republic, 2017*). Fundamental research remains necessary within each discipline, because interdisciplinary work without disciplinary depth easily becomes superficial. At the same time, public interest often requires the synthesis of knowledge. The Academy's challenge is therefore to protect disciplinary excellence while creating institutional pathways for interdisciplinary collaboration. This is one of the most important tasks of its modern architecture.

The public relevance of fundamental research also depends on communication. A publicly funded research institution must not only produce knowledge, but also explain its importance in ways that do not trivialise science. The Academy's public communication includes lectures, exhibitions, media work, educational platforms, publications, science festivals, expert commentaries, and digital dissemination. This communication is part of the public mission, but it is not the same as marketing. Its purpose is to make knowledge intelligible, to cultivate public trust, and to strengthen the place of evidence in society. The Academy must communicate uncertainty as well as results, complexity as well as discovery, and limits as well as promises. This is especially important in fields where public debate is polarised. Climate, vaccination, energy, artificial intelligence, migration, history, and identity are not merely technical topics; they are arenas of public conflict. AV ČR serves public interest when it brings careful research into such arenas without turning itself into a political campaign organisation.

The tension between fundamental research and applied relevance is also visible in evaluation. If evaluation systems reward only short-term measurable outputs, institutes may be pushed away from deep research toward easily reportable activity. If evaluation ignores public relevance entirely, publicly funded institutions may lose social legitimacy. The Academy therefore needs evaluation practices that recognise both scientific quality and public contribution. International peer review, field-sensitive assessment, long-term indicators, qualitative judgement, transfer outcomes, advisory work, and cultural impact all have a place. The Concept for Development stresses the regular and comprehensive evaluation of research and professional activities of institutes, teams, and individuals (*Academy of Sciences of the Czech Republic, 2022*). Such evaluation must be sophisticated enough to compare quality without flattening disciplinary differences. It must recognise that a major monograph, a long-term dataset, a patent, a policy report, a mathematical proof, a clinical method, and a historical edition represent different forms of excellence. Public interest is damaged when evaluation mistakes diversity for weakness.

The Academy's mission also requires financial arrangements that make long-term research possible. Fundamental research cannot survive if every activity must be justified through immediate output or short project cycles. Stable institutional funding supports continuity of teams, maintenance of infrastructure, development of young researchers, preservation of collections and databases, and exploratory research. Competitive project funding, by contrast, encourages openness, external evaluation, responsiveness, and excellence under pressure. The Academy needs both. Too much dependence on short-term grants can fragment research and weaken institutional memory. Too much dependence on unconditional institutional funding can reduce dynamism and accountability. The public interest is best served when the funding system allows institutes to take intellectual risks while remaining

transparent and evaluable. This funding balance is one of the practical foundations of the Academy's relationship between fundamental research and applied relevance.

A further public-interest function of the Academy is preparedness for the unknown. Modern societies often discover the value of research only when they face unexpected crises. A pandemic reveals the importance of virology, immunology, modelling, public communication, social behaviour, law, and ethics. An energy crisis reveals the importance of materials science, nuclear research, storage technologies, economics, and security studies. Climate events reveal the importance of atmospheric science, hydrology, ecology, geography, urban planning, and public administration. Digital threats reveal the importance of computer science, cryptography, linguistics, psychology, and law. Cultural conflicts reveal the importance of history, memory studies, sociology, and philosophy. None of these capacities can be created instantly. They are built through years of fundamental and oriented research. The Academy's public value therefore includes the maintenance of knowledge before its urgency becomes obvious.

The Academy's public relevance also depends on international excellence. A national research institution cannot serve the public well if it is scientifically provincial. The Statutes explicitly state that the Academy pursues the advancement of understanding at the international level and is guided by internationally recognised standards of scientific work (*Academy of Sciences of the Czech Republic, n.d.*). This international orientation is not a matter of prestige alone. It ensures that Czech research is tested by global peer communities, participates in advanced infrastructures, attracts talent, and remains connected to frontier methods and debates. Public interest is served by international integration because citizens benefit from knowledge that meets high standards beyond national self-confirmation. At the same time, international excellence gives the Academy authority in domestic debates. Its advice is stronger when it is grounded in research recognised beyond the Czech Republic. Fundamental research and public service are therefore connected through international credibility.

The Academy's applied relevance must also be understood through its cooperation with universities, government, industry, and public institutions. Such cooperation does not eliminate the Academy's distinct identity. Rather, it allows its fundamental expertise to circulate through the wider research and innovation system. With universities, the Academy cooperates in doctoral training, research projects, infrastructure, and scientific schools. With ministries and public authorities, it can provide analysis, expert opinions, and source documents for decision-making. With industry, it can develop technologies, methods, materials, diagnostics, instruments, and knowledge-based solutions. With cultural institutions, it can support archives, museums, heritage interpretation, language resources, and public education. These relationships show that public interest is relational. The Academy's research becomes publicly relevant through networks of use, interpretation, adaptation, and trust.

At the same time, cooperation with external actors requires boundaries. The Academy's public mission would be weakened if research agendas were fully captured by commercial contracts, political priorities, or media pressure. Scientific autonomy is therefore not an obstacle to public relevance; it is its condition. Public institutions need expertise that is not simply purchased by the highest bidder or shaped by immediate governmental convenience. This is particularly important in controversial policy fields, where independent analysis may challenge official assumptions or private interests. AV ČR must be open to cooperation but capable of

saying no when scientific standards, ethics, or long-term mission are at risk. The public trusts science because it is expected to follow evidence rather than convenience. The Academy's relevance therefore depends on the credibility of its independence.

The distinction between public relevance and politicisation is especially important in historical perspective. Under authoritarian and semi-authoritarian systems, science often loses autonomy under the language of public usefulness. Research is praised when it serves official doctrine and marginalised when it complicates the ideological picture. The post-1989 mission of AV ČR deliberately avoids this path. It connects science with society through law, public policy, peer evaluation, open communication, and institutional responsibility rather than through ideological command. This is why fundamental research remains central. It protects the Academy from becoming merely an instrument of temporary political objectives. At the same time, the Academy's public mission prevents autonomy from becoming isolation. The modern institutional settlement is therefore democratic because it contains both freedom and service. It is one of the major achievements of the Academy's post-socialist transformation.

The public-interest orientation also gives the Academy a role in cultural resilience. Societies under pressure from disinformation, polarisation, technological acceleration, and geopolitical insecurity need institutions that can preserve standards of evidence, interpretation, and reasoned debate. AV ČR contributes to this resilience not only through natural-science expertise, but also through humanities and social-science research. Historical knowledge helps societies resist manipulation of the past. Linguistic research supports public communication and digital language resources. Sociology and psychology help analyse trust, fear, inequality, and institutional behaviour. Legal and philosophical research clarifies principles, rights, and responsibilities. Cultural and archaeological research deepens the public understanding of continuity and change. These contributions may not look like "innovation" in a narrow industrial sense, but they are essential to the public interest of a democratic society. The Academy's mission is therefore both epistemic and civic.

The relationship between fundamental research and applied relevance also affects the Academy's self-representation. AV ČR must explain to society why laboratories, archives, observatories, libraries, field stations, databases, and expert teams require stable support. It must also explain why not every valuable result can be predicted in advance. This is a difficult communicative task because public debate often prefers visible outcomes, short timelines, and simple indicators. The Academy's answer cannot be to reject accountability. It must instead cultivate a richer public understanding of how science works. Fundamental research produces concepts, methods, instruments, data, interpretations, and trained people. Applications may arise directly, indirectly, unexpectedly, or after a long delay. Public relevance may take the form of technology, policy, culture, education, preparedness, or critical reflection. The Academy's institutional narrative must make these pathways visible.

In this context, the formula "from knowledge to public value" is more accurate than the older formula "from science to application". Public value can be economic, but it can also be cultural, social, educational, environmental, legal, medical, strategic, or democratic. The Academy's institutes operate across this whole spectrum. Some generate technologies and cooperate with companies. Others provide long-term data for environmental and public-health decisions. Others preserve and interpret cultural heritage. Others train researchers who move into different sectors. Others offer expert advice that improves public policy. Others produce fundamental discoveries whose application may not yet be known. A narrow understanding of

applied relevance would miss much of this value. The Academy's public mission requires a broader vocabulary.

The Academy's future will likely intensify the need for this broader vocabulary. The policy environment increasingly emphasises innovation, knowledge transfer, open science, interdisciplinarity, security, and societal impact. These trends are not hostile to fundamental research if they are interpreted properly. They can help the Academy connect more effectively with society, improve transparency, support cooperation, and show the value of public knowledge. However, they may become dangerous if they reduce science to immediate usefulness or treat all disciplines as if they produced the same kinds of outputs. AV ČR's institutional task is therefore to defend the autonomy of fundamental research while actively developing pathways of relevance. This is not a contradiction. It is the modern form of public science. The Academy's strength lies in its ability to hold together discovery, responsibility, and long-term national expertise.

Thus, fundamental research, applied relevance, and public interest are not three separate missions of the Czech Academy of Sciences, but three interdependent dimensions of one institutional purpose. Fundamental research gives the Academy intellectual depth, international credibility, methodological rigour, and the capacity to explore questions whose value may become visible only in the future. Applied relevance gives research pathways into technology, policy, education, culture, public administration, industry, health, environment, and social life. Public interest provides the democratic justification for maintaining a publicly funded institute-based research system that is autonomous but not isolated. The modern AV ČR is therefore neither a detached sanctuary of pure scholarship nor a narrow instrument of immediate innovation policy. It is a public research institution whose central task is to transform long-term knowledge into many forms of public value while preserving the freedom without which serious knowledge cannot be produced. This balance completes the legal and mission-oriented logic of the Academy's modern public status and prepares the ground for understanding its governance, internal organisation, and relations with the wider Czech research and innovation system.

Governance and Internal Organisation

1. Academy Assembly, Academy Council, and Leadership Mechanisms

The governance of the modern Czech Academy of Sciences is one of the clearest places where the post-socialist transformation of Czech science became institutional rather than merely rhetorical. After the collapse of the Czechoslovak Academy of Sciences as a socialist institution, the problem was not simply how to preserve institutes, laboratories, libraries, and research teams. It was also how to create a system of governance capable of combining scientific self-government, public responsibility, legal continuity, and operational efficiency. The Academy could not be governed as a ministry, because science requires internal professional judgement and disciplinary autonomy. It also could not be governed as a loose association of independent workplaces, because public research institutions require strategic

coordination, budgetary discipline, evaluation, and representation before the state and society. The institutional architecture established by Act No. 283/1992 Coll. therefore created a multi-layered structure centred on the Academy Assembly, the Academy Council, the President, the Presidium, and the Council for Sciences (*Czech National Council, 1992*). These bodies do not simply divide administrative tasks. They embody different principles of legitimacy within the Academy. The Assembly represents the broad corporate and deliberative will of the Academy. The Academy Council provides executive continuity and operational management. The President personifies statutory representation and leadership. The Council for Sciences preserves the scientific-policy and advisory dimension of governance. Together, these mechanisms create a system in which the Academy can act as a public institution without losing the character of a self-governing scientific community.

The Academy Assembly occupies the highest position in this system. Act No. 283/1992 Coll. defines the Assembly as the supreme body of the Academy, and the official institutional description likewise presents it as responsible for executive decisions concerning the Academy's structure, research evaluation, budget, and research conditions (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). This is important because the Academy's legitimacy does not descend only from the state budget or from appointment by public authorities. It is also produced internally through representative deliberation. The Assembly includes representatives of the Academy's institutes, institute directors, and other members connected with academic, public, and industrial institutions. This composition reflects the hybrid character of AV ČR as a public research organisation. It is neither a closed guild of scholars nor a purely external public agency. It contains institute representation, scientific authority, and a controlled opening toward universities, public institutions, and the wider application sphere. The Assembly is therefore the place where the Academy's identity as a network of institutes becomes an institutional will. Its decisions give form to the Academy as a whole rather than merely to individual workplaces. Without the Assembly, the Academy would risk becoming either a bureaucratic centre above institutes or an aggregate of institutions without a common voice.

The Assembly's powers are fundamental for the internal constitutional life of the Academy. It adopts the Statutes, approves the annual report, approves the budget and final account, approves fund distribution among individual institutes, and decides on the establishment, consolidation, merger, splitting, and dissolution of Academy institutions (*Czech National Council, 1992*). These powers show that the Assembly is not ceremonial. It controls the basic framework through which the Academy exists, spends public money, evaluates itself, and reorganises its institutional map. The adoption of the Statutes is especially important because the Statutes define the Academy's mission, internal bodies, responsibilities, institute relations, and procedural rules. However, the Statutes enter into force only after approval by the Government of the Czech Republic, which reveals the Academy's dual legitimacy. The Assembly deliberates and adopts the internal constitutional document, but the government approves it because the Academy remains a public body within the state system. Budgetary approval has the same dual meaning. The Academy receives public funds, but their internal distribution is not mechanically imposed from outside. It is processed through the Academy's own governing mechanisms. This makes the Assembly a central point where autonomy and public accountability intersect.

The Assembly also plays a decisive role in leadership formation. Under the Act, it decides on the proposal for appointing the President from among its members and on the President's

recall; it also elects and recalls elected members of the Academy Council and members of the Council for Sciences (*Czech National Council, 1992*). This mechanism ensures that the leadership of the Academy is grounded in the representative structure of the institution. The President is formally appointed by the President of the Republic after the proposal of the Assembly has been discussed by the Government, but the internal impulse comes from the Academy itself. This arrangement is not accidental. It prevents the Academy's president from being merely an external political appointee, while still acknowledging the public and state character of the institution. The election of the Academy Council by the Assembly similarly anchors executive governance in the representative body. Leadership is therefore not simply administrative appointment; it is mediated through institutional confidence. The Academy's system resembles a scientific polity in which authority must be both legally recognised and internally legitimised. This does not eliminate conflict, but it gives conflict procedural form. Leadership emerges through regulated institutional channels rather than informal personal power alone.

The term of office of the Assembly is four years, and the Act requires that it meet as needed, at least twice a year, while also allowing a meeting to be convened when at least one fifth of its members request it (*Czech National Council, 1992*). These procedural rules are significant because they create both periodicity and responsiveness. The Assembly is not a permanent management body; it does not administer the Academy day by day. However, it must meet regularly enough to exercise oversight, make major decisions, approve documents, and maintain institutional accountability. The possibility of convening the Assembly at the request of a significant minority creates a safeguard against complete domination by the executive centre. It means that the representative body can be activated when major questions arise. This rule reflects a democratic logic within a scientific institution. The Academy does not imitate parliamentary politics, but it borrows the idea that a representative body must have procedural power to assemble and deliberate. In the context of a research organisation, such rules help protect institutes and scientific communities from purely top-down governance. They make the Assembly a living institution rather than a passive formal organ.

The Academy Council occupies a different but equally essential position. The Act defines it as the executive body of the Academy (*Czech National Council, 1992*). If the Assembly is the supreme deliberative and decision-making body, the Council is the organ that ensures continuity between Assembly sessions. It convenes the Assembly, submits reports and proposals, executes Assembly resolutions, manages the current activities of the Academy, submits the draft annual report, submits the draft budget and final account, and proposes fund distribution among institutes (*Czech National Council, 1992*). These responsibilities place the Council at the operational centre of the Academy's governance. It translates the broad decisions of the Assembly into ongoing administration and strategic management. It also prepares the materials without which the Assembly cannot make informed decisions. The Council is therefore both subordinate and powerful. It is subordinate because it must execute Assembly resolutions and report to the Assembly. It is powerful because it controls the flow of information, proposals, management, and coordination between sessions. The quality of Academy governance depends heavily on whether this relationship remains balanced.

The composition of the Academy Council expresses the same balance. The Council consists of the President, Vice-Presidents, the Chair or President of the Council for Sciences, and other members elected from the members of the Assembly on the basis of proposals submitted by Academy institutes (*Czech National Council, 1992*). This structure gives the Council several

sources of authority. The President brings statutory leadership. The Vice-Presidents represent major areas of scientific and organisational responsibility. The head of the Council for Sciences brings the advisory and science-policy dimension into executive governance. Elected members connect the Council back to the institutes and the Assembly. At the same time, the Act makes membership in the Council incompatible with the function of institute director, and members may serve for two consecutive terms at most (*Czech National Council, 1992*). These restrictions are institutionally meaningful. They reduce the risk that the Council will become a direct committee of institute directors defending their own workplaces. They also prevent indefinite concentration of executive authority in the same individuals. The Council is thus designed to be representative of the Academy's scientific body, but not captured by immediate institute management.

The Academy Council's current composition also illustrates the functional complexity of modern Academy leadership. The Council formed for the 2025–2029 period includes the President of the Academy, the President of the Science Council, Vice-Presidents for the three research areas, members of the Presidium, and other members responsible for areas such as science policy, public funding, knowledge and technology transfer, intellectual property, scientific training, cooperation with universities, public communication, equal opportunities, property management, regional cooperation, Science for Policy, environmental sustainability, digitalisation, Strategy AV21, cooperation with the Technology Agency, European Research Area participation, Open Science, trusted research, and institutional resilience (*Academy of Sciences of the Czech Republic, 2025*). This distribution of responsibilities shows that leadership mechanisms have become far more complex than simple administration of institutes. The Academy now operates in an environment shaped by European grants, open science, digital infrastructures, intellectual property, research assessment reforms, security concerns, public communication, interdisciplinary programmes, and relations with ministries and application partners. The Academy Council therefore functions as a strategic coordinating centre. It must keep the Academy faithful to its mission while enabling it to operate in the contemporary research and innovation system. Its work connects legal governance with policy adaptation. In that sense, the Council is one of the main instruments through which the Academy remains institutionally modern.

The Presidium of the Academy Council adds another layer to this executive system. Act No. 283/1992 Coll. defines the Presidium as the executive body of the Council and states that it consists of the President, Vice-Presidents, the Chair of the Council for Sciences, and elected members of the Presidium (*Czech National Council, 1992*). Its function is to provide a smaller and more flexible executive mechanism within the larger Council. This structure is common in complex organisations where a broad executive body cannot handle every urgent or detailed matter efficiently. The Presidium may decide in urgent cases on matters reserved for the Council, but it must convene the Council within 20 days, and if the Council does not confirm the decision, that decision is invalidated (*Czech National Council, 1992*). This rule reveals an important principle of Academy governance. Executive speed is permitted, but only under retrospective control. The Presidium can act when necessary, but it cannot permanently replace the Council. Urgency is recognised without becoming a pretext for bypassing collective governance. This is a typical example of how the Academy's legal architecture tries to reconcile efficiency with self-government.

The Academy Council also has limited emergency authority in relation to the Assembly. In urgent cases, it may decide on matters reserved by law or the Statutes for the Assembly, but it

must convene the Assembly within 30 days, and if the Assembly does not confirm the Council's decision, the decision is invalidated (*Czech National Council, 1992*). This provision is especially revealing because it shows that the Academy's governance system is not rigidly formalistic. It recognises that a complex public research organisation may face situations requiring rapid decision-making. However, the provision also prevents emergency authority from becoming a permanent displacement of the supreme body. The Council's urgent decision exists only provisionally until confirmed by the Assembly. This mechanism creates a constitutional safety valve. It allows the Academy to act in crises, but it preserves the supremacy of the representative body. In institutional terms, this is a sophisticated balance between operational continuity and democratic legitimacy. It is also a safeguard against the kind of unchecked executive centralism that had marked earlier authoritarian governance cultures.

The Council for Sciences, usually rendered in current English institutional usage as the Science Council, plays a different role in this architecture. The Act describes it as the permanent advisory body of the Academy Council in matters concerning the preparation and implementation of the science policy of the Academy (*Czech National Council, 1992*). The official institutional description similarly presents it as an elected body and permanent advisory board to the Academy Council on matters related to the creation and implementation of Academy science policy (*Academy of Sciences of the Czech Republic, n.d.*). Its composition includes representatives of Academy institutes, universities and other research and educational institutions, and distinguished foreign scientists. A minimum of one quarter and a maximum of one third of its members are external members, and proportional representation of research areas is taken into account in elections (*Academy of Sciences of the Czech Republic, n.d.*). These details are not merely technical. They show that the Academy's science policy is not supposed to be produced only by the administrative centre or by institute management. It must be advised by a body that links internal scientific expertise with external academic perspectives. The Science Council thus helps prevent governance from drifting away from scientific judgement.

The presence of external members in the Science Council is especially important. It opens the Academy's internal science-policy deliberation to universities, other research institutions, and foreign scientific authority. This is an important safeguard against institutional insularity. A national academy with many institutes can easily become self-referential, especially when it controls its own budgetary, evaluation, and strategic processes. External members introduce comparative perspectives, disciplinary standards, and international expectations. They also help connect the Academy with the broader research system. The inclusion of distinguished foreign scientists is particularly significant because AV ČR measures itself against international standards rather than only domestic recognition. Scientific policy inside the Academy is therefore not simply internal administration. It is a dialogue between the Academy's own institutional needs and the wider scientific world. The Science Council embodies that dialogue in formal governance.

The responsibilities of the Science Council also extend into scientific integrity. The Statutes state that the Council for Sciences establishes the Committee for Scientific Integrity, which deals with general questions of the ethics of scientific work and with significant breaches of this ethics; the Council for Sciences, authorised members, and the Committee for Scientific Integrity are entitled to request necessary information and background materials from Academy bodies and institutes (*Academy of Sciences of the Czech Republic, n.d.*). This gives

the advisory structure a normative as well as strategic role. Science policy is not only about priorities, programmes, and evaluation. It is also about the moral conditions under which research is conducted. Integrity mechanisms matter because public research institutions depend on public trust. The Academy's legal and organisational design therefore connects governance with research ethics. This is important in a period when open science, data management, conflicts of interest, authorship norms, research security, and public communication have become central to the legitimacy of scientific institutions. The Science Council's role reinforces the idea that scientific autonomy must be accompanied by internal standards of responsibility. Governance is therefore both managerial and ethical.

The Head Office of the Academy provides the administrative infrastructure that allows these governing bodies to function. The official description states that the CAS Head Office has served as the administrative body for the Academy since 1 January 2001 and that its legal status is regulated by Act No. 283/1992 Coll., Act No. 219/2000 Coll., and the relevant articles of the Academy Statutes (*Academy of Sciences of the Czech Republic, n.d.*). The Statutes describe the Head Office as an internal organisational unit that accomplishes professional, managerial, inspectional, and organisational tasks as the executive arm of the President, the Council and its members, and other Academy bodies (*Academy of Sciences of the Czech Republic, n.d.*). This administrative layer is often less visible than the Assembly or Council, but it is essential. A large public research organisation cannot govern itself through meetings and resolutions alone. It requires legal services, budgetary administration, inspection, personnel support, communication, documentation, coordination, and organisational continuity. The Head Office turns decisions into procedures and procedures into institutional memory. It is one of the mechanisms through which the Academy remains a functioning public body rather than a merely deliberative community.

The Academy's governance architecture also reflects the institute-based character of the organisation. The Academy conducts research through institutes established as public research institutions, and these institutes possess their own legal personality under the public research institution framework. Yet they do not exist outside the Academy's strategic and legal order. The Assembly approves major structural changes affecting institutions, the Academy Council prepares budgetary proposals and manages current Academy activities, the President appoints and recalls institute directors, and the institutes submit proposals and participate through representation in Academy bodies (*Czech National Council, 1992*). This creates a multi-level system of governance. Institutes are autonomous research organisations, but not sovereign islands. The central Academy bodies coordinate, represent, evaluate, and distribute resources. The challenge is to preserve institute autonomy while maintaining a coherent Academy-wide strategy. This challenge is one of the defining features of AV ČR. It distinguishes the Academy from both a unitary state research agency and a loose association of independent research centres.

Leadership mechanisms in AV ČR are therefore distributed rather than purely hierarchical. The President has statutory authority and represents the Academy in all matters, but the President operates within a system of Assembly election, government discussion, appointment by the President of the Republic, Council cooperation, Presidium mechanisms, and statutory rules (*Czech National Council, 1992*). The Academy Council manages current activities, but it is elected by the Assembly and must submit annual reports, budgets, and proposals to it. The Presidium can act urgently, but its decisions must be confirmed by the Council. The Science Council advises on science policy and integrity, but it is connected to the Academy Council

rather than replacing executive governance. The Head Office supports the governing bodies, but it does not become an independent power centre. This distribution of authority is not accidental complexity. It is a legal response to the institutional problem of governing science democratically. The Academy needs leadership, but leadership must be embedded in collective procedures and scientific legitimacy. The modern governance model therefore turns potential conflict between authority and autonomy into a regulated system of checks and functions.

The Academy Assembly's role in approving budgets and fund distribution among institutes is especially important for understanding power within AV ČR. Budgets are not merely financial documents; they are institutional expressions of priorities, stability, evaluation, and future direction. When the Assembly approves the budget and final account, including the distribution of funds among institutes, it participates directly in the shaping of the Academy's research landscape (*Czech National Council, 1992*). The Council prepares these drafts, but the Assembly approves them. This division creates a dialogue between executive expertise and representative legitimacy. It also means that institutes are not entirely dependent on informal negotiation with the executive centre. The distribution of funds must pass through formal institutional channels. Such procedures do not eliminate competition, lobbying, or disagreement. However, they give budgetary conflict a transparent organisational form. In a public research institution, this is essential because financial decisions must be defensible both internally and externally.

The Assembly's power over structural change is equally significant. It approves the establishment, consolidation, merger, splitting, and dissolution of Academy institutions (*Czech National Council, 1992*). This power gives the Assembly long-term control over the institutional map of Czech non-university research. Structural decisions can be scientifically, politically, and emotionally difficult because institutes embody traditions, communities, buildings, collections, research schools, and professional identities. The ability to merge or dissolve institutions is therefore not only an administrative competence. It is an authority over continuity and rupture. The post-socialist history of the Academy showed how sensitive such questions could be, especially during periods of reform, evaluation, or budget pressure. By placing structural decisions with the Assembly, the law ensures that such changes are not made by executive fiat alone. They require deliberation within the supreme body of the Academy. This mechanism protects the Academy from arbitrary reorganisation while preserving the possibility of strategic adaptation.

The Academy Council's obligation to discuss science-policy issues with the Council for Sciences is another important leadership mechanism. Act No. 283/1992 Coll. explicitly binds the Council to discuss matters of Academy science policy with the Council for Sciences (*Czech National Council, 1992*). This requirement inserts scientific deliberation into executive decision-making. It means that science policy cannot be treated merely as budgetary administration or political positioning. It must pass through a body representing scientific expertise and broader academic perspectives. The mechanism is modest in wording but important in function. It prevents the executive centre from monopolising strategic interpretation of science. It also gives the Science Council a formal channel of influence. The Academy's governance thereby recognises that scientific policy is not only a managerial matter. It is a question of scholarly judgement, disciplinary development, quality, ethics, and long-term responsibility.

The modern Academy's leadership mechanisms have also adapted to new policy fields that were not central at the moment of the Academy's founding. Current responsibilities distributed among Academy Council members include open science, trusted research, artificial intelligence, institutional resilience, intellectual property, knowledge and technology transfer, European Research Area involvement, ERC and Horizon Europe support, evaluation of institutes, equal opportunities, regional cooperation, Science for Policy, and digitalisation (*Academy of Sciences of the Czech Republic, 2025*). This expansion shows how governance evolves without necessarily changing the basic legal architecture. The Act creates stable bodies, but the content of leadership adapts to new conditions. In the 1990s, the central governance questions concerned survival, legal transformation, property, institute restructuring, and the break with socialist administration. In the 2000s and 2010s, evaluation, European integration, public research institution status, and competitive funding became central. In the 2020s, open science, knowledge transfer, research security, artificial intelligence, and societal resilience have become unavoidable. The Academy Council is the place where these changing agendas are distributed into leadership responsibilities. Its structure therefore reveals the historical movement of Czech research policy.

The 2025–2029 leadership configuration is particularly instructive because it connects the three research areas with vice-presidential responsibility. The Vice-President for the First Research Area coordinates mathematics, physics, and earth sciences; the Vice-President for the Second Research Area coordinates life and chemical sciences; and the Vice-President for the Third Research Area coordinates humanities and social sciences (*Academy of Sciences of the Czech Republic, 2025*). This arrangement links governance to the Academy's disciplinary architecture. It recognises that different research areas have different infrastructures, funding patterns, publication cultures, societal interfaces, and strategic needs. At the same time, the Council contains members whose responsibilities cut across all areas, such as open science, evaluation, international cooperation, communication, property management, and Strategy AV21. This creates a matrix of governance. Some leadership functions follow disciplinary areas, while others address horizontal institutional priorities. Such a matrix is necessary for a complex academy. It allows discipline-sensitive management without losing system-level coordination.

Academy governance also involves relations with external public authorities. Members of the Academy Council are responsible for cooperation with bodies such as the Council for Research, Development and Innovation, the Ministry of Education, Youth and Sports, the Ministry of Industry and Trade, the Ministry of Health, the Ministry of Culture, the Ministry of the Environment, the Ministry of Defence, the Ministry of Agriculture, the Ministry of Foreign Affairs, and other relevant providers (*Academy of Sciences of the Czech Republic, 2025*). This illustrates the public character of AV ČR governance. The Academy is autonomous, but it operates within a national research and innovation system shaped by ministries, grant providers, legal rules, public strategies, and European programmes. Leadership mechanisms must therefore connect internal scientific priorities with external policy environments. The Academy Council is one of the main bridges between these worlds. It translates external expectations into institutional strategy and communicates the Academy's scientific needs to public authorities. This bridging function is essential for preserving autonomy in practice. Autonomy is not isolation; it is the capacity to negotiate public responsibility from a position of scientific legitimacy.

The Academy's governance system also incorporates public communication as a leadership function. Current Academy Council responsibilities include the presentation of results, cooperation with media, communication with the public, popularisation, publication activities, and equal opportunities (*Academy of Sciences of the Czech Republic, 2025*). This reflects a major change in the modern understanding of scientific institutions. In earlier periods, academies could assume that prestige and state recognition were sufficient forms of legitimacy. Today, public research institutions must actively explain their work, demonstrate relevance, cultivate trust, and communicate uncertainty. Communication is therefore not merely public relations. It is part of public accountability. It also protects science against misinformation, political simplification, and social mistrust. The inclusion of communication within leadership responsibilities shows that AV ČR recognises the public sphere as one of the terrains of modern science governance. The Academy must govern not only laboratories and budgets, but also its relationship with society.

The governance architecture also supports the Academy's role in research evaluation. The Assembly is formally responsible for executive decisions concerning evaluation of research activities, and current Council responsibilities include coordination of the periodic evaluation of Academy institutes and coordination of this agenda with the national system for evaluating research organisations (*Academy of Sciences of the Czech Republic, n.d.*; *Academy of Sciences of the Czech Republic, 2025*). Evaluation is one of the most powerful instruments of governance because it influences reputation, funding, strategy, careers, and structural decisions. In a disciplinary diverse institution, evaluation must be rigorous without being uniform in a crude sense. The governance system must ensure that evaluation is not reduced to numerical metrics alone, but also not weakened into self-protection. The Assembly, Council, Science Council, and external experts all have potential roles in maintaining this balance. Good evaluation strengthens autonomy because it demonstrates quality and accountability. Poor evaluation can damage both. The Academy's leadership mechanisms therefore have to treat evaluation as a scientific and institutional process, not merely as administrative control.

The relationship between the Assembly and Council also reveals the Academy's answer to the problem of scale. AV ČR is too large and complex to be governed by direct participation of every researcher in every decision. At the same time, it cannot be legitimately governed only by a small executive group. The Assembly and Council together create a representative-executive model suitable for a large public research organisation. The Assembly provides broad legitimacy, while the Council provides manageable executive capacity. The Presidium adds operational flexibility, while the Science Council provides specialised advisory depth. The Head Office supplies administrative continuity. This layered model makes governance possible without reducing it to either mass deliberation or central command. It is an institutional compromise, but a necessary one. The success of the Academy depends on whether the compromise remains credible to institutes, researchers, public authorities, and society.

The leadership mechanisms of AV ČR are also shaped by historical memory. The Academy's modern governance cannot be understood apart from the experience of the Czechoslovak Academy of Sciences, where institute-based research existed within a more hierarchical and politically conditioned framework. Post-1989 reforms had to create new procedures that would protect science from ideological subordination while preserving the advantages of coordinated research infrastructure. The Assembly's supremacy, elected Council, term limits,

institute representation, external scientific participation, and advisory science-policy mechanisms can all be read as responses to this history. They create institutional safeguards against excessive centralism. At the same time, they avoid the complete dismantling of central coordination. The Academy did not reject the institute model; it democratised and legalised it within a new public framework. Governance therefore became one of the main sites where institutional continuity and institutional rupture were reconciled. AV ČR is not the old ČSAV with a new name, but neither is it a post-1989 invention without inherited structures.

This historical interpretation also helps explain why the Academy's governance is not modelled exactly on a university senate system. Universities have their own forms of academic self-government, linked to faculties, students, degree programmes, rectors, senates, and higher education law. AV ČR is a research organisation composed of institutes, not a teaching university composed of faculties and student bodies. Its governance therefore reflects institutes, research areas, scientific councils, public research institution status, and state-budget responsibility. The Academy Assembly is not a university senate, although both express self-government. The Academy Council is not a rectorate, although both have executive functions. The Science Council is not simply an academic board, because it has a specific advisory function in Academy science policy and includes external members. The President is not a rector, although both are public representatives of academic institutions. The Academy's governance is therefore sui generis. It belongs to the specific institutional history of Czech non-university research.

The Academy's leadership mechanisms must also be understood as mechanisms of institutional representation. The Academy represents its institutes to the state, international partners, universities, industry, public institutions, and society. This representation cannot be improvised by individual institutes alone. The Academy Council, President, Vice-Presidents, and relevant Council members coordinate external relations across research areas and policy fields. Their responsibilities include European Research Area participation, cooperation with ministries, technology transfer, public communication, regional cooperation, and international cooperation (*Academy of Sciences of the Czech Republic, 2025*). This representative function gives the Academy collective visibility. It allows AV ČR to speak as a national research institution rather than as 54 separate workplaces. At the same time, effective representation must not erase institute diversity. The governance system must present the Academy as a coherent institution while respecting its internal plurality. This is one of the most difficult tasks of Academy leadership.

The internal organisation of governance also contributes to institutional resilience. Current leadership responsibilities explicitly include increasing institutional resilience and implementing the NIS2 directive within the Academy and its institutes (*Academy of Sciences of the Czech Republic, 2025*). This shows how contemporary governance now includes risks that older academic institutions did not face in the same way. Cybersecurity, information security, trusted research, data protection, geopolitical risks, and infrastructure vulnerability have become part of scientific management. Public research institutions now operate in a world where knowledge can be strategically sensitive, digital systems can be attacked, and international cooperation can carry security implications. The Academy's leadership mechanisms must therefore protect openness without naivety. They must enable international science while managing risks. This expands the meaning of governance from internal administration to institutional security and resilience. It also demonstrates how the Academy's public responsibility evolves with historical conditions.

The Academy's governance system is not without tension. A representative-executive model can produce conflicts between central strategy and institute autonomy, between disciplinary interests and Academy-wide priorities, between long-term research and short-term policy pressures, between public accountability and scientific freedom, and between national responsibilities and international standards. These tensions should not be interpreted as evidence of failure. They are the normal tensions of a large public research institution. The legal and organisational architecture of AV ČR does not remove them; it gives them procedures, bodies, and channels of deliberation. The Assembly provides a forum for fundamental decisions. The Council provides executive management. The Science Council offers scientific-policy advice. The President and Presidium provide leadership and continuity. The Head Office supplies administrative capacity. Governance is therefore the art of managing these tensions without allowing any one principle to dominate completely.

The leadership mechanisms of AV ČR also show that autonomy is institutional, not merely individual. Individual researchers need intellectual freedom, but that freedom is sustained by institutions that distribute budgets, maintain infrastructure, appoint directors, evaluate research, negotiate with the state, and protect standards. The Academy's governance bodies are the structures through which collective autonomy is organised. If they function well, they allow researchers and institutes to pursue scientific work under stable and legitimate conditions. If they function poorly, autonomy can be weakened either by central bureaucracy or by uncoordinated fragmentation. The Academy's system therefore treats governance as a precondition of scientific freedom. This may seem paradoxical, because governance is often associated with control. Yet in public research institutions, good governance protects research from arbitrary control by making authority procedural, representative, and accountable. AV ČR's modern architecture is built on this principle.

The Academy Assembly, Academy Council, Science Council, Presidium, President, and Head Office together create a governance system that is both legal and cultural. It is legal because its powers, terms, procedures, and responsibilities are defined in law and statutes. It is cultural because these bodies work only if the scientific community accepts the norms of deliberation, representation, responsibility, and trust that they presuppose. Formal structures cannot by themselves guarantee good governance. They require a culture of institutional loyalty, scientific integrity, willingness to compromise, and respect for disciplinary difference. The Academy's history shows how fragile such culture can be under political pressure, ideological conflict, or financial stress. The modern system is therefore not merely a set of rules inherited from 1992. It is an ongoing practice of democratic scientific administration. Each election, Assembly meeting, Council decision, evaluation, and policy debate renews or weakens that practice.

Thus, the governance and leadership mechanisms of the modern Czech Academy of Sciences express the institutional settlement through which Czech non-university research was transformed after the end of the socialist Academy. The Academy Assembly provides the supreme representative body, controlling statutes, budgets, structural decisions, annual reporting, leadership proposals, and major institutional directions. The Academy Council supplies executive management, prepares proposals, manages current activities, coordinates strategy, and links the Academy with the wider research and policy environment. The Presidium provides operational flexibility under Council control, while the Science Council brings scientific-policy advice, external expertise, and integrity-related authority into governance. The President gives statutory representation and leadership, and the Head Office converts

decisions into administrative continuity. This architecture allows AV ČR to act as a national public research institution without becoming either a ministry-like bureaucracy or a loose association of institutes. It is the organisational form through which scientific autonomy, public accountability, disciplinary plurality, strategic coordination, and historical continuity are held together in the modern Academy.

2. The Role of the President and Institutional Representation

The President of the Czech Academy of Sciences occupies a position that is at once legal, administrative, representative, symbolic, and strategic. In a purely formal reading, the President is the statutory representative of the Academy and is authorised to act on its behalf in all matters. Yet this definition only begins to explain the importance of the office. The President stands at the point where the Academy's internal self-government meets the Czech state, public finance, universities, ministries, international scientific organisations, industry, media, and society. This role is therefore not equivalent to the director of a single institute, nor to the rector of a university, nor to the head of a ministerial department. It is a distinctive office shaped by the Academy's hybrid status as an organisational body of the Czech Republic, a founder of public research institutes, and a self-governing research community. The President represents the Academy legally, but also personifies it institutionally. Through the President, the Academy appears to the state and the public not as an abstract network of 54 institutes, but as a coherent national research institution. The office is therefore one of the principal mechanisms through which the Academy's internal plurality becomes external representation. In this sense, the President is not simply the "head" of the Academy, but the mediator of its identity.

The legal basis of the office is found in Act No. 283/1992 Coll. and in the Statutes of the Czech Academy of Sciences. The Act defines the President as the statutory representative of the Academy and authorises the President to act on behalf of the Academy in all matters (*Czech National Council, 1992*). The Statutes repeat and develop this rule by stating that the President is the head of the Academy and, while administering the Academy's chapter of the national budget, is responsible for the management of budgetary resources and for creating and enforcing a system of internal audit and financial control (*Academy of Sciences of the Czech Republic, n.d.*). These provisions are important because they connect representation with responsibility. The President does not merely speak for the Academy in ceremonial contexts. The President bears legal and financial obligations connected with the Academy's public status. This is a major difference between a symbolic learned-society president and the president of AV ČR as a large public research organisation. The office has honour, but it also has administrative weight. It carries the burden of public accountability for a complex system of institutes, budgets, policies, and research conditions.

The method of appointment reveals the office's dual legitimacy. The President is appointed and recalled by the President of the Czech Republic from among the members of the Academy Assembly, upon the proposal of the Assembly, after that proposal has been discussed by the Government (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). This procedure is institutionally revealing. The Academy itself initiates the choice through the Assembly, the supreme self-governing body. The Government discusses the proposal, thereby recognising the Academy's place within the public order. The President of the Republic formally appoints the President of the Academy, giving the office national visibility and constitutional

dignity. The result is neither simple internal election nor direct political appointment. It is a mixed procedure that protects scientific self-government while acknowledging the Academy's public status. This arrangement is characteristic of the post-1989 settlement in Czech science. It avoids the command logic of the socialist academy, but it also avoids treating the Academy as a private corporation outside public responsibility.

The four-year term of office and the limitation to two successive terms add further meaning to this arrangement. The office is stable enough to permit strategic leadership, but not indefinite enough to become personal rule. The term corresponds to the rhythm of Academy governance, including the term of the Academy Assembly and the Academy Council. This creates institutional cycles in which leadership, representation, strategic priorities, and internal bodies can be renewed. The prohibition against more than two successive terms prevents excessive concentration of authority and reflects the democratic culture of the modern Academy. It also produces historical periods in which each president leaves a distinct imprint on the institution. Rudolf Zahradník's presidency was associated with the stabilisation of the new Academy after the dissolution of the Czechoslovak Academy of Sciences. Helena Illnerová's presidency reflected the consolidation of the Academy as a democratic research institution. Václav Pačes, Jiří Drahoš, Eva Zažímalová, and Radomír Pánek each represent later phases in which public research, evaluation, European integration, public relevance, open science, and technology transfer became increasingly visible. The presidency is thus a legal office, but also a sequence of historical interpretations of what the Academy should become.

The President's internal authority is substantial, but it is embedded in collective governance. The President presides over the sessions of the Academy Assembly, the Academy Council, and the Presidium (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). This places the President at the centre of deliberative and executive coordination. However, presiding is not identical with unilateral command. The Assembly remains the supreme self-governing body, the Academy Council remains the executive body, and the Presidium remains the executive body of the Council. The President's authority is therefore procedural as well as personal. The President drafts agendas, chairs sessions, organises leadership work, and helps shape the institutional tempo of decision-making. A strong president can influence priorities, language, alliances, and strategic emphasis, but must still operate through legally constituted bodies. This is one of the most important features of the Academy's governance culture. Leadership is necessary, but it is not supposed to replace self-government.

One of the President's most consequential powers is the appointment and recall of directors of Academy institutes. The Act and the Statutes assign this competence to the President (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). This power connects the presidential office directly with the institute-based structure of AV ČR. Institutes are legally autonomous public research institutions, but they are not disconnected from the Academy's central framework. Their directors are key figures in research strategy, personnel policy, institutional culture, financial management, and external relations. By appointing and recalling directors, the President participates in shaping the leadership ecology of the entire Academy. This does not mean that directors are merely personal appointees of the President in a political sense. Selection procedures, institute bodies, Academy rules, and scientific legitimacy all matter. Nevertheless, the President's formal competence makes the office a bridge between central representation and institute-level governance. Through this

competence, the President helps ensure that the Academy's network of institutes remains a coordinated public research system.

The President also appoints Vice-Presidents from among elected members of the Presidium and charges them with the management of specified fields of Academy activities (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). This power reveals the presidential role in forming the leadership team. The Academy is too large and too diverse for one person to manage every disciplinary, financial, legal, international, and communicative field directly. Vice-Presidents therefore translate presidential leadership into a distributed structure of responsibility. In the 2025–2029 leadership cycle, Vice-Presidents were appointed for the three research areas: mathematics, physics and earth sciences; life and chemical sciences; and humanities and social sciences (*Academy of Sciences of the Czech Republic, 2025*). This arrangement links presidential authority to the Academy's disciplinary architecture. It recognises that each research area has its own institutional problems, evaluation cultures, infrastructures, and external partners. The President's role is therefore not only to lead personally, but to compose a leadership system capable of representing the Academy's internal diversity.

The current presidency of Radomír Pánek illustrates how the office is shaped by both legal function and scientific biography. Pánek is a plasma physicist and nuclear-fusion specialist associated with the Institute of Plasma Physics of the CAS, where he held leadership positions connected with the COMPASS tokamak and the COMPASS-U project before becoming President of the Academy (*Academy of Sciences of the Czech Republic, n.d.*). His biography is not merely a personal detail. It reflects one type of scientific capital that can be carried into the presidency: experience in large research infrastructure, international cooperation, technological ambition, and institutional management. He has also been involved in European fusion-research structures, including EUROfusion and EURATOM-related bodies (*Academy of Sciences of the Czech Republic, n.d.*). This matters because the Academy's president must increasingly operate in a European research environment shaped by consortia, infrastructures, research security, international evaluation, and strategic technologies. The president is therefore not only an internal administrator, but also a representative of Czech science in international scientific and policy arenas. Pánek's election and appointment for the 2025–2029 term thus symbolised a leadership profile oriented toward excellence, infrastructure, international cooperation, and public confidence in science (*Academy of Sciences of the Czech Republic, 2024*; *Academy of Sciences of the Czech Republic, 2025*).

Institutional representation begins with the President's legal authority to act for the Academy, but it extends far beyond legal acts. The President represents AV ČR before the Government, ministries, Parliament, the President of the Republic, the Council for Research, Development and Innovation, grant and technology agencies, universities, regional authorities, international organisations, foreign academies, scientific unions, industry, cultural institutions, and the media. Such representation is not ceremonial alone. It affects budgets, legislation, evaluation frameworks, international cooperation, public communication, and the Academy's ability to defend research autonomy. When the Academy negotiates its position in public research policy, the President often becomes the public voice through which the institution expresses its concerns and priorities. This is especially important in periods of legislative reform, budgetary pressure, or debate over applied relevance. The President must speak in a language intelligible to policymakers while remaining faithful to scientific values. The office therefore

demands translation between institutional worlds. It is a site of scientific diplomacy within the state.

The President's responsibility for the Academy's budget chapter gives this representative role particular weight. The Academy is financed from the state budget of the Czech Republic and, for budgetary purposes, has the status of a central authority (*Czech National Council, 1992*). The President is responsible under the Statutes for managing budgetary resources and for establishing internal audit and financial control (*Academy of Sciences of the Czech Republic, n.d.*). This places the President in a difficult position. Internally, the President must protect the research conditions of institutes, support excellence, enable strategic development, and respond to the needs of disciplines with very different cost structures. Externally, the President must justify public funding before state authorities and society. Public money gives the Academy stability, but it also creates scrutiny. The President must therefore frame the Academy's budget not as institutional self-interest, but as investment in national knowledge capacity. This budgetary representation is one of the most important practical functions of the office.

The President's role in relation to legislation is also central. AV ČR operates under the Act on the Czech Academy of Sciences, the Act on public research institutions, budgetary rules, research and innovation legislation, labour law, property regulations, ethical frameworks, and European legal requirements. The President represents the Academy in discussions where these frameworks are interpreted or revised. The importance of this function became especially visible during debates around the new Czech law on research, development, innovation, and knowledge transfer. Academy representatives emphasised that legal reforms should strengthen research conditions without undermining scientific autonomy or increasing unnecessary administrative burdens (*Academy of Sciences of the Czech Republic, 2024*; *Parliament of the Czech Republic, 2025*). Such debates show that the President's representation is not merely passive response to law. The Academy is an institutional actor in the formation of the legal environment of Czech science. The President helps give that actor a public and negotiable voice.

The President also represents the Academy's internal unity. This function may appear less formal than legal representation, but it is no less important. AV ČR consists of institutes in natural sciences, technical sciences, medical and biological sciences, social sciences, and humanities. These institutes differ in size, infrastructure, publication culture, funding patterns, international networks, and social visibility. A president who appears to represent only one field or one type of science would weaken the Academy's collective identity. The President must therefore speak for plasma physics and philosophy, molecular genetics and medieval studies, materials science and linguistics, archaeology and artificial intelligence, climate research and legal theory. This is not easy, because public policy often privileges some kinds of research over others. The President's task is to defend the Academy as a whole, not merely the most visible or politically fashionable parts of it. Institutional representation is therefore an exercise in disciplinary fairness.

This unifying role is made more complex by the Academy's institute autonomy. Directors, research teams, institute councils, and disciplinary communities all possess their own authority and professional identity. The President cannot and should not govern scientific content from the centre. Yet the President must articulate common priorities and maintain institutional coherence. This produces a leadership style based less on command than on

persuasion, agenda-setting, negotiation, and symbolic authority. The President's speeches, Assembly addresses, public statements, institute visits, and negotiations with ministries become mechanisms through which the Academy's common direction is communicated. In this sense, the presidency is performative as well as legal. The President continually performs the unity of the Academy before institutes, researchers, the state, and the public. When this performance is credible, the Academy appears as a coherent national research institution. When it fails, the Academy risks being seen as an aggregation of separate interests.

The President's representative role also includes relations with universities. The Academy is not a university, but its mission includes educating researchers and cooperating with higher education institutions. Doctoral training, joint research projects, shared infrastructure, co-supervision, appointments, and scientific schools all depend on stable Academy-university relations. The President is therefore a key figure in presenting AV ČR not as a competitor to universities, but as a complementary research pillar. This is particularly important in Czech science policy, where universities and Academy institutes sometimes compete for public funding, prestige, researchers, and influence. A mature presidential role requires the ability to frame the relationship as partnership rather than rivalry. The Academy's institute-based strength can enrich doctoral education and advanced research, while universities provide broader educational communities and degree-awarding frameworks. The President must represent this complementarity in public debate. Without such representation, institutional misunderstandings can harden into policy conflict.

International representation is another major dimension of the office. The Act allows the Academy and its institutes to conclude agreements on international cooperation in scientific activity and technological development (*Czech National Council, 1992*). The Statutes state that the Academy pursues knowledge at the international level and actively participates in research and development policies of the Czech Republic and the European Union (*Academy of Sciences of the Czech Republic, n.d.*). The President embodies this international orientation in meetings with foreign academies, European bodies, scientific infrastructures, embassies, international committees, and research organisations. This role is particularly important for a country whose scientific visibility depends on international networks and European integration. The President does not conduct international cooperation alone, because institutes and researchers are the primary actors in projects and publications. However, the President gives institutional weight to cooperation and can open channels that individual institutes cannot easily open by themselves. International representation therefore transforms the Academy's national public mission into a transnational scientific presence.

The President's role in public communication has grown sharply in the 21st century. Public research institutions can no longer assume that citizens, politicians, or media automatically understand why fundamental research needs long-term support. The President must explain the value of research in language that is accessible without being simplistic. This involves presenting scientific achievements, defending the importance of basic research, addressing social concerns, responding to crises, and cultivating trust in science. The Academy's official mission connects research with education, culture, competitiveness, and the solution of current problems of society (*Academy of Sciences of the Czech Republic, n.d.*). The President is one of the central interpreters of this mission for the public. Public communication becomes especially important when science is politicised, misunderstood, or challenged by disinformation. The President must therefore represent not only the Academy's interests, but also the broader public authority of evidence-based knowledge.

The presidency also has a symbolic connection with the historical continuity of Czech science. AV ČR presents itself as following more than two hundred years of Czech scientific institutions, including the Royal Czech Society of Sciences, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy of Sciences (*Academy of Sciences of the Czech Republic, n.d.*). The President stands within this long line of representatives. The official list of representatives of the Academy and its predecessors makes this continuity visible, connecting the presidents of the modern Academy with chairmen and presidents of earlier institutions, including the Czechoslovak Academy of Sciences and older academy structures (*Academy of Sciences of the Czech Republic, n.d.*). This continuity is not politically innocent, because some periods of Czech and Czechoslovak science were marked by authoritarian pressure, ideological subordination, or institutional rupture. The modern President therefore represents continuity selectively and critically. The office preserves institutional memory while affirming the democratic and autonomous meaning of the present Academy. The President is thus a symbolic interpreter of the past as well as a strategic actor in the present.

The comparison with earlier leadership under the Czechoslovak Academy of Sciences clarifies the transformation of the office. In the socialist period, the highest representatives of the Academy operated within a political system in which scientific authority was entangled with party-state structures. Even when individual scholars had genuine scientific stature, the institutional environment limited autonomy and embedded leadership in ideological expectations. The post-1992 presidency of AV ČR was designed differently. Its legitimacy derives from the Academy Assembly, statutory appointment, public law, research excellence, and democratic governance rather than from party authority. This does not make the office free from politics in the broad sense, because public budgets, laws, and strategies are always political. It does, however, change the nature of political relation. The President represents science to the state, not party doctrine to science. This reversal is one of the key institutional meanings of the modern presidency.

The President's role in awarding honours, medals, and recognition adds another dimension to institutional representation. The Statutes authorise the President, upon the proposal of the Council, to bestow Academy awards, medals, and other honours (*Academy of Sciences of the Czech Republic, n.d.*). Such acts may appear ceremonial, but they help define the Academy's internal hierarchy of values. Awards recognise scientific achievement, popularisation, service, and contribution to research culture. Through them, the President participates in the symbolic economy of the Academy. Recognition tells researchers and the public what the institution considers exemplary. It also connects individual achievement with the collective prestige of AV ČR. In a research system increasingly shaped by metrics and competition, ceremonial recognition can preserve a broader understanding of scientific value. The President's role in honours therefore belongs to the cultural governance of science.

The President's relation to ethical and workplace standards has also become more visible. Contemporary research institutions must address scientific integrity, equal opportunities, harassment prevention, workplace culture, conflicts of interest, and responsible leadership. The Academy adopted a Code of Ethics for Scientific Research and a Code of Conduct, and such documents connect institutional credibility with everyday behaviour in research environments (*Academy of Sciences of the Czech Republic, 2024*; *Academy of Sciences of the Czech Republic, 2024*). The President does not personally resolve every ethical or workplace issue, but the office carries responsibility for the tone of institutional culture. A president who treats ethics as marginal weakens public trust. A president who links excellence with fairness,

safety, and integrity strengthens the Academy's legitimacy. This is especially important for younger researchers, international staff, doctoral students, and employees in vulnerable career positions. Institutional representation must include representation of the Academy as a trustworthy workplace, not only as a producer of publications.

The President's role in relation to open science and knowledge transfer is similarly strategic. The Academy's Open Science Principles emphasise the widest possible benefit of research results for society and the importance of open exchange of knowledge, sharing, and collaboration (*Academy of Sciences of the Czech Republic, 2024*). The new research-law environment also places knowledge transfer more firmly within Czech public research policy (*Parliament of the Czech Republic, 2025*). The President must represent the Academy in this changing context, where society expects not only excellent research, but also transparency, accessibility, and pathways to public use. This requires careful balance. The President must encourage transfer and openness without reducing all research to immediate application or administrative compliance. Basic research, intellectual property, sensitive data, ethical constraints, and disciplinary diversity all require nuanced representation. The President becomes an interpreter of how the Academy can be open and useful while remaining scientifically autonomous. This is one of the defining representational tasks of the current period.

The President's leadership also becomes visible during institute visits and direct engagement with workplaces. Such visits are more than protocol. They allow the President to hear institute-level concerns, observe infrastructures, communicate strategic priorities, and demonstrate that the central leadership recognises the diversity of the Academy's research environments. In a networked organisation, visibility of leadership matters. Researchers working in specialised institutes need to feel that the Academy's central representation understands their conditions and not only abstract policy documents. Institute visits can also support public communication when they draw attention to concrete laboratories, archives, fieldwork, and projects. Through this practice, the President represents the centre to the institutes and the institutes to the outside world. The direction of representation is therefore two-sided. The President listens inward and speaks outward.

The office also has a role in crisis representation. Although this function is not always described in legal texts, it is inherent in the presidency of a national research institution. Crises may involve budget cuts, public-health emergencies, attacks on research autonomy, ethical controversies, geopolitical tensions, cyber threats, or public misunderstanding of science. In such moments, the President must provide a coherent institutional response. The response must be scientifically credible, legally careful, politically aware, and publicly intelligible. The Academy's authority can be strengthened or weakened by how its President communicates during crises. This is particularly significant because AV ČR contains expertise relevant to many areas of crisis governance, from virology and modelling to energy, climate, social behaviour, security, language, history, and law. The President cannot replace experts, but can mobilise and represent the Academy's expert capacity. Crisis leadership therefore reveals the institutional meaning of representation under pressure.

The President's external representation is also connected with science diplomacy. The Academy maintains international relations, supports scientific societies, establishes national committees in international scientific unions, and represents the Learned Society of the Czech Republic toward similar foreign institutions (*Czech National Council, 1992*; *Academy of*

Sciences of the Czech Republic, n.d.). The President's office gives these activities a national scientific face. Science diplomacy may involve cooperation agreements, visits, joint programmes, participation in European advisory bodies, and representation in international academy networks. It may also involve more delicate questions, such as cooperation with countries affected by political conflict, research security, sanctions, academic freedom, and support for threatened scholars. The President must navigate these questions without turning scientific cooperation into naïve universalism or narrow political instrumentality. International representation therefore requires judgement, not only protocol. The office stands at the intersection of scientific universalism and national public responsibility.

The presidency also influences how the Academy is perceived by younger scientists. A president's priorities concerning doctoral education, early-career researchers, salaries, work-life balance, equal opportunities, and career development can shape institutional morale. In the 2025 nomination process, Pánek's programme publicly emphasised research excellence, budget growth, competitive salaries, public and political trust in science, support for the next generation of scientists, work-life balance, research ethics, equal opportunities, partnerships with universities, international representation, and technology transfer simplification (*Academy of Sciences of the Czech Republic, 2024*). These priorities show that modern Academy leadership must address not only research outputs, but also the human conditions under which research is produced. Public research institutions compete internationally for talent. If career conditions are weak, legal status and historical prestige are not enough. The President's representation of the Academy must therefore include representation of its future workforce. Scientific continuity depends on whether the Academy remains attractive to those who will carry it forward.

The President's role should not be interpreted as absolute leadership. The Academy's governance is deliberately plural. The Assembly, Academy Council, Presidium, Science Council, institute directors, institute councils, Head Office, advisory bodies, and ethical bodies all participate in institutional life. The President's authority is strongest when it works through these structures rather than around them. This is why the presidency is best understood as coordinated leadership. It requires strategic initiative, but also respect for procedures. It requires public voice, but also internal listening. It requires the ability to decide, but also the ability to build consensus. In a democratic scientific institution, presidential authority is not weakened by collegial governance; it is legitimised by it. The President represents the Academy credibly only when the Academy recognises itself in that representation.

The institutional representation performed by the President is therefore both vertical and horizontal. Vertically, the President links the Academy to the state: the President of the Republic, Government, Parliament, ministries, budgetary authorities, and legal frameworks. Horizontally, the President links the Academy to universities, research organisations, industry, cultural institutions, regions, international partners, and society. Internally, the President links institutes, research areas, councils, directors, and researchers. Historically, the President links the modern Academy to its predecessors and to the memory of Czech science. Symbolically, the President links the public image of science to the concrete work of laboratories, libraries, archives, field stations, and research teams. No single act exhausts this representation. It is accumulated through appointments, speeches, negotiations, visits, awards, policy statements, crisis responses, and strategic choices. The presidency is therefore a continuous performance of institutional mediation.

Thus, the President of the Czech Academy of Sciences is not merely the highest official of a research organisation, but the central figure through whom the Academy's legal personality, public mission, internal unity, and external representation are articulated. The office is grounded in law, elected legitimacy, state appointment, budgetary responsibility, and collective governance. It gives the Academy a statutory voice before the Czech state, a strategic face in the national research and innovation system, a representative presence in international science, and a symbolic link with the long history of Czech learned institutions. At the same time, the President's authority is bounded by the Academy Assembly, Academy Council, Presidium, Science Council, statutes, public law, and the autonomy of institutes. The strength of the office lies precisely in this balance: it allows leadership without personalisation of the institution, representation without bureaucratic command, and public accountability without the loss of scientific self-government. In the modern AV ČR, the President embodies the Academy as a national research centre that must be legally responsible, scientifically autonomous, internationally visible, publicly trusted, and internally plural.

3. Decision-Making, Autonomy, and Accountability

Decision-making in the modern Czech Academy of Sciences is best understood as a system of mediated autonomy. It is not the direct command of the state over research, nor the unregulated freedom of institutes to act without reference to public responsibility. It is a layered structure in which scientific self-government, public law, institute autonomy, financial accountability, research evaluation, and ethical responsibility interact. This structure is one of the clearest institutional results of the post-1989 transformation of Czech science. The Academy inherited from the Czechoslovak Academy of Sciences a strong institute-based research system, but it could not inherit the old socialist model of administrative-political control. At the same time, it could not simply dissolve itself into a market of independent research units, because public research requires continuity, coordination, and long-term capacities. The post-1992 governance model therefore built decision-making around representative bodies, executive bodies, legal rules, institute-level organs, and accountability mechanisms (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). The result is not a perfectly simple system. It is deliberately complex because the institution it governs is complex. AV ČR must protect scientific freedom while using public money, coordinate 54 research institutes while respecting their disciplinary individuality, and respond to public needs while preserving the slow temporality of fundamental research. Decision-making, autonomy, and accountability are therefore not separate problems. They are three dimensions of one institutional settlement.

The first level of decision-making is the Academy Assembly, which functions as the supreme self-governing body of the Academy. Its authority over statutes, budget, final accounts, annual reports, leadership proposals, election of Academy Council members, election of Science Council members, and structural decisions gives it a constitutional role within AV ČR (*Czech National Council, 1992*). This is important because self-government in the Academy is not merely a principle declared in the abstract. It is embodied in a body that can approve, elect, recall, establish, merge, divide, and dissolve. The Assembly is the place where the Academy's dispersed institutional life becomes a collective decision. Institute directors, elected representatives, and external members participate in a structure that gives the Academy a broad deliberative base. This means that major decisions cannot legitimately be reduced to

the preferences of the President, the Academy Council, or a ministry. The Assembly gives the Academy's autonomy a representative form. It is the institutional mechanism through which the scientific community participates in the governance of its own public research system. Without this representative level, autonomy would be either rhetorical or purely managerial.

The Academy Council provides the second level of decision-making. It is the executive body of the Academy, responsible for managing current activities between Assembly sessions, preparing reports and proposals, executing Assembly resolutions, and submitting the draft annual report, budget, final account, and fund distribution among institutes (*Czech National Council, 1992*). This role gives the Council substantial practical influence. The Assembly can make supreme decisions, but the Council structures much of the information and agenda through which those decisions are made. It is therefore a mechanism of executive coordination rather than a mere administrative committee. The Council must balance institute interests, disciplinary priorities, public funding constraints, strategic programmes, research evaluation, and relations with government bodies. Its composition, elected from the Assembly with representation of research areas, helps give it scientific legitimacy. At the same time, its executive role requires responsibility for the Academy as a whole. The Council is thus positioned between collective representation and operational necessity. It is where autonomy becomes administration.

The Presidium adds a third decision-making layer by allowing urgent executive action under subsequent control. The Act permits the Academy Council to decide urgent matters otherwise reserved for the Assembly, but only on condition that the Assembly is convened within 30days and confirms the decision; otherwise the decision is invalidated (*Czech National Council, 1992*). The Presidium of the Council has a similar urgent function in relation to the Council, subject to confirmation by the Council within a set period (*Czech National Council, 1992*). These mechanisms are important because they show that Academy governance is not rigidly ceremonial. A large public research organisation may need quick decisions in legal, financial, personnel, international, or crisis-related situations. However, the emergency mechanism does not abolish collective control. It temporarily shifts authority and then returns it to the broader body. This is a subtle but important democratic design. It allows the Academy to act without allowing executive necessity to become permanent executive dominance. In this way, decision-making remains both flexible and accountable.

The President's role completes the central decision-making structure. The President is the statutory representative of the Academy, acts on its behalf in all matters, presides over the Assembly, Academy Council, and Presidium, appoints Vice-Presidents, appoints and recalls institute directors, and bears responsibilities connected with budgetary resources, audit, and internal control (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). These functions give the President significant authority, but that authority is embedded in collective procedures. The President is not a sovereign executive ruler of the Academy. The office derives legitimacy from the Assembly's proposal, government discussion, and appointment by the President of the Republic. The President must act through bodies, statutes, budgets, and legal rules. This gives AV ČR a leadership model that combines personal representation with procedural limitation. The President can shape priorities, represent the Academy publicly, and coordinate leadership, but cannot legitimately bypass the institutional architecture. The office is powerful because it mediates among bodies, not because it stands above them without constraint.

Decision-making also occurs at the institute level, where the autonomy of public research institutions is given concrete organisational form. Act No. 341/2005 Coll., on public research institutions, identifies the bodies of a public research institution as the Director, the Board, and the Supervisory Board (*Parliament of the Czech Republic, 2005*). The Statutes of the Academy define the Director as the statutory body of the institute, responsible for decisions on institute matters unless the public research institution law provides otherwise, for proper bookkeeping, for submitting annual reports and final accounts, for preparing research objectives and projects, and for submitting budgetary and internal-regulation proposals to the Institute Board (*Academy of Sciences of the Czech Republic, n.d.*). This institute-level governance is essential to the Academy's autonomy. Scientific life cannot be managed exclusively from the central Academy bodies. Research teams, laboratories, archives, field stations, collections, and disciplinary agendas require local decision-making. The institute director and institute bodies therefore carry responsibility for the immediate conditions of research. AV ČR's autonomy is distributed across its institutes rather than concentrated only in the Academy centre.

The Institute Board is especially important as a mechanism of internal scientific governance. Under the public research institution framework and the Academy Statutes, the Board discusses draft research objectives, research project proposals, internal regulations, budgets, amendments, and annual reports, and it participates in the institutional life of the institute (*Parliament of the Czech Republic, 2005*; *Academy of Sciences of the Czech Republic, n.d.*). This gives researchers and institutional representatives a formal channel through which to influence the direction of their workplace. The Board is not merely decorative consultation. It embodies the principle that scientific institutions should not be governed only by managerial hierarchy. Research agendas require informed deliberation by those who understand disciplinary standards, methodological needs, and the internal life of the institute. The Board therefore connects local scientific expertise with institutional decision-making. It also provides a forum in which strategic choices can be discussed before they become administrative acts. This is one of the ways in which the Academy's autonomy becomes collegial rather than individualistic.

The Supervisory Board adds the dimension of oversight. Public research institutions operate with public assets, public funding, and public obligations, and they therefore require mechanisms that monitor legality, economy, property management, and conformity with the institution's public purpose. The Statutes assign the Academy Council important powers concerning the Rules of Procedure of Supervisory Boards and the appointment and recall of their members (*Academy of Sciences of the Czech Republic, n.d.*). This creates a link between institute-level oversight and Academy-wide responsibility. Supervisory Boards are not supposed to interfere with scientific conclusions, but they are part of the accountability system that makes institute autonomy credible. They help ensure that legal personality does not become financial opacity. In a public research institution, freedom in research must be accompanied by clarity in management. The existence of supervisory bodies reflects the democratic principle that public trust must be institutionally protected. Autonomy without oversight would not be sustainable.

The Academy's decision-making system is therefore multi-centred. Major institutional decisions pass through the Academy Assembly. Executive coordination belongs to the Academy Council and Presidium. Statutory representation and leadership belong to the President. Scientific-policy advice is provided by the Science Council. Administrative continuity is supplied by the Head Office. Institute directors, boards, and supervisory boards

manage and oversee institute-level life. This multi-centred arrangement may appear complex, but it prevents the concentration of authority in one place. It reflects the Academy's institutional nature as a network of specialised research institutions under a common public framework. Each level has a different type of legitimacy. The Assembly has representative legitimacy. The Council has executive legitimacy. The President has statutory and symbolic legitimacy. The Science Council has scientific-advisory legitimacy. Institute bodies have local scientific and managerial legitimacy. Supervisory bodies have accountability legitimacy. Together, they make AV ČR governable without making it authoritarian.

Autonomy in this structure must be understood with precision. It does not mean that the Academy is independent of Czech law, public finance, government approval of statutes, budgetary rules, evaluation, audit, or public expectations. The Academy is an organisational body of the Czech Republic, financed from the state budget, and for budgetary purposes it has the status of a central authority (*Czech National Council, 1992*). Its institutes are public research institutions established by the Academy on behalf of the Czech Republic (*Czech National Council, 1992*). Such a body cannot claim private independence. Its autonomy is scientific and institutional rather than sovereign. It means that research priorities, methods, conclusions, scientific evaluation, disciplinary development, and internal academic governance should be determined primarily through scientific judgement and Academy procedures rather than direct political command. The Academy belongs to the public sphere, but it is not supposed to be intellectually subordinated to the immediate preferences of government. This distinction is the foundation of democratic public research.

The Statutes formulate this autonomy in connection with freedom of scientific research, internationally recognised standards, democratic organisation, and the Academy's role as a national research centre (*Academy of Sciences of the Czech Republic, n.d.*). This language matters because it places autonomy within a normative order. Autonomy is not institutional self-interest. It is justified because scientific research requires freedom from external coercion, disciplinary competence, open criticism, and long-term development. A government can finance research, but it cannot decree what is true. A ministry can set broad policy priorities, but it cannot replace peer judgement in mathematics, genetics, history, archaeology, sociology, or philosophy. A company can cooperate with an institute, but it should not control research integrity. The Academy's autonomy protects society from knowledge produced solely under political or commercial pressure. It is therefore a public value, not only an academic privilege.

Historical memory gives this autonomy particular significance. The Czechoslovak Academy of Sciences had real scientific achievements, but it operated within a socialist political system in which autonomy was limited by party-state structures, ideological expectations, and administrative centralisation. The modern Academy was created after 1989 in part to preserve research capacity while changing the conditions under which that capacity was governed. Autonomy became a way of correcting the institutional distortions of the previous regime. It also became a means of reconnecting Czech science with democratic and international standards. This historical background explains why AV ČR's governance cannot be reduced to efficiency alone. Procedures of election, representation, consultation, external evaluation, and legal accountability have a deeper meaning. They are safeguards against the return of arbitrary command. Decision-making in the modern Academy carries the memory of what happens when science loses institutional freedom.

At the same time, autonomy does not remove the need for accountability. Public accountability begins with the budget. The Academy's activities are financed from the state budget, and funds for the Academy are budgeted in a separate chapter of the Czech Republic (*Czech National Council, 1992*). The Academy Council submits the draft budget and final account, including proposals for the distribution of funds among institutes, to the Assembly (*Czech National Council, 1992*). The President is responsible for managing the Academy's budgetary resources and for creating and enforcing internal audit and financial control systems (*Academy of Sciences of the Czech Republic, n.d.*). These rules make financial accountability central to decision-making. Public research institutions cannot demand stable support while refusing scrutiny of how resources are used. Financial responsibility is one of the conditions under which scientific autonomy remains politically defensible. It shows citizens and public authorities that freedom in research does not mean irresponsibility in management.

Annual reporting is another basic form of accountability. The Academy Council submits the draft annual report on the Academy's activities to the Assembly, and institute directors submit annual reports and audited final accounts through the procedures defined by the Statutes (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). Reports translate scientific, organisational, and financial activity into a public and institutional record. They do not capture everything that matters in research, but they make the institution visible and reviewable. In a publicly funded system, visibility matters. Annual reports allow the Academy to explain achievements, difficulties, priorities, cooperation, infrastructure, finances, and societal contributions. They also create continuity from year to year, making it possible to judge whether strategies are being fulfilled. Reporting is therefore not only bureaucratic documentation. It is a narrative and evidentiary form of public accountability.

Research evaluation is a deeper form of scientific accountability. AV ČR has developed periodic evaluations of the research and professional activities of its institutes, including methodologies, reports, and institute-specific evaluation documents (*Academy of Sciences of the Czech Republic, n.d.*). Evaluation allows the Academy to demonstrate that public funding supports quality, international relevance, disciplinary development, and institutional strategy. It also helps the Academy make difficult decisions about resources, priorities, and restructuring. However, evaluation in an institution as diverse as AV ČR cannot be based on one crude metric. A physics institute, an institute of Czech literature, a biological centre, a mathematical institute, an archaeological institute, and a social-science institute produce different kinds of outputs and public value. The Academy's evaluation culture therefore has to combine peer judgement, field sensitivity, qualitative assessment, and appropriate indicators. Scientific accountability must respect the nature of science. If it becomes mechanical, it risks damaging the autonomy it is meant to legitimate.

The Academy's participation in the reform of research assessment illustrates this point. AV ČR signed the Agreement on Reforming Research Assessment in 2022 and joined the Coalition for Advancing Research Assessment, with an action plan to develop its evaluation system further by 2027 (*Academy of Sciences of the Czech Republic, 2024*). This places the Academy within a European movement that criticises excessive reliance on narrow quantitative indicators and seeks more responsible evaluation cultures. Such participation is not merely administrative fashion. It fits the Academy's institutional needs. AV ČR contains fields where journal metrics may be meaningful, fields where monographs and editions are central, fields where datasets and infrastructures matter, and fields where public expertise is essential. Responsible assessment helps protect this plurality. It also strengthens accountability by making

evaluation more credible to researchers and to the public. The Academy's autonomy is best defended not by rejecting evaluation, but by developing evaluation that is scientifically adequate.

Recent discussion of Academy evaluation has explicitly emphasised peer review and assessment "beyond metrics" (*Academy of Sciences of the Czech Republic, 2025*). This phrase is significant because it captures the tension at the heart of research accountability. Metrics are not useless; they can provide signals, comparisons, and contextual information. But if they become substitutes for expert judgement, they distort research behaviour. Peer review, when properly organised and protected from conflicts of interest, allows assessment to consider originality, methodological quality, international position, long-term contribution, societal relevance, and field-specific standards. The Academy's evaluation system therefore seeks to make accountability intellectually serious rather than merely administrative. This is essential for a public research institution whose mission includes both fundamental research and public relevance. The Academy must be able to show quality without flattening the meaning of quality. That is one of the most difficult governance tasks in contemporary science.

Accountability also includes scientific integrity. The Code of Ethics for Researchers of the Czech Academy of Sciences identifies values such as freedom of research, fairness, equal opportunities, responsibility, honesty, diligence, trust, and respect for others (*Academy of Sciences of the Czech Republic, 2024*). These values connect autonomy with responsibility at the level of individual and collective research practice. Freedom of research is listed together with honesty and fairness, not apart from them. This is conceptually important. A public research institution does not defend freedom so that researchers can avoid standards. It defends freedom so that researchers can pursue truth under standards of integrity. Ethical accountability covers authorship, data, supervision, conflicts of interest, reliability, collegial behaviour, and public communication. It is part of the internal moral architecture of the Academy. Without integrity, public trust in autonomy would collapse.

The Scientific Integrity Committee of the Academy and related ethical structures provide institutional form to these principles. The Statutes state that the Council for Sciences establishes the Committee for Scientific Integrity, dealing with general questions of the ethics of scientific work and significant breaches of these ethics (*Academy of Sciences of the Czech Republic, n.d.*). The Academy also refers to the revised European Code of Conduct for Research Integrity, published by ALLEA and made available in Czech in 2024 (*Academy of Sciences of the Czech Republic, 2024*). These mechanisms place AV ČR within wider European standards of research integrity. This is important because accountability in science is not only national. International collaboration requires shared norms of honesty, reliability, respect, and responsibility. The Academy's ethical governance therefore connects internal autonomy with external scientific trust. It shows that the Academy understands integrity as a condition of both national public legitimacy and international scientific participation.

Workplace accountability has also become more visible in recent years. The Academy's Code of Conduct is designed to help create and cultivate a fair and safe working environment for everyone without distinction (*Academy of Sciences of the Czech Republic, 2024*). This broadens the meaning of governance. A research institution is not accountable only for publications, finances, and legal compliance. It is also accountable for the social conditions under which research is produced. Problems of harassment, discrimination, unequal opportunity, unhealthy hierarchy, poor supervision, and precarious careers can damage

scientific quality as well as human dignity. The Academy's public mission therefore includes responsibility for institutional culture. This is especially important in an international and intergenerational research environment, where doctoral students, early-career researchers, foreign staff, and technical employees may be vulnerable to unequal power relations. Scientific autonomy cannot be separated from fair working conditions. A culture of freedom must also be a culture of respect.

Open science adds another layer of accountability. The Academy's Open Science Principles state that the Academy strives to ensure that the results of scientific activities of its institutes have the widest possible benefit for society and that open exchange of knowledge, sharing, and collaboration are important for science (*Academy of Sciences of the Czech Republic, 2024*). Openness makes research more visible, reusable, verifiable, and socially accessible. It also changes the relationship between publicly funded research and the public sphere. If research is supported by public resources, there is a strong argument that its results should be available as widely as legal, ethical, and technical conditions permit. Open science therefore strengthens accountability not by imposing political control, but by making knowledge circulation more transparent. It allows other researchers and, where appropriate, society to examine, reuse, and build upon publicly produced knowledge. This is a contemporary extension of the Academy's public mission.

Decision-making in AV ČR is also accountable through legal relationships with the state. The Academy's Statutes are adopted by the Assembly but require approval by the Government (*Czech National Council, 1992*). The President is appointed by the President of the Republic after the Assembly's proposal has been discussed by the Government (*Czech National Council, 1992*). The Academy's budgetary chapter is part of the state budget. Its institutes are public research institutions established on behalf of the Czech Republic. These arrangements mean that the Academy is not outside public law. Yet they do not mean that the state controls research content. The Czech model separates legal accountability from epistemic subordination. This distinction is crucial. It allows the state to secure legality, public finance, and institutional responsibility while leaving scientific judgement to the Academy's bodies, institutes, researchers, and peer communities. Democratic science governance depends on this separation.

The tension between autonomy and accountability is therefore productive rather than accidental. If autonomy were absolute, the Academy could become a closed corporation of researchers defending resources without sufficient public explanation. If accountability were absolute in a bureaucratic or political sense, the Academy could lose the freedom necessary for serious research. The modern governance model seeks to prevent both outcomes. The Assembly, Council, President, institute bodies, evaluation procedures, annual reports, ethical frameworks, supervisory boards, and open science policies all participate in this balance. Each mechanism limits some forms of arbitrary power while enabling legitimate action. Accountability disciplines autonomy, and autonomy protects accountability from becoming political command. Their relationship is circular. The Academy must be accountable because it is autonomous, and it must be autonomous because only autonomous research can be publicly trustworthy.

This balance also affects relations between central Academy bodies and institutes. The Academy Council and President have powers concerning institute directors, supervisory boards, evaluation, budgetary distribution, founding deeds, internal regulations, and strategic

coordination (*Academy of Sciences of the Czech Republic, n.d.*). Institutes have legal personality, directors, boards, supervisory boards, research agendas, and internal responsibilities. The relationship is therefore neither central command nor complete independence. It is a founder-institute relationship mediated by law, statutes, public research institution rules, and Academy-wide governance. Central bodies must ensure coherence, accountability, and quality. Institutes must preserve disciplinary expertise, research initiative, and local responsibility. Conflict between these levels is possible and sometimes unavoidable. However, the legal architecture provides procedures through which such conflict can be managed. This is one of the main reasons why the Academy has remained a coherent institution despite disciplinary breadth and institute autonomy.

The role of the Head Office is important in making this balance administratively real. The Head Office serves as the administrative body of the Academy and functions as the executive arm of the President, the Academy Council and its members, and other Academy bodies (*Academy of Sciences of the Czech Republic, n.d.*). It supports legal, managerial, organisational, inspectional, and administrative tasks. In a complex system, decisions cannot be implemented by resolutions alone. They require documentation, deadlines, financial processing, legal interpretation, records, communication, and coordination with institutes and public authorities. The Head Office therefore contributes to accountability by maintaining procedural continuity. It also supports autonomy by providing the administrative capacity without which scientific bodies would be overwhelmed by bureaucracy. Good administration is not the enemy of research autonomy. In a public research institution, it is one of its conditions.

Accountability also has a public-communication dimension. The Academy must explain its decisions, priorities, results, and needs to citizens, policymakers, universities, industry, and international partners. Public communication is not simply institutional promotion. It is part of democratic accountability because public trust depends on understanding. The Academy must communicate why fundamental research matters, why institutes require stable funding, why evaluation must respect disciplinary diversity, why open science is important, and why autonomy is necessary. The public does not need to know every internal procedural detail, but it does need a credible picture of the Academy's contribution to society. Decisions that are invisible or poorly explained can become politically vulnerable. The Academy's leadership therefore has to treat communication as a governance function. In modern public science, legitimacy is produced not only through legal rules and scientific quality, but also through intelligible public justification.

The Academy's decision-making culture must also confront the problem of time. Political systems often operate in short cycles; research often operates in long cycles. Budget debates may be annual, electoral priorities may shift every few years, and public attention may move rapidly from one issue to another. Fundamental research, however, may require decades of accumulated expertise. Collections, longitudinal datasets, observatories, language corpora, infrastructure projects, and scientific schools cannot be built or rebuilt quickly. Decision-making in AV ČR must therefore protect long-term capacities while adapting to changing circumstances. Accountability cannot mean only immediate responsiveness. It must also include responsibility for the future. The Academy's governance bodies have to decide not only what is urgent now, but what knowledge the Czech Republic will need later. This long temporal horizon is one of the strongest arguments for public research institutions.

The Academy's participation in European research governance adds another dimension to accountability. European frameworks increasingly emphasise responsible research assessment, open science, research integrity, gender equality, data management, knowledge transfer, security, and societal impact. AV ČR must align with these standards while maintaining national legal identity and institutional traditions. The signing of the Agreement on Reforming Research Assessment and involvement in CoARA shows that the Academy is willing to place its evaluation culture in a European context (*Academy of Sciences of the Czech Republic, 2024*). Open science principles and the Czech version of the European Code of Conduct for Research Integrity further reinforce this orientation (*Academy of Sciences of the Czech Republic, 2024*; *Academy of Sciences of the Czech Republic, 2024*). European accountability is not an external burden alone. It helps the Academy benchmark itself, protect scientific standards, and strengthen its credibility. International standards thus support domestic autonomy.

Decision-making also involves the management of risk. Contemporary research institutions face risks connected with cyber security, research security, geopolitical tensions, sensitive technologies, data protection, intellectual property, research misconduct, public controversy, and financial uncertainty. The current Academy Council includes responsibilities for trusted research, digitalisation, institutional resilience, intellectual property, technology transfer, and implementation of European security-related requirements (*Academy of Sciences of the Czech Republic, 2025*). This shows that governance has expanded beyond traditional budget and personnel questions. Autonomy now requires risk awareness. An open scientific institution must remain internationally connected, but it cannot ignore vulnerabilities. Accountability requires that research institutions protect data, people, infrastructure, and public trust. The Academy's decision-making therefore increasingly includes strategic risk management. This is a modern extension of institutional responsibility.

The Academy's accountability is also connected with its role in public policy. The Statutes state that the Academy participates in the formation of research and development policies of the Czech Republic and the European Union and is guided by the needs of science, technology, culture, Czech and EU research policies, and internationally recognised standards (*Academy of Sciences of the Czech Republic, n.d.*). This makes AV ČR both a subject and an object of policy. It is shaped by national research policy, but it also contributes expertise and institutional experience to policy formation. Decision-making inside the Academy must therefore consider how institutional choices affect the wider Czech research and innovation system. Budget priorities, evaluation models, cooperation with universities, knowledge transfer, and open science all have systemic consequences. The Academy's accountability is not only internal and financial. It is also systemic, because AV ČR is one of the pillars of national research capacity.

The democratic meaning of accountability is especially important here. Accountability should not be confused with political obedience. A public research institution may be accountable precisely by offering independent expertise that complicates political preferences. It may serve the public interest by warning about environmental risks, criticising ineffective policies, correcting historical myths, analysing social inequalities, or questioning technological enthusiasm. In such cases, accountability means responsibility to evidence and public reason, not compliance with power. The Academy's autonomy protects this function. Public authorities need independent research institutions because the state itself can be short-sighted, politicised, or administratively limited. AV ČR's decision-making must therefore

preserve the conditions under which expertise can be inconvenient as well as useful. This is one of the deepest democratic functions of the Academy.

At the same time, autonomy requires internal humility. The Academy cannot claim public authority simply because it is the Academy. It must earn authority through quality, integrity, openness, and responsiveness. Researchers and institutes must recognise that public support brings obligations. These obligations include careful use of funds, honest reporting, ethical conduct, willingness to undergo evaluation, attention to public communication, and readiness to cooperate when expertise is needed. Autonomy does not exempt science from society; it enables science to serve society in a serious way. This is why the Academy's governance system combines self-government with multiple forms of accountability. The system is not designed to make research comfortable. It is designed to make public research legitimate, durable, and scientifically meaningful.

The decision-making model of AV ČR therefore reflects a broader European transformation of public research governance. The old binary between state-controlled research and autonomous scholarship is no longer sufficient. Modern public research institutions must be autonomous, evaluated, ethical, open, strategic, internationally connected, financially accountable, and socially relevant. They must defend fundamental research while engaging with application, policy, and public debate. They must maintain internal disciplinary cultures while participating in cross-cutting missions. They must preserve long-term knowledge while responding to urgent problems. The Czech Academy's governance architecture provides one national version of this broader transformation. Its distinctive feature is the combination of a central Academy framework with legally autonomous public research institutes. This combination allows decision-making to be both system-wide and institute-based.

Thus, decision-making, autonomy, and accountability in the Czech Academy of Sciences form a single institutional logic rather than three separate administrative themes. The Academy makes decisions through a layered structure of Assembly, Academy Council, Presidium, President, Science Council, Head Office, institute directors, institute boards, and supervisory boards. Its autonomy is grounded in scientific freedom, institute-based research, legal self-government, representative bodies, and internationally recognised standards. Its accountability is maintained through public law, state-budget rules, annual reporting, internal audit, supervisory mechanisms, research evaluation, reform of assessment, ethical codes, scientific integrity bodies, open science principles, and public communication. This architecture embodies the central lesson of the Academy's modern history: science needs freedom, but public science also needs responsibility. AV ČR's governance system is an attempt to make that relationship durable. It protects research from direct political command while ensuring that research institutions remain answerable to the public, to law, to scientific standards, and to the future needs of Czech society.

Research Areas and Institutes

1. The Structure of Scientific Areas within AV ČR

The structure of scientific areas within the Czech Academy of Sciences is not merely an administrative table that distributes institutes into convenient categories. It is one of the main ways in which the modern Academy organises disciplinary plurality, governs its institutes, represents Czech research to the state and society, and preserves continuity between older academic traditions and contemporary scientific demands. AV ČR is legally defined as an Academy that conducts research through its institutes in a broad range of natural, technical, social, and human sciences (*Academy of Sciences of the Czech Republic, n.d.*). This phrase is broad, but the internal structure of research areas gives it institutional form. The Academy's scientific map is arranged into three major research areas: Mathematics, Physics, and Earth Sciences; Life and Chemical Sciences; and Humanities and Social Sciences (*Academy of Sciences of the Czech Republic, n.d.*). Each of these areas is divided into three sections, making nine sections in total. The arrangement is simple enough to provide orientation, but broad enough to hold the full disciplinary range of a national research organisation. It shows that the Academy is not built around one dominant scientific field. Rather, it is constructed as a system of knowledge in which physical, biological, technical, social, historical, linguistic, and philosophical research coexist under one institutional roof.

This three-area structure also reflects the Academy's position between a university and a specialised research agency. A university usually organises knowledge through faculties, departments, degree programmes, and teaching obligations. A sectoral research agency often organises knowledge around one policy field, such as agriculture, health, defence, or industry. AV ČR does neither of these things exactly. It organises research through autonomous institutes grouped into scientific areas and sections. This gives the Academy a structure suited to long-term research rather than curricular administration. The areas do not correspond to student markets, but to clusters of research competence. They help the Academy coordinate research policies, evaluation, funding discussions, leadership responsibilities, and external representation. At the same time, they do not erase institute individuality. The Academy's scientific areas are therefore a framework of coordination, not a rigid disciplinary command system. They allow the Academy to speak as a whole while still recognising the depth and specificity of each institute.

The first research area, Mathematics, Physics, and Earth Sciences, gathers disciplines concerned with the physical universe, formal systems, matter, energy, computation, instruments, the Earth, atmosphere, and related technological and methodological fields. Its sections are Mathematics, Physics, and Computer Science; Applied Physics; and Earth Sciences (*Academy of Sciences of the Czech Republic, n.d.*). This area has a distinctive intellectual profile because it stretches from the most abstract forms of mathematical reasoning to highly instrument-based experimental research and to long-term observation of natural systems. Its internal breadth is important. Mathematics and theoretical computer science may deal with logic, topology, differential equations, optimisation, modelling, and statistical methods. Physics investigates matter and fundamental laws, astrophysical objects, plasma, condensed matter, nuclei, and experimental data from large instruments. Earth sciences study geology, geophysics, atmosphere, hydrology, rock structures, climate-related processes, and the geological specificity of the Czech lands. The area thus combines theory,

observation, modelling, experimentation, and advanced technology. It is one of the principal foundations of the Academy's capacity for fundamental and strategic research.

The Section of Mathematics, Physics, and Computer Science includes the Astronomical Institute, Institute of Physics, Institute of Mathematics, Institute of Computer Science, Nuclear Physics Institute, and Institute of Information Theory and Automation (*Academy of Sciences of the Czech Republic, 2026*). This grouping is intellectually coherent because it links formal methods, physical theory, astronomical observation, computational systems, nuclear research, information theory, and automation. At first glance, mathematics, astronomy, nuclear physics, and cybernetics may appear as separate worlds. Yet in modern science they are deeply connected through modelling, instrumentation, data processing, numerical methods, statistical inference, and theoretical abstraction. Astrophysics relies on computation and mathematical modelling. Nuclear physics depends on instruments, data analysis, and theoretical frameworks. Information theory and automation link abstract mathematics with control systems, robotics, and applied technologies. The section therefore embodies one of the Academy's key principles: fundamental disciplines may remain distinct, but their methods and problems increasingly intersect. This is why the area cannot be reduced to a list of institutes. It is a methodological ecosystem.

The Section of Applied Physics forms another bridge between fundamental laws and technological relevance. It includes institutes devoted to photonics and electronics, physics of materials, plasma physics, scientific instruments, theoretical and applied mechanics, and thermomechanics (*Academy of Sciences of the Czech Republic, 2026*). The official description of the research area emphasises macroscopic properties and new structures of solid, liquid, and plasma bodies, microstructures and microprocesses, material science, fluid modelling, plasma processing, tokamak research, electron microscopy, spectroscopy, and digital signal processing (*Academy of Sciences of the Czech Republic, n.d.*). This section is particularly important for understanding the Academy's refusal to separate pure and applied research mechanically. Applied physics here does not mean simple technical service. It often begins with fundamental laws of physics, but it develops instruments, materials, methods, and models that can become useful in many fields. It links scientific understanding with the material and technological basis of modern society. In institutional terms, the section also shows why the Academy needs specialised institutes rather than only university departments. Advanced instruments, plasma facilities, materials laboratories, and mechanical testing capacities require stable institutional support and long-term expertise.

The Section of Earth Sciences completes the first research area by bringing together geophysics, geology, atmospheric physics, geonics, hydrology, and rock structure and mechanics (*Academy of Sciences of the Czech Republic, 2026*). Its official description distinguishes global-continental research from local-regional research, with attention to the structure and evolution of the Earth, the geology of the Czech territory, climate oscillations, environmental change, paleomagnetism, paleontology, induced seismic waves, soil and sediment contamination, radioactive-waste repository questions, the atmosphere, and long-term changes in atmospheric circulation in Central Europe (*Academy of Sciences of the Czech Republic, n.d.*). This section gives the Academy a special public role because earth-science research connects fundamental knowledge with territorial responsibility. A country needs to understand its geology, water systems, atmosphere, seismic risks, mineral structures, environmental history, and climate vulnerabilities. These are not short-term research topics. They require long observation, field knowledge, instruments, archives of data, and cooperation

with public authorities. The Earth Sciences section therefore shows how a national research academy serves public interest by maintaining scientific memory of the country's physical environment. It is fundamental research with immediate and long-term civic significance.

The second research area, Life and Chemical Sciences, brings together chemical, biological, medical, ecological, and environmental research. Its sections are Chemical Sciences; Biological and Medical Sciences; and Bio-Ecological Sciences (*Academy of Sciences of the Czech Republic, n.d.*). This area is central to the Academy's engagement with health, molecular processes, organisms, ecosystems, biotechnology, materials, medicines, environmental change, and the relationship between life and its physical conditions. It also represents one of the strongest zones of interaction between fundamental research and applied relevance. Chemistry, biochemistry, molecular biology, microbiology, physiology, botany, ecology, and global-change research all move between basic mechanisms and practical consequences. Discoveries in molecular and cellular processes may later influence medicine. Research in polymers may influence biomedicine and materials. Ecological observation may influence conservation and climate adaptation. This second area therefore embodies the Academy's mission in a particularly visible form: it advances international knowledge while addressing problems that citizens immediately associate with health, environment, food, and the quality of life. Its institutional breadth is not decorative, but necessary for modern life-science research.

The Section of Chemical Sciences includes institutes of analytical chemistry, inorganic chemistry, physical chemistry, chemical process fundamentals, macromolecular chemistry, and organic chemistry and biochemistry (*Academy of Sciences of the Czech Republic, 2026*). The official description connects this section with Czech chemical traditions represented by figures such as Rudolf Brdička, Jaroslav Heyrovský, František Šorm, and Otto Wichterle (*Academy of Sciences of the Czech Republic, n.d.*). This historical reference is important because chemical sciences have long been among the internationally visible fields of Czech research. The section covers theoretical and experimental physical chemistry, electrochemistry, catalysis, new compounds and materials, organic chemistry, biochemistry, antiviral compounds, polymers, separation methods, spectral methods, thermodynamics, reacting systems, catalysis, and chemical engineering science (*Academy of Sciences of the Czech Republic, n.d.*). The structure of this section shows how chemical research connects basic molecular understanding with medicine, industry, materials, environmental monitoring, and analytical technologies. It also demonstrates the Academy's capacity to preserve disciplinary traditions while renewing them through contemporary research. Chemistry within AV ČR is both a historical field of national scientific excellence and a modern platform for interdisciplinary work.

The Section of Biological and Medical Sciences contains institutes of biophysics, biotechnology, physiology, microbiology, experimental botany, experimental medicine, molecular genetics, and animal physiology and genetics (*Academy of Sciences of the Czech Republic, 2026*). This section investigates living organisms from molecular and cellular mechanisms to whole organisms. The official description mentions DNA-protein interactions, environmental effects on organisms, signalling pathways, gene responses, immune mechanisms, microbial genomes, metabolites, cardiovascular physiology, neuroscience, reproduction, embryology, preventive medicine, insects as models and pests, plant genetics, plant physiology, pathophysiology, and biotechnology (*Academy of Sciences of the Czech Republic, n.d.*). Such diversity is characteristic of contemporary biological research. The

boundaries between biology, medicine, chemistry, physics, and computation have become increasingly porous. Molecular genetics requires imaging, sequencing, bioinformatics, and model organisms. Experimental medicine depends on physiology, molecular mechanisms, and translational pathways. Plant sciences intersect with climate, agriculture, biotechnology, and environmental change. This section therefore illustrates how the Academy's research areas are not sealed containers, but organised zones of overlapping expertise.

The Section of Bio-Ecological Sciences includes the Biology Centre, Institute of Botany, Institute of Vertebrate Biology, and Global Change Research Institute (*Academy of Sciences of the Czech Republic, 2026*). Its research is concentrated on interactions between organisms and environment, including ecosystems, water systems, parasite-host relations, long-term observations, geobotany, hydrobiology, soil biology, chemistry, microbiology, eutrophication, taxonomy, conservation, and global change (*Academy of Sciences of the Czech Republic, n.d.*). This section is particularly significant because it extends the biological mission of the Academy from the organism and cell to ecosystems and planetary processes. It also connects natural science with public policy in a direct way. Biodiversity, water quality, climate change, conservation, agriculture, landscape management, and environmental resilience all require long-term scientific capacity. The presence of the Global Change Research Institute in this section makes visible the Academy's role in addressing one of the defining problems of the 21st century. Yet this role rests on fundamental research into organisms, ecosystems, and environmental processes. The section therefore expresses a central theme of the Academy's modern mission: public relevance depends on deep and continuous scientific observation.

The third research area, Humanities and Social Sciences, gives the Academy its cultural, historical, social, legal, linguistic, economic, and philosophical breadth. Its sections are Social and Economic Sciences; Historical Sciences; and Humanities and Philology (*Academy of Sciences of the Czech Republic, 2026*). This area is essential for understanding AV ČR as more than a laboratory organisation. It preserves and develops the intellectual traditions through which Czech society understands itself, its past, its institutions, its language, its social transformations, and its place in the wider world. The humanities and social sciences within the Academy are not an ornamental appendix to natural and technical research. They are part of the Academy's core public mission. A democratic society needs reliable knowledge about law, economy, social structure, memory, culture, language, literature, religion, philosophy, identity, and historical experience. The Academy's third area provides institutional depth for such knowledge. It shows that the Academy's concept of research includes both the analysis of nature and the interpretation of human worlds.

The Section of Social and Economic Sciences includes the Economics Institute, the Library of the CAS, the Institute of Psychology, the Institute of Sociology, and the Institute of State and Law (*Academy of Sciences of the Czech Republic, 2026*). Its official description connects the work of the section with the deep social, political, and economic transformation of Czech society after 1989, integration into the European Union, global processes, economic development, social structure, inequalities, social cohesion, legal systems, personality psychology, and social psychology (*Academy of Sciences of the Czech Republic, n.d.*). This section is particularly important because it studies the very society that funds and needs the Academy. It analyses transformation, institutions, behaviour, law, economy, social trust, and collective change. It also creates knowledge relevant to public policy, education, legal reform, labour markets, mental health, public administration, and democratic governance. The inclusion of the Library of the CAS in this section also reminds us that knowledge infrastructure

belongs to the social organisation of science. Research depends on access, cataloguing, preservation, dissemination, and scholarly communication. The section therefore combines analytical social science with the infrastructure of academic knowledge.

The Section of Historical Sciences includes the Archaeological Institutes in Brno and Prague, the Institute of History, the Masaryk Institute and Archives, the Institute of Art History, and the Institute of Contemporary History (*Academy of Sciences of the Czech Republic, 2026*). Its official description emphasises Czech history in a broader international context, archaeology of Bohemia and the Central Danube region, spatial archaeology, archaeometry, archaeogenetics, critical editions, key events such as 1938–1945, 1948, 1968, and 1989, the history of science, the works of T. G. Masaryk, visual arts, architecture, conservation care, aesthetics, and musicology (*Academy of Sciences of the Czech Republic, n.d.*). This section is one of the strongest points of continuity between modern AV ČR and the older national scholarly tradition. Czech learned life has always been deeply connected with history, language, archives, cultural heritage, and national self-understanding. The modern Academy does not reproduce national history as patriotic mythology. It studies historical experience critically, comparatively, and professionally. The Historical Sciences section therefore performs a public function that is both cultural and democratic. It protects society from amnesia, simplification, and ideological manipulation of the past.

The Section of Humanities and Philology includes the Institute of Ethnology, Institute of Philosophy, Oriental Institute, Institute of Slavonic Studies, Institute of Czech Literature, and Czech Language Institute (*Academy of Sciences of the Czech Republic, 2026*). Its fields include philosophy, logic, classical and medieval studies, comeniology, Slavonic studies, Czech language, Czech literature, Oriental studies, ethnology, and questions of culture, language, text, thought, and human experience (*Academy of Sciences of the Czech Republic, n.d.*). This section gives the Academy a distinctive humanistic voice. It sustains expertise in language, texts, traditions, intellectual history, philosophical reflection, and cultural comparison. It also shows that the Academy's international orientation is not limited to natural sciences. Oriental studies, Slavonic studies, philosophy, philology, and ethnology all connect Czech scholarship with wider regions and civilisational contexts. The Czech Language Institute, in particular, links scholarship with public language culture, education, dictionaries, grammar, and social communication. The section therefore represents a form of public research whose relevance is intellectual and cultural rather than primarily technological.

The division into three research areas and nine sections should not be seen as a rigid taxonomy inherited passively from the past. It is a governance instrument. The Academy Council for 2025–2029 assigns Vice-Presidents to coordinate the concept of the first, second, and third research areas and to address scientific-organisational matters of the institutes in the corresponding sections (*Academy of Sciences of the Czech Republic, 2025*). This confirms that areas have an active organisational function. They help translate disciplinary clusters into leadership responsibilities. The first area is coordinated in relation to sections one to three, the second area in relation to sections four to six, and the third area in relation to sections seven to nine. Such coordination matters because institutes face different funding sources, infrastructure needs, legislation, ministry relations, evaluation norms, and cooperation opportunities. The area structure gives the Academy a way to address these differences without fragmenting its governance. It is therefore both scientific and administrative. It creates a bridge between knowledge classification and institutional management.

The structure also supports the Academy's relationship with ministries and public-policy providers. Academy Council responsibilities link the first research area with technology transfer, commercial-sector cooperation, and the Ministry of Industry and Trade; the second area with cooperation relevant to the Ministry of Health; and the third area with the Ministry of Culture and archaeological heritage and monument care (*Academy of Sciences of the Czech Republic, 2025*). These links do not mean that each area is reduced to one ministry or one application sphere. Rather, they show that scientific areas have different public interfaces. Physical and technical sciences often connect with industry, instruments, materials, energy, and technological infrastructures. Life and chemical sciences often connect with health, biotechnology, medicine, and environmental questions. Humanities and social sciences often connect with culture, heritage, law, social policy, public administration, and education. The area structure helps the Academy manage these interfaces systematically. It allows institutional representation to be adapted to the specific public relevance of different fields.

At the same time, the area structure must not be misunderstood as an impermeable division. Many of the Academy's most important research questions cross the borders between areas. Climate change requires atmospheric physics, hydrology, ecology, botany, global-change research, economics, sociology, law, and public communication. Artificial intelligence involves mathematics, computer science, automation, linguistics, philosophy, law, psychology, and social policy. Biomedical research connects chemistry, molecular genetics, physiology, experimental medicine, ethics, data science, and technology transfer. Cultural heritage research may require archaeology, history, art history, chemistry, physics of materials, digital humanities, conservation technologies, and legal frameworks. Energy research involves plasma physics, materials, thermomechanics, environmental science, economics, and public policy. The structure of areas gives the Academy order, but the practice of research often creates bridges across that order. This tension between classification and interdisciplinarity is one of the defining features of the modern AV ČR.

The three-area structure also corresponds to different temporalities of research. Mathematics and theoretical physics may operate on long abstract horizons where usefulness cannot be predicted in advance. Earth sciences and ecological research often depend on long-term observation and accumulated datasets. Biomedical and chemical research may move between laboratory discovery and translational pathways. Social sciences may track transformations over decades, while historical sciences may work across centuries and millennia. Humanities may preserve and reinterpret texts, languages, and ideas across very long cultural durations. A single academy can hold these different temporalities together because its public mission is not limited to short-term output. The area structure helps make these temporalities visible. It shows that national research capacity includes rapid innovation, slow observation, long interpretation, deep theory, and cultural memory. This is one reason why AV ČR cannot be adequately understood through project funding alone. Its scientific areas are repositories of time as much as of expertise.

The structure also reflects the Academy's inherited and transformed institutional memory. Earlier Czech learned institutions were deeply shaped by the organisation of knowledge into classes, departments, and sections. The Czech Academy of Sciences and Arts, for example, developed internal divisions that reflected the scientific and cultural priorities of its time, and by the interwar period natural sciences were further differentiated into several sections, including mathematics-physics, chemistry-mineralogy-geology, biology, medicine, and technical fields (*Academy of Sciences of the Czech Republic, n.d.*). The socialist Czechoslovak

Academy of Sciences later built a much larger institute-based system in which disciplinary areas were connected with state planning, research priorities, and central administration. The modern AV ČR inherited parts of that institute landscape but reorganised them under democratic, legal, and public research principles. The present three-area structure is therefore historically layered. It carries traces of learned-society classification, socialist institute specialisation, and post-socialist governance reform. Its importance lies precisely in this layered character.

The first area preserves the Academy's strength in formal, physical, and earth-related sciences. These fields are essential for international scientific standing because they often produce high-impact theoretical and experimental research. They also require strong infrastructure and long-term investment. Astronomy, nuclear physics, plasma physics, materials science, scientific instruments, geophysics, hydrology, and atmospheric research cannot be improvised as short-term projects. Their inclusion in a common area helps the Academy coordinate infrastructure-heavy fields and represent them in relation to national and European research priorities. This is especially important in fields connected with large instruments, data systems, and international facilities. The first area therefore embodies the Academy's role as a provider of advanced scientific infrastructure. It also shows how the Czech Republic maintains capacity in fields that require more than university teaching structures alone.

The second area preserves and develops the Academy's biomedical, chemical, and ecological capacities. It is especially visible to society because its research is connected with health, medicines, molecular processes, environmental protection, biodiversity, climate change, and biotechnology. Yet its public value does not lie only in applied outcomes. The area depends on fundamental knowledge of molecules, cells, organisms, species, ecosystems, and global processes. This makes it a central example of the Academy's argument that applied relevance grows from long-term research depth. The second area also reflects the increasing convergence of disciplines. Modern life sciences cannot be separated from chemistry, physics, computation, microscopy, modelling, and data analysis. Ecological and global-change research cannot be separated from earth sciences, policy, economics, and social behaviour. The area is therefore both a disciplinary cluster and a platform for cross-area cooperation.

The third area preserves the Academy's role in cultural, historical, linguistic, legal, social, economic, and philosophical research. Its public visibility may differ from that of biomedical or technological sciences, but its national significance is profound. Czech society's modern identity was historically formed through language, history, education, learned societies, cultural institutions, and critical scholarship. The third area continues this tradition under contemporary research standards. It studies not only the Czech nation, but also the social, legal, economic, cultural, linguistic, and philosophical conditions of modern life. It provides expertise relevant to public policy, heritage protection, education, cultural diplomacy, legal reform, social cohesion, and democratic memory. The existence of this area within the same Academy as plasma physics, molecular genetics, and hydrology is institutionally important. It prevents the Academy from becoming a narrowly technocratic research organisation. It keeps the idea of knowledge broad.

The structure of scientific areas also influences evaluation. AV ČR evaluates institutes and their teams through field-sensitive procedures, and recent evaluation discussions have

emphasised peer review beyond narrow metrics (*Academy of Sciences of the Czech Republic, 2025*). Area and section structure helps make evaluation manageable because it groups institutes with broadly comparable disciplinary cultures while still allowing cross-cutting assessment. Evaluation of a mathematical institute cannot use exactly the same criteria as evaluation of an institute of contemporary history or experimental medicine. The area structure makes such differences visible. It also allows the Academy to identify area-specific strengths, weaknesses, infrastructures, and future directions. This is important for accountability. A public research institution must show quality, but quality must be judged according to the nature of the field. The structure of areas therefore supports both scientific fairness and institutional governance.

The area structure also has implications for doctoral education and researcher training. The Academy educates researchers and cooperates closely with universities, but its educational role is embedded in research environments rather than mass teaching. Each research area provides doctoral students and early-career researchers with different types of training. In the first area, training may involve mathematical theory, large instruments, modelling, experimental physics, or environmental observation. In the second area, it may involve laboratory biology, chemistry, molecular methods, field ecology, or biomedical techniques. In the third area, it may involve archival work, textual criticism, field interviews, legal analysis, statistical social science, philology, philosophical argument, or historical interpretation. The area structure thus helps form scientific identities. It gives young researchers a disciplinary home while allowing them to encounter interdisciplinary programmes and Academy-wide standards. In this way, structure shapes the reproduction of scientific generations.

The structure further affects public communication. The Academy must explain its work to citizens, policymakers, media, and partners. Three broad areas and nine sections provide a comprehensible map of a complex institution. Without such a structure, the public would see only an overwhelming list of institutes. With it, the Academy can present itself as a balanced national research organisation covering the physical world, living systems, and human society and culture. This map helps communicate why AV ČR is relevant to energy, health, environment, technology, law, culture, history, language, and social transformation. Public communication is not only a matter of popularisation; it is a form of institutional representation. The area structure gives that representation a clear grammar. It shows that the Academy's breadth is organised rather than accidental.

The structure also supports knowledge transfer, but in different ways across areas. The first area may transfer knowledge through instruments, materials, modelling, energy technologies, electronics, photonics, computational methods, and engineering cooperation. The second area may transfer knowledge through biomedical research, chemical compounds, biotechnologies, environmental methods, diagnostics, and health-related expertise. The third area may transfer knowledge through policy advice, legal analysis, heritage expertise, language resources, educational materials, cultural interpretation, archives, and public memory. If knowledge transfer is understood too narrowly as commercialisation, much of the third area's public value becomes invisible. If it is understood too broadly without standards, the concept loses meaning. The Academy's area structure helps maintain a differentiated view. It shows that each field has its own modes of public relevance. This is important for a research policy increasingly concerned with knowledge transfer and societal impact.

The area structure also reflects the Academy's national geography. Although Prague remains the seat and historical centre of AV ČR, institutes and workplaces are located across the Czech Republic. Earth-science, ecological, biological, astronomical, physical, archaeological, and regional research often depend on places outside the capital. The Institute of Plasma Physics, observatories, biological centres, archaeological institutes, field stations, ecological research sites, and regional workplaces connect the Academy to the territory of the state. The structure of areas helps integrate these geographically distributed capacities into one system. It allows the Academy to be national not only symbolically, but spatially. The research areas create a framework through which regional infrastructures and local expertise can be represented in Academy-wide governance. This territorial dimension is particularly important for environmental, archaeological, geological, and biological research.

Another important feature of the scientific-area structure is its ability to preserve smaller or more specialised fields. In a purely market-oriented or student-demand-driven system, certain fields might be vulnerable because they do not immediately generate large revenues or mass enrolment. A national academy can maintain expertise in fields that are culturally, scientifically, or strategically important even when their public visibility is limited. This applies to parts of mathematics, philology, archaeology, taxonomy, geophysics, art history, philosophy, minority language studies, and specialised laboratory sciences. The area structure gives such fields institutional belonging. They are not isolated curiosities, but parts of larger research sections and areas. This protects disciplinary diversity. It also ensures that the Czech Republic retains knowledge capacities that may become important unexpectedly.

The structure of AV ČR's research areas therefore should be read as a map of national expertise. It shows what kinds of knowledge the Czech Republic has decided to maintain through public research institutions. It includes the cosmos and the atom, the cell and the ecosystem, the archive and the language, the law and the economy, the instrument and the text. This breadth is not simply a matter of prestige. It is the institutional condition for responding to complex problems. Modern societies need scientific knowledge of nature, technological systems, living processes, social structures, historical memory, cultural meaning, and normative institutions. No single discipline can provide this alone. AV ČR's structure offers a way to hold these forms of knowledge together. It is one of the reasons why the Academy remains a central institution in Czech public science.

The structure is also a reminder that the Academy's history is a history of classification as well as of institutions. To classify knowledge is to make choices about what belongs together, what deserves representation, what receives resources, and what can speak as part of a national scientific system. The current three-area and nine-section model is not eternal. It may change as science changes. Artificial intelligence, climate science, biomedicine, materials research, digital humanities, data science, and research security already cross older boundaries. Yet institutional classifications remain necessary because organisations must govern, evaluate, fund, and represent research in some structured way. The challenge is to keep the structure flexible enough to support new fields while stable enough to preserve institutional memory. AV ČR's area model is therefore both an inheritance and a working tool. It organises the past while making room for future scientific rearrangements.

Thus, the structure of scientific areas within the Czech Academy of Sciences is a central element of the Academy's modern institutional architecture. The division into Mathematics, Physics, and Earth Sciences; Life and Chemical Sciences; and Humanities and Social Sciences

gives organisational form to the Academy's legal mission of research across natural, technical, social, and human sciences. The nine sections translate this broad mission into manageable disciplinary clusters, while the institutes provide the real environments in which research is conducted. The area structure supports governance, leadership coordination, evaluation, public communication, knowledge transfer, doctoral training, and external representation. It also preserves historical continuity with older Czech academic classifications while adapting them to the institute-based public research system of the modern AV ČR. Most importantly, it allows the Academy to remain a broad national research institution rather than a narrow sectoral agency. Through this structure, the Academy holds together abstract theory, experimental science, technological capacity, biomedical research, ecological observation, social analysis, historical memory, linguistic scholarship, and humanistic reflection as parts of one public knowledge system.

2. Institutes of Natural, Technical, Medical, Social, and Human Sciences

The institutes of the Czech Academy of Sciences are the real institutional body of the Academy. Laws, statutes, assemblies, councils, strategies, and research areas create the framework, but the institutes are the places where scientific work is actually performed, traditions are reproduced, infrastructures are maintained, researchers are trained, and public knowledge is produced. The Academy's mission speaks of research in a broad spectrum of the natural, technical and social sciences and the humanities, but this mission would remain abstract without institutes able to give it organisational substance (*Academy of Sciences of the Czech Republic, n.d.*). The institute is therefore the crucial unit through which AV ČR differs from a learned society and from a purely administrative research agency. It is not only a workplace, but a durable environment of expertise. Each institute has its own scientific profile, director, internal bodies, research teams, laboratories or departments, collaborations, archives, instruments, collections, and public responsibilities. Together, these institutes form a national research system that is broader than any single university faculty and more historically layered than a collection of temporary projects. The Academy's structure into natural, technical, medical, social, and human sciences should therefore be read through its institutes, because they reveal how the Czech Republic has chosen to preserve and organise long-term knowledge.

The institute-based model is one of the most important inheritances from the history of Czech and Czechoslovak science, although it has been transformed under democratic and legal conditions. The Czechoslovak Academy of Sciences created a dense network of institutes, many of which carried forward older scientific traditions and developed new research capacities after 1953. After 1989, the problem was not whether the institute model had any value, but how to preserve its scientific strengths while removing its subordination to the party-state logic of the socialist period. The modern AV ČR retained the idea that advanced research often needs specialised institutes rather than only university departments or short-term grant teams. However, it placed those institutes within a new public-law framework, later strengthened by the transformation into public research institutions under Act No. 341/2005 Coll. (*Parliament of the Czech Republic, 2005*). This legal transformation changed the meaning of the institute. It became an autonomous public research institution, not a mere administrative unit of a centrally planned academy. The modern institute thus embodies both continuity and rupture. It carries the disciplinary memory of Czech science, but it now works

under principles of autonomy, evaluation, public accountability, international cooperation, and democratic governance.

The Academy's institutes are also instruments of disciplinary depth. A university department is usually embedded in teaching, degree programmes, student administration, and faculty politics. An Academy institute, by contrast, can concentrate more fully on research, research infrastructure, long-term teams, doctoral training through cooperation, and international projects. This does not make it superior to a university department, but it gives it a different institutional rhythm. A biological laboratory can maintain model organisms and long experimental series. A physical institute can operate instruments that require long-term technical expertise. An archaeological institute can preserve fieldwork traditions and databases. A linguistic institute can sustain dictionaries, corpora, and normative language resources. A historical institute can manage editions, archives, and long documentary projects. A mathematical institute can support theoretical work whose significance may become visible only over decades. The institute model therefore allows the Academy to sustain forms of knowledge that would be difficult to maintain through short teaching cycles or short grant contracts alone. Its strength lies in institutional patience.

The institutes of the first research area, Mathematics, Physics, and Earth Sciences, show this clearly. They form the Academy's main base in formal, physical, computational, technical, and earth-related research. The Section of Mathematics, Physics, and Computer Science includes the Astronomical Institute, Institute of Physics, Institute of Mathematics, Institute of Computer Science, Nuclear Physics Institute, and Institute of Information Theory and Automation (*Academy of Sciences of the Czech Republic, 2026*). This group brings together some of the most abstract and some of the most instrument-dependent fields within AV ČR. Mathematics and theoretical computer science produce methods, structures, models, and formal reasoning. Physics and nuclear physics investigate matter, energy, particles, condensed systems, and experimental phenomena. Astronomy links observation, theory, instrumentation, and cosmological imagination. Information theory and automation connect mathematics with control systems, cybernetics, modelling, signal processing, decision-making, and modern data-based technologies. The section therefore illustrates how the natural and technical sciences are intertwined within the Academy. It is difficult to say where pure mathematics ends and applied modelling begins, or where theoretical physics ends and instrument-building starts.

The Astronomical Institute represents one of the oldest and most publicly recognisable forms of scientific curiosity: the study of the universe beyond the Earth. Yet astronomy in the Academy is not simply symbolic or romantic. It requires observatories, instruments, long-term data, mathematical modelling, international cooperation, and highly specialised technical staff. The Institute of Physics and the Nuclear Physics Institute similarly connect fundamental questions with advanced experimental infrastructures and European scientific networks. The Institute of Mathematics preserves the theoretical foundation without which much of modern science would lose its language. The Institute of Computer Science and the Institute of Information Theory and Automation show how computation, algorithms, control, optimisation, artificial intelligence, and modelling have become central to almost every scientific field. These institutes do not form a hierarchy from "pure" to "applied". Rather, they form a continuum of formal and physical knowledge. The Academy's public role depends precisely on its capacity to maintain this continuum. Without mathematics, physics, computation, and automation,

many later applications in medicine, energy, materials, environment, and public policy would lack conceptual and technical foundations.

The Section of Applied Physics makes the connection between fundamental laws and technological relevance even more explicit. It includes the Institute of Photonics and Electronics, Institute of Physics of Materials, Institute of Plasma Physics, Institute of Scientific Instruments, Institute of Theoretical and Applied Mechanics, and Institute of Thermomechanics (*Academy of Sciences of the Czech Republic, 2026*). These institutes occupy the border zone between natural science and engineering science. They investigate materials, light, electronics, plasma, instruments, mechanics, flows, structures, and thermal processes. Their work often begins with basic physical principles, but it produces knowledge that can become important for industry, medicine, energy, transport, construction, and environmental technologies. The Institute of Scientific Instruments, for example, embodies the Academy's capacity to develop the very tools through which science sees and measures the world. The Institute of Plasma Physics connects fundamental plasma behaviour with fusion research and advanced technological systems. The Institute of Physics of Materials and the Institute of Theoretical and Applied Mechanics link microscopic structures with the durability of materials, buildings, devices, and infrastructures. The section thus shows that technical science within AV ČR is not a secondary application of research, but one of its intellectual cores.

The applied-physics institutes also reveal why public research institutions need stable infrastructure. Photonics, plasma physics, electron microscopy, materials testing, thermomechanical modelling, and mechanics of structures cannot be sustained by occasional projects alone. They require laboratories, technical staff, instruments, safety systems, maintenance, calibration, long-term equipment planning, and international standards. In this sense, the institute is an infrastructure as well as an intellectual community. The Academy's applied-physics institutes preserve national competence in areas where private industry may cooperate, but cannot easily carry the entire burden of fundamental and strategic research. Their work often becomes visible only when a technology, instrument, material, or method becomes useful outside the institute. Yet the capacity behind that result is built slowly. This is a typical pattern of Academy science. Public relevance appears downstream from institutional continuity. The institutes therefore represent not only current projects, but accumulated technical intelligence.

The Earth Sciences section includes the Institute of Geophysics, Institute of Geology, Institute of Atmospheric Physics, Institute of Geonics, Institute of Hydrology, and Institute of Rock Structure and Mechanics (*Academy of Sciences of the Czech Republic, 2026*). These institutes give the Academy a scientific relationship with the territory, atmosphere, water systems, geological formations, seismic processes, and environmental conditions of the Czech lands and Central Europe. Earth science has a particular public meaning because it connects national space with scientific knowledge. A state needs to understand its underground structures, water resources, atmospheric processes, geological risks, rock behaviour, climate patterns, and human impacts on the environment. These are not short-term policy topics. They require archives of observations, fieldwork, monitoring, modelling, and long-term institutional memory. The Institute of Atmospheric Physics, for example, connects the Academy with climate, atmospheric circulation, and the physics of the Earth's gaseous envelope. The Institute of Hydrology deals with water, one of the most strategic resources in any society. The Institute of Geophysics and Institute of Geology preserve knowledge of the Earth's structure

and evolution. The public importance of such institutes becomes especially visible in periods of climate instability, drought, floods, infrastructure risk, mining questions, and energy transition.

The first research area as a whole therefore demonstrates how natural and technical sciences are institutionally linked within AV ČR. Mathematics supports modelling and data analysis. Physics supports understanding of matter, energy, instruments, and technological processes. Applied physics transforms fundamental principles into methods, materials, systems, and devices. Earth sciences connect physical knowledge with the territory, environment, and long-term natural processes. These institutes form one of the Academy's strongest arguments for maintaining a non-university public research sector. They require long-term infrastructure, interdisciplinary cooperation, and international networks that cannot be reduced to immediate market demand. They also show how fundamental and applied research coexist. A theory, instrument, material, or dataset may become socially useful after years of development. The Academy's institutes make such development possible. They sustain the conditions from which future applications emerge.

The second research area, Life and Chemical Sciences, represents another major pillar of the Academy's institute structure. Its institutes work on molecules, compounds, cells, organisms, physiological systems, microbes, plants, animals, ecosystems, and global environmental processes. The Section of Chemical Sciences includes the Institute of Analytical Chemistry, Institute of Inorganic Chemistry, J. Heyrovský Institute of Physical Chemistry, Institute of Chemical Process Fundamentals, Institute of Macromolecular Chemistry, and Institute of Organic Chemistry and Biochemistry (*Academy of Sciences of the Czech Republic, 2026*). These institutes continue strong Czech traditions in chemistry associated with figures such as Jaroslav Heyrovský, František Šorm, Rudolf Brdička, and Otto Wichterle, while working in contemporary fields of chemical physics, electrochemistry, catalysis, materials, organic synthesis, polymers, biochemistry, separation methods, and chemical engineering (*Academy of Sciences of the Czech Republic, n.d.*). Chemistry is one of the clearest examples of a discipline whose fundamental and applied dimensions cannot be separated. The structure of molecules, reactions, surfaces, polymers, and biological compounds may be studied for theoretical reasons, but such studies often become relevant for medicine, diagnostics, materials, energy, environmental monitoring, and industry.

The J. Heyrovský Institute of Physical Chemistry carries a particularly strong symbolic meaning because Heyrovský's Nobel Prize in Chemistry remains one of the most internationally visible achievements of Czech science. Yet the institute's significance is not only memorial. It represents the continuity of physical chemistry as an internationally oriented field in which theory, instrumentation, electrochemistry, catalysis, spectroscopy, and surface science interact. The Institute of Organic Chemistry and Biochemistry is one of the Academy's most prominent centres for research at the border of chemistry, biology, and medicine. The Institute of Macromolecular Chemistry connects polymer science with materials and biomedical applications. The Institute of Analytical Chemistry develops methods for separation, detection, measurement, and chemical analysis. The Institute of Chemical Process Fundamentals links chemistry with engineering processes, reaction systems, catalysis, and industrially relevant methods. The Institute of Inorganic Chemistry contributes to materials and compound research. Together, these institutes show how chemical knowledge becomes a central medium between nature, technology, medicine, and industry. Chemistry in AV ČR is therefore not one sector among others, but a connective language across the Academy.

The Section of Biological and Medical Sciences includes the Institute of Biophysics, Institute of Biotechnology, Institute of Physiology, Institute of Microbiology, Institute of Experimental Botany, Institute of Experimental Medicine, Institute of Molecular Genetics, and Institute of Animal Physiology and Genetics (*Academy of Sciences of the Czech Republic, 2026*). This section contains the Academy's most direct institutional engagement with living processes, health-related mechanisms, molecular biology, biotechnology, physiology, pathophysiology, microorganisms, plants, animals, and genetic systems. Its institutes do not usually provide medical care in the way hospitals do, but they produce the fundamental and translational knowledge upon which medicine and biotechnology often depend. The Institute of Physiology and the Institute of Experimental Medicine connect research with cardiovascular, neurological, reproductive, developmental, and pathological questions. The Institute of Molecular Genetics and the Institute of Microbiology work with cellular mechanisms, immunity, microbial genomes, and biological processes. The Institute of Experimental Botany contributes to plant genetics, physiology, and biotechnology. The Institute of Biotechnology and the Institute of Biophysics link life science with methods, instruments, molecular structures, and biotechnological possibilities. This section gives the Academy a crucial role in the biomedical and biological research ecosystem of the Czech Republic.

The word "medical" in the Academy's structure should therefore be understood in a research sense rather than a clinical-institutional sense. AV ČR is not a hospital network and does not replace medical faculties or clinical research centres. Its medical relevance lies in experimental medicine, physiology, molecular genetics, microbiology, biotechnology, biophysics, and animal physiology. It provides knowledge about mechanisms, models, pathways, cells, organisms, diseases, biological effects, and preventive foundations. This is essential because medicine depends on basic biological and chemical research long before a therapy, diagnostic method, or clinical protocol appears. Public research institutes can study mechanisms whose practical value may be uncertain at the beginning. They can maintain animal models, cell lines, microbial collections, instruments, and specialised teams. They can cooperate with hospitals and universities when translation becomes possible. The Academy's biological and medical institutes therefore occupy a space between fundamental life science and future health relevance. Their public value lies not only in immediate medical outcomes, but in the deep knowledge infrastructure that makes such outcomes possible.

The Section of Bio-Ecological Sciences includes the Biology Centre, Institute of Botany, Institute of Vertebrate Biology, and Global Change Research Institute (*Academy of Sciences of the Czech Republic, 2026*). These institutes extend biological research outward from molecules and organisms to populations, species, ecosystems, landscape, biodiversity, environmental change, and climate-related processes. The official description of the section emphasises interactions between organisms and environment, earth and water ecosystems, parasite-host systems, bio-ecological mapping, long-term observations, geobotany, hydrobiology, soil biology, microbiology, eutrophication, taxonomy, conservation, and the care of Průhonice Park as part of natural and cultural heritage (*Academy of Sciences of the Czech Republic, n.d.*). This section is particularly important in the 21st century because environmental change has become one of the central problems of public research. Biodiversity loss, climate change, drought, invasive species, landscape transformation, and ecosystem resilience cannot be understood through short-term observation. They require long institutional memory, field stations, databases, taxonomic expertise, ecological modelling,

and cooperation with public authorities. The Academy's bio-ecological institutes provide this continuity.

The Global Change Research Institute is especially significant because it places the Academy directly within the scientific response to climate and environmental transformation. Global change research is by nature interdisciplinary: it connects atmospheric science, ecology, hydrology, plant physiology, carbon cycles, remote sensing, modelling, economics, policy, and public adaptation. The Biology Centre and the Institute of Vertebrate Biology add organismal, ecological, parasitological, evolutionary, and population perspectives. The Institute of Botany preserves plant diversity research, taxonomy, geobotany, experimental botany links, and cultural-natural heritage responsibility through Průhonice. Together, these institutes make the Academy a guardian of environmental knowledge, not simply a producer of occasional ecological reports. Their work is public in a deep sense because societies increasingly depend on reliable knowledge about living systems and ecological limits. The Academy's bio-ecological institutes show how fundamental research can become a basis for environmental citizenship. They also show that "natural science" in AV ČR is never separated from the land, water, organisms, and human decisions that shape the Czech environment.

The second research area as a whole demonstrates the Academy's capacity to connect chemistry, biology, medicine, biotechnology, ecology, and environmental science. Chemical institutes study compounds, reactions, polymers, catalysis, and biological molecules. Biological and medical institutes study cells, genes, physiology, microbes, plants, animals, and disease mechanisms. Bio-ecological institutes study organisms, ecosystems, biodiversity, and global change. The boundaries between these fields are porous. Biochemistry links chemistry with biology. Biotechnology links molecular research with possible application. Plant research connects genetics with ecology and agriculture. Environmental science requires chemistry, hydrology, botany, microbiology, modelling, and public policy. This area therefore illustrates the Academy's ability to organise complexity. It does not collapse life and chemical sciences into one discipline. Rather, it holds them together in a structure that allows cooperation while preserving institutional identities.

The third research area, Humanities and Social Sciences, is equally important for understanding AV ČR as a national academy rather than simply a laboratory system. The Section of Social and Economic Sciences includes the Economics Institute, Library of the CAS, Institute of Psychology, Institute of Sociology, and Institute of State and Law (*Academy of Sciences of the Czech Republic, 2026*). These institutes study economy, society, personality, social behaviour, law, public institutions, transformation processes, and the infrastructure of scholarly communication. The official description of the section emphasises Czech society's transformation after 1989, European integration, global processes, economic development, social structure, inequalities, cohesion, legal systems, personality psychology, and social psychology (*Academy of Sciences of the Czech Republic, n.d.*). This is not marginal to the Academy's mission. A democratic society needs research-based understanding of itself. It needs to know how institutions function, how laws develop, how inequalities emerge, how people behave, how economies transform, and how social trust is built or weakened. These institutes therefore produce knowledge that is directly relevant to public policy and civic life.

The Economics Institute contributes to the analysis of markets, public policy, labour, education, development, and economic behaviour, often through internationally oriented research connected with CERGE-EI traditions. The Institute of Sociology studies social

structure, public opinion, inequalities, gender, trust, political attitudes, social change, and the conditions of modern Czech society. The Institute of Psychology examines personality, cognition, social behaviour, development, mental processes, and applied psychological questions. The Institute of State and Law analyses legal systems, constitutional questions, public law, private law, European law, and the theoretical foundations of legal order. The Library of the CAS might appear at first as an infrastructure rather than a research institute, but its place in the Academy is significant. It preserves access to scholarly communication, collections, databases, open science services, and the documentary basis of research. The section thus combines social-science analysis with knowledge infrastructure. It is one of the Academy's key bridges between research and public understanding of post-1989 Czech society.

The Section of Historical Sciences includes the Institute of Archaeology in Brno, Institute of Archaeology in Prague, Institute of History, Masaryk Institute and Archives, Institute of Art History, and Institute of Contemporary History (*Academy of Sciences of the Czech Republic, 2026*). These institutes are central to the Academy's cultural and historical mission. They investigate Czech history in broader international contexts, prehistoric and medieval settlement, archaeological landscapes, archives, political history, intellectual history, art, architecture, visual culture, musicology, conservation, and the key turning points of the 20th century (*Academy of Sciences of the Czech Republic, n.d.*). The two archaeological institutes express the territorial and chronological depth of Czech scholarship. They connect field research, rescue archaeology, spatial archaeology, archaeometry, archaeogenetics, conservation, and regional history. The Institute of History and the Institute of Contemporary History carry the documentary and interpretive burden of Czech historical self-understanding. The Masaryk Institute and Archives preserves the legacy of T. G. Masaryk and the history of science, intellectual life, and archival heritage. The Institute of Art History connects the Academy with visual culture, architecture, aesthetics, and heritage preservation. Together, these institutes make historical knowledge an institutional public good.

Historical research within AV ČR has a special democratic meaning because Czech modern history is marked by repeated ruptures: the Habsburg imperial framework, the foundation of Czechoslovakia, the Munich crisis, Nazi occupation, communist takeover, Prague Spring, normalisation, Velvet Revolution, the dissolution of Czechoslovakia, and European integration. These events are not only chronological markers; they shape collective memory, political identity, institutional trust, and public debate. Institutes of historical sciences provide professional tools for interpreting such memory. They work with archives, editions, archaeological evidence, oral histories, visual materials, official documents, and comparative historiography. Their task is not to produce patriotic myth or political justification, but to make the past available for critical understanding. This role is especially important in societies exposed to memory conflicts and historical manipulation. The Academy's historical institutes therefore protect public reason by protecting the standards of historical evidence. In this sense, they are as important to democratic life as laboratories are to technological development.

The Section of Humanities and Philology includes the Institute of Ethnology, Institute of Philosophy, Oriental Institute, Institute of Slavonic Studies, Institute of Czech Literature, and Czech Language Institute (*Academy of Sciences of the Czech Republic, 2026*). These institutes preserve and develop the humanistic core of the Academy. They study language, literature, philosophy, logic, classical and medieval traditions, Comenius, Patočka, Slavonic cultures,

Oriental regions, ethnology, migration, folk culture, intellectual history, textual heritage, and cultural comparison (*Academy of Sciences of the Czech Republic, n.d.*). The Czech Language Institute has an especially visible public role because language is both a research object and a living public institution. It supports lexicography, grammar, language culture, corpora, standard and non-standard language research, and public linguistic consultation. The Institute of Czech Literature studies Czech literary history, theory, and literary life in relation to broader linguistic and regional contexts. The Institute of Philosophy connects Czech scholarship to European and global philosophical debates. The Oriental Institute and Institute of Slavonic Studies open Czech humanistic research to wider cultural regions. The Institute of Ethnology studies both traditional and contemporary cultural practices. This section shows that the Academy's public mission includes interpretation, meaning, language, and cultural plurality.

Humanities and philology within AV ČR carry a historical continuity that reaches back to the national revival and to the older learned-society tradition. Czech national modernity was deeply connected with language scholarship, historical writing, literature, folklore, philosophy, and the creation of cultural institutions. The modern Academy inherits this tradition, but it also transforms it. It no longer treats humanities primarily as instruments of national awakening, nor as ideological tools of a political regime. It treats them as critical research fields with international standards and public relevance. This transformation is essential. The same disciplines that once helped create national culture now help analyse it, question it, compare it, and make it available to a plural democratic society. The Academy's humanistic institutes therefore preserve continuity without becoming antiquarian. They show that national culture is not a fixed inheritance, but a field of research, debate, reinterpretation, and public education.

The third research area as a whole demonstrates that AV ČR understands public knowledge broadly. Social sciences help society analyse its institutions, inequalities, behaviour, law, and transformation. Historical sciences provide evidence-based understanding of the past. Humanities and philology interpret language, culture, thought, texts, and collective meanings. These institutes may not always produce visible technological outputs, but they produce forms of public value that cannot be replaced by technology. A society needs language resources, legal analysis, historical memory, cultural interpretation, social diagnosis, and philosophical reflection. It needs experts who can explain archives, laws, public opinion, literature, identity, migration, political transformation, and intellectual traditions. The Academy's humanities and social-science institutes therefore make AV ČR a civic institution as well as a scientific one. They give the Academy a voice in the cultural and democratic life of the Czech Republic.

The presence of natural, technical, medical, social, and human sciences under one Academy also gives AV ČR a special capacity for institutional comparison. The institutes differ sharply in size, infrastructure, outputs, publication patterns, cooperation partners, funding needs, and evaluation cultures. A physics institute may require expensive instruments and international facilities. A biological institute may need animal facilities, laboratories, sequencing technologies, and strict ethical procedures. An ecological institute may require field stations and long-term monitoring. A historical institute may depend on archives, editions, field archaeology, and scholarly monographs. A linguistic institute may build dictionaries and corpora over decades. A legal institute may produce expert analyses relevant to public administration. A sociological institute may maintain surveys and data infrastructures. The Academy must govern all these differences within one system. This is difficult, but it is also one of its great strengths. It prevents research policy from being defined by one discipline's habits alone.

The institute system also reveals how AV ČR converts disciplinary autonomy into public accountability. Each institute has its own research profile and internal bodies, but it belongs to the Academy's wider framework of statutes, budget, evaluation, ethics, open science, and public mission. This combination protects institutes from arbitrary political interference while requiring them to demonstrate quality and responsibility. The public research institution model allows them to manage research activities, cooperate internationally, employ staff, develop projects, and maintain infrastructures, but it also requires reporting, supervision, evaluation, and legal compliance (*Parliament of the Czech Republic, 2005*). The institute is therefore neither a private laboratory nor a ministry department. It is a public scientific organisation with its own intellectual life. This form is particularly suited to a national academy because it preserves diversity without abandoning collective accountability. The strength of AV ČR lies in this regulated plurality.

The institute-based structure also allows the Academy to maintain long-term projects that do not fit easily into short funding cycles. Dictionaries, critical editions, archaeological surveys, longitudinal social data, climate observations, taxonomic collections, material-science infrastructures, biomedical models, mathematical theories, and astronomical observations often require decades. Their value grows cumulatively. A short-term project can contribute to such work, but cannot replace the institution that preserves continuity. Academy institutes are therefore custodians of scientific time. They maintain projects across generations of researchers. This is especially important in a small or medium-sized national research system. Without such institutes, some forms of expertise might disappear between political cycles or funding fashions. AV ČR's institutes protect Czech society against the loss of difficult, specialised, and long-memory knowledge.

The institutes also function as sites of internationalisation. Each institute participates in disciplinary networks, European projects, bilateral cooperation, conferences, joint publications, and international infrastructures according to its field. The Academy's mission requires research at an international level, and institutes are the primary carriers of this international standard (*Academy of Sciences of the Czech Republic, n.d.*). Internationalisation differs by discipline. A physics institute may cooperate through large facilities and multinational collaborations. A biomedical institute may join consortia and translational networks. A historical institute may participate in archival and comparative projects. A linguistic institute may work with international corpora and Slavic or European language research. A sociological institute may contribute to comparative surveys. International integration gives institutes external benchmarks and protects them from provincial isolation. Through its institutes, the Academy becomes part of global science rather than only a national administrative structure.

The institutes are also central to doctoral and early-career training. AV ČR does not function as a university, but its institutes provide research environments where doctoral students, postdoctoral researchers, and young scientists encounter advanced scientific practice. They learn methods, instruments, archival techniques, modelling, fieldwork, publication standards, data management, peer review, and research ethics. This training is often conducted in cooperation with universities, which provide degree-awarding frameworks. The institute offers something complementary: immersion in a research-intensive environment. Young researchers can become part of teams whose primary mission is research rather than teaching administration. This is especially important in experimental, infrastructure-heavy, archival, or long-term fields. The Academy's institutes thus reproduce Czech scientific capacity not only

through outputs, but through people. Their public function includes the formation of future expertise.

The institute system also creates the conditions for interdisciplinary cooperation, although this topic belongs more fully to the next section. Interdisciplinarity does not begin in abstract strategy documents. It begins when institutes possess strong disciplinary bases that can be brought into contact. Climate research requires atmospheric physics, hydrology, botany, ecology, economics, sociology, and public policy. Biomedical innovation requires chemistry, molecular genetics, physiology, biotechnology, instruments, ethics, and law. Cultural heritage research may require archaeology, history, art history, chemistry, physics of materials, digital tools, and conservation science. Artificial intelligence connects mathematics, computer science, automation, linguistics, psychology, philosophy, law, and social sciences. AV ČR can support such links because its institutes cover an unusually wide disciplinary spectrum. The institute system therefore gives interdisciplinary work substance. It provides the expertise that interdisciplinary programmes can mobilise.

The public image of the Academy often focuses on visible achievements, prestigious laboratories, major discoveries, prominent scholars, or public interventions. Yet the deeper importance of the institutes lies in everyday continuity. Researchers write articles, maintain instruments, collect data, supervise students, preserve archives, organise conferences, evaluate manuscripts, advise public authorities, develop methods, update databases, and communicate with society. Technical and administrative staff keep laboratories, libraries, servers, instruments, finances, and buildings functioning. Institutes are social organisations as well as intellectual ones. They contain hierarchies, career paths, conflicts, cooperation, mentorship, and institutional cultures. The quality of the Academy depends not only on formal structure, but on the everyday life of these institutes. This is why the institute should be treated as a historical actor, not merely as a line in an organisational chart.

The distribution of institutes across Czech territory also matters. Although many institutes are located in Prague, important workplaces are situated in Brno, České Budějovice, Ostrava, Ondřejov, Průhonice, Řež, Vestec, Liběchov, and other places. This geography connects the Academy with regional research capacities, field sites, industrial environments, ecological zones, historical landscapes, and university centres. The Biology Centre in České Budějovice, institutes in Brno, observatory traditions in Ondřejov, nuclear research in Řež, botanical and heritage responsibilities in Průhonice, and geonics in Ostrava all show that AV ČR is not only a Prague institution. The Academy's national character is partly territorial. Its institutes place research in different parts of the country, where specific infrastructures and regional relationships can develop. This geography also strengthens cooperation with regional universities, municipalities, museums, hospitals, companies, and public authorities. The institute network is therefore a spatial as well as disciplinary architecture.

The distinction between research institutes and supporting institutional units should also be kept clear. The Academy's public communication sometimes refers to a network of 54 institutes, while the official list of institutes according to research areas gives the disciplinary arrangement of institutes within the three areas and nine sections (*Academy of Sciences of the Czech Republic, 2026*). Additional central or supporting units, such as administrative and operational structures, help the research system function but do not always belong to the disciplinary classification in the same way. This distinction is not a contradiction; it reflects the complexity of a large public research organisation. Research requires both scientific institutes

and supporting infrastructures. Libraries, administration, operations, technology-transfer support, open-science services, legal support, financial management, and communication offices all participate in the conditions of research. The Academy's architecture therefore contains more than institutes alone. However, the scientific identity of AV ČR is primarily expressed through the institutes grouped by research areas.

The institutes also differ in how they relate to public interest. Some have obvious links to health, environment, energy, technology, or industry. Others serve public interest through cultural memory, language, legal expertise, social analysis, or education. It would be a mistake to measure all institutes by the same form of usefulness. The Institute of Plasma Physics and the Czech Language Institute both serve society, but in radically different ways. The Institute of Organic Chemistry and Biochemistry and the Institute of Contemporary History both produce public value, but through different temporalities, methods, and audiences. The Institute of Hydrology and the Institute of State and Law both contribute to public decision-making, but one does so through water systems and the other through legal analysis. The Academy's institute system teaches a broader understanding of relevance. Public knowledge is plural. A mature research system must recognise this plurality rather than forcing all fields into one narrow metric.

The institutes therefore also embody the Academy's argument against excessive utilitarian simplification. Fundamental mathematics, historical editions, taxonomic research, philosophical inquiry, atmospheric physics, and molecular biology may all appear remote from immediate public demand at particular moments. Yet each may become vital in ways not easily predicted. Mathematical models can later shape artificial intelligence or epidemiology. Historical expertise can clarify democratic crises. Taxonomy can become crucial for biodiversity protection. Philosophy can help interpret technology and ethics. Atmospheric physics can become essential for climate adaptation. Molecular biology can become central to medicine. Academy institutes preserve such possibilities. They give society access to knowledge before society knows exactly when it will need it. This is one of the strongest justifications for public research.

The institute system of AV ČR also has a symbolic dimension. It shows that the Czech Republic understands science and scholarship as a public good requiring durable institutions. This symbolism is especially powerful in a country whose modern intellectual life was shaped by learned societies, national revival scholarship, interwar democratic institutions, the experience of occupation, socialist centralisation, and post-1989 reconstruction. Institutes are not only functional workplaces; they are monuments of scientific continuity in motion. They preserve names, archives, collections, instruments, research schools, and intellectual lineages. At the same time, they must continually renew themselves through evaluation, international cooperation, new researchers, new methods, and changing public needs. This combination of continuity and renewal is characteristic of the modern Academy. It is neither a museum of Czech science nor a laboratory corporation without memory. It is an institutional organism whose institutes carry both past and future.

The natural, technical, medical, social, and human sciences within AV ČR therefore should not be treated as separate worlds. They are organised separately because disciplinary depth matters, but they belong together because public knowledge is interdependent. Technical science needs mathematics and physics. Medical research needs chemistry, biology, instruments, data, ethics, and law. Environmental research needs earth sciences, ecology,

economics, sociology, and governance. Social policy needs psychology, economics, law, history, and data analysis. Cultural heritage needs archaeology, art history, chemistry, physics, digital tools, and public education. Language technologies need linguistics, computer science, statistics, and social understanding. The Academy's institute structure makes such interdependence possible because it preserves strong specialised units within one institutional frame. Its diversity is therefore not fragmentation. It is a condition of scientific and public resilience.

Thus, the institutes of the Czech Academy of Sciences give concrete institutional form to the Academy's broad mission in the natural, technical, medical, social, and human sciences. They are the workplaces where scientific autonomy, public responsibility, disciplinary memory, infrastructure, international cooperation, doctoral training, evaluation, and public relevance become real. The institutes of mathematics, physics, applied physics, and earth sciences provide the formal, physical, technical, and territorial knowledge base of the Academy. The chemical, biological, medical, and bio-ecological institutes connect molecular, organismal, biomedical, environmental, and global-change research. The social, economic, historical, humanistic, and philological institutes preserve the Academy's civic, cultural, legal, linguistic, and interpretive mission. Together, they make AV ČR more than a legal institution and more than a symbolic national academy. They make it a living research system. Through them, Czech public science maintains the long-term capacities needed to understand matter, life, society, culture, history, language, technology, and the changing world in which the Czech Republic exists.

3. Interdisciplinary Links between Institutes

Interdisciplinary links between the institutes of the Czech Academy of Sciences are not an optional supplement to its disciplinary structure. They are one of the main reasons why the Academy's institute-based architecture remains relevant in the 21st century. The modern Academy is divided into three research areas and nine sections, but the most pressing scientific and social problems rarely remain inside one area or one section. Climate change does not belong only to atmospheric physics or ecology. Artificial intelligence does not belong only to computer science. Public health does not belong only to experimental medicine. Cultural heritage does not belong only to archaeology or art history. Energy, biodiversity, migration, security, language technologies, social trust, pandemics, food systems, and digital transformation all require knowledge from different institutes. This is why interdisciplinarity in AV ČR should be understood as a structural capacity rather than as a fashionable slogan. The Academy can build interdisciplinary links because it contains strong disciplinary institutes in the first place. Its interdisciplinary work grows from disciplinary depth, not from the dissolution of disciplines into general rhetoric.

The Academy's mission already contains the basic logic of this interdisciplinarity. The Statutes define the Academy as conducting research through its institutes in a broad range of natural, technical, social, and human sciences, while also applying and disseminating the results of its activities for education, culture, competitiveness, and the solution of current problems of society (*Academy of Sciences of the Czech Republic, n.d.*). This formulation implies that the Academy's research must be both specialised and capable of broader public connection. The official mission statement similarly stresses research in a broad spectrum of natural, technical and social sciences and the humanities, whether highly specialised or interdisciplinary in

nature (*Academy of Sciences of the Czech Republic, n.d.*). These statements are important because they prevent a false opposition between specialisation and interdisciplinarity. A public research institution needs specialists who know their fields deeply. It also needs institutional mechanisms that allow those specialists to cooperate when problems exceed the limits of one discipline. AV ČR's structure is therefore not a contradiction between discipline and interdisciplinarity. It is an arrangement in which strong institutes can enter shared research spaces without losing their own scholarly identity.

The first condition of interdisciplinarity is the Academy's breadth. Few research organisations contain within one institutional framework mathematics, physics, computer science, plasma physics, scientific instruments, geology, atmospheric physics, hydrology, chemistry, molecular biology, experimental medicine, ecology, sociology, economics, law, psychology, archaeology, history, art history, philosophy, linguistics, ethnology, Slavonic studies, and Oriental studies. This breadth is not simply a catalogue of disciplines. It creates the possibility of intellectual recombination. A mathematical method developed in one context can become useful for ecological modelling or biomedical data analysis. Chemical knowledge can support conservation science, materials research, drug discovery, or environmental monitoring. Historical and sociological research can clarify how societies respond to crises, technologies, wars, or environmental risks. Linguistics and computer science can cooperate in speech synthesis, language technologies, artificial intelligence, and digital humanities. Archaeology, geology, chemistry, physics of materials, and art history can cooperate in heritage research. The Academy's institutes are therefore not isolated islands. They are potential nodes in a system of knowledge circulation.

The official description of the first research area already shows that interdisciplinarity is built into many fields that appear at first to be purely natural or technical. In the section of Mathematics, Physics, and Computer Science, even theoretical investigations of neural networks, optimisation, and numerical modelling are described as frequently motivated by concrete problems of the natural sciences and as producing applicable results (*Academy of Sciences of the Czech Republic, n.d.*). Applied physics is explicitly presented as interdisciplinary and as finding application in various scientific and technological areas, including digital signal processing, spectroscopy, and electron microscopy of living objects (*Academy of Sciences of the Czech Republic, n.d.*). These examples are revealing because they show that interdisciplinarity does not always mean a formal programme joining several institutes under one title. It may also occur through methods, instruments, data, and shared problems. A microscope, algorithm, sensor, model, or signal-processing method can connect physics with biology, medicine, linguistics, and engineering. The boundary between disciplines is often crossed through tools before it is crossed through theory.

The applied-physics institutes are especially important in this respect. The Institute of Scientific Instruments, Institute of Photonics and Electronics, Institute of Plasma Physics, Institute of Physics of Materials, Institute of Thermomechanics, and Institute of Theoretical and Applied Mechanics all work in fields where fundamental physics, engineering, materials, computation, and life-science applications overlap. Spectroscopy, electron microscopy, nanostructures, plasma technologies, thermomechanical modelling, and biomechanics are not confined to one disciplinary language. They are platforms on which physicists, engineers, biologists, chemists, medical researchers, and industrial partners can meet. The official research-area description even mentions electron microscopy of living objects, which is a direct bridge between physical instrumentation and biological research (*Academy of Sciences*

of the Czech Republic, n.d.). Such links matter because modern science often advances through new instruments before it advances through new interpretations. When an institute develops a better way to observe, measure, model, or manipulate a system, many other fields may be transformed. Interdisciplinarity therefore often begins with technical mediation.

Earth sciences provide another natural bridge across institutes. Research on the atmosphere, hydrology, geology, rock structures, induced seismicity, climate oscillations, environmental change, soil contamination, radioactive-waste depositories, and Central European atmospheric circulation already touches public policy, engineering, ecology, chemistry, geography, and social decision-making (*Academy of Sciences of the Czech Republic, n.d.*). A geological or hydrological problem is never purely geological when it involves land use, water management, infrastructure, environmental risk, or public regulation. Climate and atmospheric research require data, models, physics, ecology, economics, social behaviour, and policy analysis. Radioactive-waste repository questions require geology, geophysics, rock mechanics, engineering, public administration, law, communication, and social trust. The Academy's earth-science institutes therefore stand at an intersection between natural systems and public choices. Their interdisciplinary links arise from the fact that the Earth is both a scientific object and a human environment. AV ČR's institute structure allows such problems to be addressed with depth rather than through superficial policy commentary.

The second research area, Life and Chemical Sciences, is also inherently interdisciplinary. Chemical research in the Academy includes physical chemistry, inorganic chemistry, organic chemistry, biochemistry, macromolecular chemistry, analytical methods, polymers, catalysis, separation techniques, and chemical process fundamentals (*Academy of Sciences of the Czech Republic, n.d.*). These fields connect directly with biology, medicine, materials, ecology, and industry. Organic chemistry and biochemistry may lead to antiviral compounds and biological mechanisms. Macromolecular chemistry may support biomedical materials and polymer technologies. Analytical chemistry may provide methods for environmental, biological, or medical measurement. Chemical process research may connect laboratory knowledge with industrial or environmental applications. The institutes of chemistry are therefore central interdisciplinary mediators. They translate molecular knowledge into forms that can be used by life sciences, materials science, medicine, and application partners. Chemistry acts as a language between matter and life.

The biological and medical institutes similarly cross boundaries by necessity. Molecular genetics, microbiology, physiology, biophysics, biotechnology, experimental medicine, experimental botany, and animal physiology cannot be neatly separated from chemistry, physics, computation, ethics, and clinical relevance. DNA-protein interactions, signalling pathways, immune mechanisms, microbial genomes, metabolites, cardiovascular physiology, neuroscience, reproduction, plant genetics, and biotechnology all require methods from several fields (*Academy of Sciences of the Czech Republic, n.d.*). A molecular-genetic question may require sequencing technologies, bioinformatics, microscopy, protein chemistry, model organisms, and statistical analysis. Experimental medicine may require physiology, cell biology, animal models, imaging, chemistry, and collaboration with hospitals. Plant biotechnology may require genetics, ecology, agriculture, climate science, and food-system research. These institutes demonstrate that interdisciplinarity in AV ČR is not only a link between natural sciences and humanities. It also operates deeply within the natural and medical sciences themselves. Modern life science is interdisciplinary by its very method.

Bio-ecological institutes create another broad set of links. The Biology Centre, Institute of Botany, Institute of Vertebrate Biology, and Global Change Research Institute work on ecosystems, biodiversity, parasites, water systems, soil biology, geobotany, conservation, global change, and long-term environmental observations (*Academy of Sciences of the Czech Republic, n.d.*). These fields connect with atmospheric physics, hydrology, chemistry, geography, agriculture, economics, sociology, law, and public administration. Biodiversity loss, for example, is a biological issue, but it is also a problem of land use, legislation, social perception, agricultural practice, climate change, and cultural attitudes toward nature. Global change research requires physical observations, ecological modelling, remote sensing, carbon-cycle analysis, policy interpretation, and public communication. The Academy's bio-ecological institutes therefore transform interdisciplinarity into environmental responsibility. They show how research can move from the study of organisms to the analysis of societal risk. In this context, cooperation between institutes is not merely intellectually desirable. It is necessary for understanding the object itself.

The humanities and social sciences add a different kind of interdisciplinary capacity. They allow AV ČR to connect scientific and technical questions with law, ethics, history, culture, language, social behaviour, institutions, public trust, and collective memory. Without such links, interdisciplinary research risks remaining technocratic. Artificial intelligence, for example, is not only an issue of algorithms and data. It also raises questions of language, bias, labour, law, responsibility, creativity, education, and public communication. Climate change is not only a physical and ecological problem. It also concerns political institutions, social inequality, public attitudes, historical land use, and legal regulation. Infectious disease is not only virology and immunology. It also involves public behaviour, communication, trust, governance, historical memory, economic disruption, and ethical decisions. The Academy's humanities and social-science institutes make it possible to treat such problems as human problems as well as technical ones. This is one of the strongest reasons for keeping these fields inside the same Academy as natural and technical sciences.

The Section of Social and Economic Sciences is especially important for translating scientific findings into public policy contexts. The Economics Institute, Institute of Sociology, Institute of Psychology, Institute of State and Law, and Library of the CAS provide expertise on behaviour, institutions, public policy, law, inequality, social cohesion, economic transformation, mental processes, and knowledge infrastructures. These institutes can connect with natural and technical institutes when social uptake, regulation, communication, or policy design becomes necessary. A new technology does not enter society simply because it is technically possible. It must pass through legal frameworks, economic incentives, social trust, psychological attitudes, ethical debates, and public institutions. A biodiversity strategy, energy transition, health measure, or digital policy will fail if it ignores society. The Academy's social-science institutes therefore provide the human and institutional dimension of applied relevance. They make interdisciplinarity socially realistic.

The historical sciences offer another form of cross-institute connection. Archaeology, history, contemporary history, art history, archives, musicology, conservation, and intellectual history often cooperate with natural and technical sciences through archaeometry, material analysis, digital documentation, landscape research, palaeoenvironmental reconstruction, and heritage technologies. The official description of the historical-science section mentions archaeometry and archaeogenetics alongside spatial archaeology and historical research (*Academy of Sciences of the Czech Republic, n.d.*). These fields are exemplary cases of

interdisciplinarity. Archaeogenetics connects archaeology with molecular genetics. Archaeometry connects archaeology with chemistry, physics, geology, and materials science. Conservation research connects art history with chemistry, materials science, climate control, and technology. Digital archives connect history with computer science and data management. The historical sciences therefore show that interdisciplinarity is not only future-oriented. It also allows societies to understand the past with new methods. The Academy's institutes can link material traces, texts, genetic evidence, landscapes, and cultural interpretation in one research field.

Humanities and philology similarly connect with digital technologies, social analysis, cultural comparison, and public communication. The Czech Language Institute, Institute of Czech Literature, Institute of Philosophy, Institute of Ethnology, Oriental Institute, and Institute of Slavonic Studies all possess expertise that can become interdisciplinary in contemporary contexts. Linguistics connects with artificial intelligence, speech synthesis, language corpora, education, translation technologies, and social communication. Philosophy connects with ethics of technology, artificial intelligence, biomedical responsibility, environmental values, and public reason. Ethnology connects with migration, social memory, cultural identity, and field-based understanding of communities. Oriental and Slavonic studies connect regional expertise with history, politics, language, religion, migration, and international relations. Literary studies can enter digital humanities, cultural memory, education, and media analysis. These forms of interdisciplinarity are sometimes less visible than laboratory cooperation, but they are central to the public mission of the Academy. They help ensure that the human meaning of research is not lost.

Strategy AV21 is the most explicit institutional mechanism through which AV ČR has organised interdisciplinary links between institutes. Approved by the Academy Assembly in 2014, it was designed to present the Academy as an institution focused on the problems and challenges of contemporary society and to work under the motto "Top research in the public interest" (*Academy of Sciences of the Czech Republic, 2017*). The strategy is based on coordinated research programmes rather than on permanent disciplinary restructuring. This is important because it allows institutes to retain their identity while entering temporary or long-term interdisciplinary consortia around socially significant topics. Strategy AV21 therefore does not abolish the three research areas or nine sections. It creates a second, cross-cutting layer of organisation. Institutes remain disciplinary homes, while programmes become interdisciplinary meeting places. This is one of the most elegant features of the Academy's modern architecture.

The Concept for Development of Activities of the Czech Academy of Sciences describes Strategy AV21 as a platform that identifies socially significant topics and global challenges, responds flexibly to new problems, and serves as an established platform for inter-sector and interdisciplinary dialogue (*Academy of Sciences of the Czech Republic, 2022*). It also states that the strategy is based on a constantly changing set of coordinated research programmes using interdisciplinary and inter-institutional synergies to identify current problems and coordinate the research efforts of the Academy (*Academy of Sciences of the Czech Republic, 2022*). These phrases are especially important because they show how the Academy understands interdisciplinarity institutionally. It is not simply a moral appeal for researchers to cooperate. It is a governance tool, a communication tool, and a public-relevance tool. Through Strategy AV21, the Academy can mobilise institutes, external partners, public institutions, universities, and application actors around problems that require more than one field. This

gives interdisciplinarity a practical organisational form. It turns cross-disciplinary ambition into programmes, coordinators, outputs, communication, and policy interfaces.

Recent developments in Strategy AV21 show that this mechanism remains active and evolving. In 2026, the Academy launched new programmes under Strategy AV21 and described the strategy as a mechanism that has connected Academy institutes, universities, industrial partners, and state and public sectors for more than a decade (*Academy of Sciences of the Czech Republic, 2026*). New programmes introduced in 2026 included themes such as the materiality of objects between past and future, the global biodiversity crisis, and infectious diseases as new targets and strategies (*Academy of Sciences of the Czech Republic, 2026*). These topics themselves reveal the logic of modern interdisciplinarity. Materiality connects archaeology, history, ethnology, materials research, computer science, and chemistry. Biodiversity links natural sciences, humanities, social perception, legislation, landscape protection, and public policy. Infectious disease connects biochemistry, virology, medicine, history, social behaviour, economics, and public health. The Academy's programme logic therefore follows the structure of real-world problems. It starts not with disciplinary borders, but with complex issues demanding several forms of expertise.

The programme on materiality is particularly illustrative. Its coordinator noted that the programme connects archaeology, premodern and contemporary history, ethnology, materials research, computer science, and inorganic chemistry, bringing together eleven Academy institutes and six partner institutions (*Academy of Sciences of the Czech Republic, 2026*). This is a strong example of interdisciplinary cooperation because it refuses to treat objects as merely historical artefacts or merely physical materials. Objects can be studied as material structures, cultural symbols, technological products, economic goods, memory carriers, and social actors. An object may require chemical analysis, digital modelling, archival research, ethnographic interpretation, and historical contextualisation. Such a programme shows how humanities and natural sciences can cooperate without one dominating the other. Chemistry does not replace history, and history does not replace material analysis. Each field sees something different. Together, they produce a richer account than any one institute could produce alone.

The biodiversity programme offers another model of interdisciplinary linkage. Its official presentation emphasises that researchers and teams from Academy institutes and beyond will draw on both humanities and natural sciences to examine how humans influence biodiversity, how society perceives the biodiversity crisis, and whether Czech legislation adequately addresses landscape diversity protection (*Academy of Sciences of the Czech Republic, 2026*). This framing is crucial because biodiversity is often mistakenly treated as a purely biological issue. In reality, biodiversity crisis is produced by agriculture, urbanisation, economic systems, law, cultural values, public perception, and political decisions. It therefore requires ecological data, taxonomic expertise, landscape history, sociology, law, economics, education, and policy analysis. The Academy's interdisciplinary structure makes such integration possible. It can connect the Institute of Botany, Biology Centre, Global Change Research Institute, Institute of Sociology, Institute of State and Law, historical institutes, and others around one problem. Biodiversity thus becomes a meeting place of nature and society.

The infectious-disease programme shows how AV ČR can connect biomedical, chemical, historical, and social knowledge in response to risks that societies experience as crises. Infectious diseases involve molecular mechanisms, viral structures, immune responses, drug

targets, diagnostics, epidemiology, behaviour, communication, trust, and public institutions. The Academy's 2026 programme on infectious diseases was introduced within Strategy AV21 as a search for new targets and strategies (*Academy of Sciences of the Czech Republic, 2026*). Such a programme naturally draws on institutes such as the Institute of Organic Chemistry and Biochemistry, Institute of Microbiology, Institute of Molecular Genetics, Institute of Experimental Medicine, Institute of Physiology, Institute of Sociology, Institute of Psychology, and possibly historical and legal expertise. The COVID-19 experience made visible that biological knowledge alone is insufficient when public behaviour, trust, regulation, misinformation, and social inequality shape outcomes. Interdisciplinary research on infectious diseases is therefore not a luxury. It is a condition of preparedness.

Older and continuing Strategy AV21 programmes also demonstrate the breadth of the Academy's interdisciplinary links. Programmes such as "AI: Artificial Intelligence for Science and Society", "Society in Motion and Public Policy", "Space for Humankind", "Identities in a World of Wars and Crises", "Foods for the Future", and "Molecules and Materials for Life" all show how AV ČR organises research around cross-cutting topics rather than only disciplinary sections (*Academy of Sciences of the Czech Republic, n.d.*; *Academy of Sciences of the Czech Republic, n.d.*; *Academy of Sciences of the Czech Republic, n.d.*; *Academy of Sciences of the Czech Republic, n.d.*). Artificial intelligence links computer science, mathematics, automation, linguistics, law, philosophy, psychology, and social sciences. Society in motion links sociology, economics, psychology, law, history, and public administration. Space research links astronomy, physics, materials, instruments, engineering, international cooperation, and public imagination. Identities in crises link history, ethnology, sociology, political analysis, religion, language, and memory. Food systems link plant science, biotechnology, ecology, chemistry, economics, and public policy. The programme format therefore reveals the Academy's capacity to create thematic bridges across the institute structure.

Science for policymaking has become another important form of interdisciplinary linkage. The Academy's 2026 Strategy AV21 coordinator meeting presented Science4Policy as a platform designed to support knowledge transfer and science-for-policymaking activities, including analyses for Academy leadership in communication with political representatives and consultations for research teams planning activities for public administration and evidence-based decision-making (*Academy of Sciences of the Czech Republic, 2026*). This is significant because policy problems rarely fit disciplinary divisions. A policy brief on security, religion, energy, climate, health, or education may require data, legal interpretation, social-science analysis, historical context, and technological understanding. Science4Policy therefore acts as a channel through which interdisciplinary research can reach decision-makers in usable form. It does not replace academic publications, but it translates research into formats needed by public administration. In this way, interdisciplinarity becomes part of the Academy's public accountability. It links knowledge to decisions without reducing science to political instruction.

Knowledge and technology transfer also require interdisciplinary cooperation. The Academy's Concept for Development emphasises that the transfer of research results into practice cannot be understood through a simple linear model moving from basic research to applied research, development, and innovation (*Academy of Sciences of the Czech Republic, 2022*). It notes that practical experience shows the limits of predicting technological development and that socio-economic impacts may arise from many kinds of research, including those without

immediate commercial effect (*Academy of Sciences of the Czech Republic, 2022*). This argument has an interdisciplinary implication. Transfer often happens when knowledge from one field meets needs, methods, or users in another. A chemical discovery may require legal support, business expertise, biomedical testing, and communication. A language corpus may become useful for artificial intelligence. A historical database may support education and cultural policy. A hydrological model may need public-administration pathways. The Academy's transfer system must therefore be distributed across institutes while supported centrally. Interdisciplinarity is not only about research questions; it is also about the pathways through which results become useful.

Evaluation reform has also recognised the importance of interdisciplinary research. The Academy's action plan for reforming research assessment refers to the diversity of institutes and their scientific teams, including interdisciplinary research, as one of the specific challenges that need to be considered in the Academy's environment (*Academy of Sciences of the Czech Republic, 2024*). This is an important point because interdisciplinary work is often difficult to evaluate. It may not fit established journal categories, disciplinary metrics, or traditional peer communities. It may produce outputs such as policy briefs, databases, prototypes, exhibitions, interdisciplinary articles, public reports, digital tools, or collaborative infrastructures. If evaluation remains too narrowly disciplinary, researchers may avoid interdisciplinary work because it becomes institutionally risky. AV ČR's recognition of this problem is therefore part of its governance of interdisciplinarity. To support interdisciplinary links between institutes, the Academy must evaluate them fairly. Otherwise, strategy and incentives would contradict each other.

Interdisciplinary links also depend on people who can move between institutional cultures. A programme may be officially interdisciplinary, but cooperation succeeds only when researchers learn to understand different methods, vocabularies, publication rhythms, and standards of proof. A chemist, historian, lawyer, ecologist, mathematician, and sociologist may all use the word "model" differently. A physicist and an ethnologist may have different ideas of evidence. A computer scientist and a philosopher may disagree about what counts as explanation. These differences are not obstacles to be erased; they are the substance of interdisciplinary learning. The Academy's institutes provide strong disciplinary homes, but interdisciplinary programmes create spaces where such differences can be negotiated. Successful cooperation requires patience, translation, trust, and respect for expertise. The institutional architecture can encourage interdisciplinarity, but the actual work remains human and intellectual.

The Academy's interdisciplinary links are also shaped by infrastructure. Databases, laboratories, field stations, archives, libraries, observatories, instruments, computing facilities, collections, and digital platforms allow institutes to cooperate in practical ways. A biological sample, archaeological artefact, climate dataset, linguistic corpus, material specimen, satellite image, legal database, or historical archive can become a shared object of research. Infrastructure creates common ground. The Library of the CAS, for example, supports scholarly communication and open science across fields. Scientific instruments developed in one institute can be used by researchers from another. Environmental monitoring data can support both natural science and policy analysis. Digital infrastructures can connect humanities, social sciences, and computer science. The Academy's interdisciplinary capacity therefore depends not only on ideas, but on the material and digital conditions of research. Institutes are connected through tools as well as through programmes.

External partners strengthen these links. Strategy AV21 has connected Academy institutes with universities, industrial partners, state and public sectors, and other institutions (*Academy of Sciences of the Czech Republic, 2026*). This matters because interdisciplinarity within the Academy often becomes inter-institutional cooperation beyond the Academy. Universities bring students, teaching, faculties, clinical environments, and additional research groups. Industry brings application problems, technological needs, and development pathways. Ministries and public authorities bring policy questions and social responsibilities. Museums, archives, schools, hospitals, and regional authorities bring specific public contexts. The Academy's institute network becomes more effective when it is open to such partners. Interdisciplinary links therefore extend outward. AV ČR is not a closed system; it is a hub in a wider research and innovation ecology.

The Academy's interdisciplinary work also has a historical dimension. Czech scientific culture has long been shaped by the interaction of national scholarship, natural science, technical modernisation, cultural institutions, and public education. The Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts were never only laboratories or only literary bodies. They brought together different forms of knowledge because the formation of modern Czech society itself required linguistic, historical, technical, economic, and natural-scientific development. The Czechoslovak Academy of Sciences later expanded institute-based research, though under a politically constrained system. The modern AV ČR inherited both the breadth and the problem of coordination. Its interdisciplinary mechanisms can therefore be seen as a democratic reconstruction of older integrative ambitions. The difference is that integration today is not supposed to serve ideology. It is meant to serve public knowledge under conditions of autonomy, evaluation, and international standards.

Interdisciplinarity is especially visible where the Academy addresses crises. Crises expose the limits of disciplinary isolation. A pandemic requires virology, chemistry, medicine, data modelling, psychology, sociology, law, communication, and history. War and displacement require political analysis, history, law, economics, psychology, language expertise, and cultural understanding. Climate crisis requires atmospheric physics, ecology, hydrology, geology, economics, sociology, law, philosophy, and public communication. Technological crisis requires computer science, mathematics, ethics, regulation, psychology, and education. The Academy's broad institute structure gives it the capacity to respond to such crises with depth. Strategy AV21 programmes such as "Identities in a World of Wars and Crises", "Society in Motion and Public Policy", and "Global Biodiversity Crisis" reflect this crisis-oriented interdisciplinary role (*Academy of Sciences of the Czech Republic, n.d.*; *Academy of Sciences of the Czech Republic, n.d.*; *Academy of Sciences of the Czech Republic, 2026*). Such programmes show that AV ČR is not only a keeper of long-term research, but also an organiser of knowledge under pressure.

Artificial intelligence provides one of the clearest contemporary examples. AI research requires mathematics, statistics, computer science, information theory, automation, linguistics, psychology, philosophy, law, ethics, sociology, education, and public policy. It also affects scientific practice itself by changing data analysis, modelling, translation, text processing, image analysis, and research communication. The Strategy AV21 programme "AI: Artificial Intelligence for Science and Society" explicitly responds to these developments and supports research and development in this field (*Academy of Sciences of the Czech Republic, n.d.*). Within AV ČR, institutes of computer science, information theory and automation, Czech language, psychology, philosophy, sociology, state and law, and many natural-science

institutes can all contribute to AI-related questions. The Academy's interdisciplinary advantage lies in the fact that it can study AI not only as a technology, but also as a social, linguistic, ethical, legal, and scientific transformation. This is precisely the kind of problem for which a broad academy is needed.

Cultural heritage is another exemplary field. It links archaeology, art history, history, ethnology, chemistry, physics of materials, digital imaging, conservation science, architecture, law, and public education. The Institute of Art History, archaeological institutes, Institute of History, Institute of Ethnology, Institute of Theoretical and Applied Mechanics, Institute of Inorganic Chemistry, Institute of Scientific Instruments, and computer-science institutes may all contribute to heritage research in different ways. A medieval mural, manuscript, wooden structure, archaeological burial, urban landscape, or museum object can be studied through historical interpretation, material analysis, imaging, conservation methods, structural mechanics, and digital reconstruction. Such work demonstrates that interdisciplinarity is not always oriented toward future technology. It can also protect and reinterpret the past. The Academy's heritage-related links show that public interest includes culture, memory, and continuity as well as innovation.

Energy is another field where interdisciplinary cooperation is unavoidable. Plasma physics, materials science, thermomechanics, photonics, nuclear physics, geology, hydrology, environmental science, economics, law, sociology, and public policy all enter questions of energy transition, safety, storage, infrastructure, and public acceptance. The Institute of Plasma Physics connects AV ČR with fusion research and large scientific infrastructures. Materials institutes contribute to durability, efficiency, and technological development. Earth-science institutes contribute to geological and environmental assessments. Social-science and legal institutes help analyse regulation, public trust, risk perception, and governance. Energy therefore shows why technical solutions alone are insufficient. Public acceptance, legal feasibility, environmental impact, and economic structure matter. The Academy's institute system gives it the capacity to address energy as a scientific, technological, environmental, and social problem at once.

Food systems and agriculture also show the value of interdisciplinary links. Programmes such as "Foods for the Future" connect plant science, biotechnology, ecology, chemistry, climate research, soil biology, economics, public health, and social behaviour (*Academy of Sciences of the Czech Republic, n.d.*). Food security is not only a biological issue. It involves crop breeding, pests, climate adaptation, soil, water, logistics, consumer behaviour, regulation, nutrition, and economic access. Academy institutes working in experimental botany, microbiology, biotechnology, ecology, global change, analytical chemistry, sociology, economics, and law can all contribute to such questions. This broad approach is especially important as climate change and geopolitical instability affect food systems. The Academy's interdisciplinary links allow research to move from cellular mechanisms to landscape management and from laboratory innovation to social needs. Food becomes a field where basic research, application, and public interest visibly converge.

The social sciences and humanities also benefit from cooperation with natural and technical institutes. They are not merely service providers explaining the social consequences of scientific discoveries after the fact. They can shape research questions from the beginning. Sociologists can identify public attitudes and inequalities that affect environmental policy. Lawyers can clarify regulatory constraints around data, health, energy, heritage, and

technology. Philosophers can question assumptions about responsibility, identity, knowledge, and value. Historians can show how past crises, policies, and technologies shaped present conditions. Linguists can improve communication and language technologies. Ethnologists can reveal local knowledge, practices, and cultural meanings. When these fields enter interdisciplinary research early, the result is more realistic and more socially responsible. This is one of the reasons why AV ČR's inclusion of humanities and social sciences within the same institutional system is so important.

Nevertheless, interdisciplinarity also has risks. It can become superficial if it is reduced to the mere presence of several institutes in one project. It can become managerial if programmes are created for policy visibility rather than intellectual necessity. It can become unequal if technical or natural-science fields dominate and humanities or social sciences are invited only to communicate results or study acceptance. It can also become inefficient if researchers spend too much time translating concepts without producing real knowledge. AV ČR's challenge is therefore to cultivate meaningful interdisciplinarity. Such interdisciplinarity requires well-defined problems, respect for disciplinary standards, appropriate evaluation, clear coordination, and sufficient time. Strategy AV21 provides a framework, but the quality of interdisciplinary research depends on the seriousness of the participating institutes. The Academy must avoid both disciplinary isolation and empty interdisciplinarity.

The institute-based structure helps manage these risks because it preserves disciplinary accountability. Researchers return to institutes where their work is judged by colleagues who understand the field. This prevents interdisciplinary programmes from becoming intellectually vague. At the same time, programmes expose institutes to other standards and questions, preventing disciplinary self-enclosure. The Academy's best interdisciplinary links therefore depend on a productive tension between home discipline and shared problem. A historian working with chemists on materiality must remain a historian, but must also understand what chemical analysis can reveal. A physicist working with biologists on microscopy must remain a physicist, but must understand biological questions. A lawyer working with AI researchers must understand legal doctrine, but also enough about computational systems to ask relevant questions. The Academy's structure permits this tension because it combines institutes and programmes. It gives researchers both roots and bridges.

Interdisciplinarity also changes the Academy's public image. A list of institutes can make the Academy appear fragmented, but interdisciplinary programmes show how these institutes contribute jointly to societal problems. Public audiences may not understand why there are separate institutes of hydrology, botany, sociology, mathematics, and law, but they can understand why biodiversity, climate adaptation, food security, infectious disease, artificial intelligence, and cultural heritage require many kinds of expertise. Strategy AV21 has therefore become a communication mechanism as well as a research mechanism. It helps the Academy present itself as a public institution capable of integrated response. This is particularly important when public funding is debated. Interdisciplinary programmes make visible the collective value of the Academy's broad structure. They show that disciplinary plurality is not institutional excess, but public capacity.

The future of AV ČR will likely make interdisciplinary links even more important. The new Czech research, development, innovation, and knowledge-transfer framework strengthens expectations of knowledge transfer, public relevance, open science, and cooperation across sectors (*Parliament of the Czech Republic, 2025*). European research policy also increasingly

supports missions, societal challenges, open science, responsible assessment, and cross-sectoral cooperation. AV ČR's existing structure gives it advantages in this environment, but also creates demands. It must coordinate institutes without over-centralising them. It must support interdisciplinary consortia without weakening basic research. It must evaluate cross-cutting outputs without forcing them into narrow metrics. It must communicate results without oversimplifying complexity. It must cooperate with external partners without losing independence. These tasks will define the next stage of the Academy's institutional architecture. Interdisciplinarity will not replace the institute system. It will test whether the institute system can remain adaptive.

Thus, interdisciplinary links between the institutes of the Czech Academy of Sciences are a central expression of the Academy's modern public research mission. They arise from the breadth of its institute network, the depth of its disciplinary traditions, and the growing complexity of the problems addressed by Czech and international science. Strategy AV21 has given these links a visible institutional form by creating coordinated programmes that connect institutes, universities, public authorities, industrial partners, and other actors around socially significant topics. Scientific instruments, data, archives, field stations, collections, methods, policy platforms, and knowledge-transfer mechanisms also create less visible but equally important connections between institutes. These links allow AV ČR to address climate change, biodiversity, infectious disease, artificial intelligence, energy, cultural heritage, food security, public policy, identity, and social resilience in ways that no single institute could manage alone. At the same time, successful interdisciplinarity depends on strong disciplines, fair evaluation, institutional trust, and respect for different forms of evidence. The Academy's strength lies not in dissolving its institutes into general programmes, but in enabling specialised institutes to cooperate without losing their intellectual depth. Through this balance, AV ČR becomes not merely a collection of research workplaces, but a national system of interconnected public knowledge.

The Academy in the Czech Research and Innovation System

1. Relations with Universities

The relationship between the Czech Academy of Sciences and universities is one of the defining elements of the modern Czech research and innovation system. It cannot be understood as a simple rivalry between two sectors, even though competition for funding, talent, prestige, doctoral students, infrastructure, and political attention is always present. The Academy and universities perform different but interdependent functions within the national knowledge system. Universities are the principal institutions of higher education, degree-awarding, student formation, teaching, and academic socialisation. The Academy is the principal non-university public research organisation, built around specialised institutes and long-term research capacities. The two systems therefore meet most intensively where research and education overlap: doctoral training, joint laboratories, shared infrastructures, research projects, European grants, supervision, teaching by Academy researchers, and the

movement of people between institutes and faculties. The Academy's own mission explicitly includes the education of researchers and the application of research results for education, culture, competitiveness, and social needs (*Academy of Sciences of the Czech Republic, n.d.*). This means that AV ČR is not outside the educational system, even though it is not a university. Its relations with universities are a structural necessity rather than an optional form of cooperation. In the modern Czech research system, the Academy and universities together form the institutional basis for advanced knowledge production.

The distinction between the Academy and universities is rooted in institutional history. Czech learned life developed through universities, learned societies, museums, archives, professional associations, and specialised research bodies long before the modern AV ČR was created. The Charles University tradition gave Czech scholarship one of its oldest institutional foundations, while the Royal Czech Society of Sciences and later the Czech Academy of Sciences and Arts created forms of scholarly organisation that were not identical with university teaching. The socialist period strengthened the institute-based research model through the Czechoslovak Academy of Sciences, while universities continued to carry the main responsibility for higher education. After 1989, the democratic transformation did not erase this dual structure. Instead, it redefined it under public law, institutional autonomy, European integration, and competitive research policy. The modern AV ČR therefore relates to universities as an heir to the non-university research tradition, but also as a partner in doctoral education and advanced research. This historical layering explains why cooperation is sometimes easy and sometimes tense. The Academy and universities are close enough to need each other, but distinct enough to defend their own institutional identities.

The most visible point of cooperation is doctoral training. The Academy's official mission description states that researchers of Academy institutes participate in education particularly through doctoral study programmes for young researchers and by teaching at universities (*Academy of Sciences of the Czech Republic, n.d.*). This formulation captures the basic division of labour. Universities provide the legal and curricular framework for doctoral programmes, while Academy institutes offer research environments, supervisors, laboratories, archives, datasets, instruments, research teams, and scientific cultures. Doctoral students may be enrolled at universities while conducting much of their research in Academy institutes. This arrangement is especially important in fields where the Academy possesses infrastructures or expertise that are not easily available in university departments. A doctoral student in molecular biology, plasma physics, archaeology, botany, history, linguistics, economics, sociology, or materials science may benefit from the concentrated research environment of an Academy institute while remaining connected to a university degree programme. Doctoral cooperation therefore turns institutional duality into an educational advantage. It allows the Czech research system to combine university legitimacy with Academy research depth.

This cooperation also shapes the formation of scientific generations. Doctoral education is not merely a formal passage to a degree; it is the process through which young researchers learn methods, standards, ethics, writing, collaboration, and disciplinary identity. Academy institutes can provide unusually intensive research training because their primary mission is research. They offer doctoral students direct exposure to projects, instruments, fieldwork, archives, international teams, grant applications, seminars, and publication practices. Universities provide the broader academic environment, teaching structures, degree regulations, and access to students across educational stages. When the relationship works well, doctoral students receive both institutional worlds: the intellectual breadth of the

university and the research concentration of the Academy. This is one of the most productive forms of cooperation between AV ČR and universities. It also demonstrates why the Academy's public mission cannot be limited to producing research outputs. It contributes to the reproduction of the Czech scientific community itself.

The 2025–2029 leadership structure of AV ČR confirms the strategic importance of university relations. The Academy Council includes a member responsible for conceptual issues of scientific training and cooperation of the Academy with universities and joint institutes, including doctoral study programmes and cooperation with departmental institutes (*Academy of Sciences of the Czech Republic, 2025*). This is more than an administrative detail. It shows that cooperation with universities is treated as a central governance field, not as a peripheral activity left to individual institutes alone. The same portfolio includes programme and project cooperation with the Ministry of Education, Youth and Sports, universities, and funding providers, including operational programmes of structural funds (*Academy of Sciences of the Czech Republic, 2025*). The Academy therefore understands university relations as part of a broader policy environment involving education, research funding, European funds, and national research strategy. Cooperation is both scientific and political-institutional. It requires negotiation over programmes, accreditation, funding, infrastructure, and career pathways.

Joint institutes and joint workplaces are one of the most concrete forms of Academy-university cooperation. They embody the idea that some research capacities cannot be effectively placed wholly on one side of the institutional boundary. A prominent example is CERGE-EI, described in Academy communication as a joint workplace of Charles University and the Economics Institute of the CAS (*Academy of Sciences of the Czech Republic, 2026*). CERGE-EI is especially important because it combines graduate education, economics research, international standards, and a bridge between university and Academy traditions. It also illustrates how the social sciences can develop institutional forms similar in ambition to advanced laboratories in the natural sciences. Another major example is BIOCEV, the Biotechnology and Biomedicine Centre of the Academy of Sciences of the Czech Republic and Charles University, which became highly visible during the COVID-19 pandemic when it was authorised to conduct large-scale testing (*Academy of Sciences of the Czech Republic, 2020*). BIOCEV represents a research-infrastructure model in which biomedical and biotechnological capacities are jointly developed by the Academy and a university. These examples show that cooperation is not only a matter of personal collaboration, but also of shared institutional construction.

BIOCEV also demonstrates why Academy-university links matter in moments of public crisis. During the pandemic, laboratories, researchers, instruments, and institutional trust had to be mobilised quickly. Academy sources described BIOCEV as a joint centre of the Academy and Charles University and noted its role in large-scale testing, while other Academy institutes and university-linked teams also contributed to testing, economics, ethics, and public-health analysis (*Academy of Sciences of the Czech Republic, 2020*; *Academy of Sciences of the Czech Republic, 2020*). This example shows that the relationship between the Academy and universities is not confined to regular doctoral cooperation. It can become part of national preparedness. Research infrastructures built for fundamental and biomedical purposes may suddenly acquire urgent public relevance. The existence of joint centres makes it easier to combine expertise, staffing, student involvement, clinical or public-health connections, and research technology. Such cooperation is difficult to improvise during a crisis if institutional relationships do not already exist. The pandemic therefore revealed the strategic value of long-term Academy-university cooperation.

The CEFRES Platform provides a different model of cooperation, rooted in the humanities and social sciences. The French Research Centre in Humanities and Social Sciences in Prague, Charles University, the Czech Academy of Sciences, and CNRS are united within the CEFRES Platform, which initiates common scientific and educational programmes in social sciences and humanities, supports scientific training for young researchers, and encourages common academic publishing (*Academy of Sciences of the Czech Republic, n.d.*). This platform shows that Academy-university cooperation is not limited to laboratories, biomedical centres, or technical infrastructures. It can also create international intellectual environments, doctoral fellowships, seminars, workshops, and project incubators. In the humanities and social sciences, collaboration often depends on scholarly networks, language competence, archives, theoretical exchange, and international mobility rather than expensive instruments. The CEFRES Platform gives such cooperation an institutional form. It links Czech universities, Academy institutes, French research institutions, and young scholars. It is therefore an example of how AV ČR participates in the Europeanisation of Czech humanities and social sciences through university partnerships.

The CEFRES doctoral fellowships show how this platform translates institutional cooperation into support for young researchers. In 2026, CEFRES offered year-long fellowships to PhD students enrolled at Charles University and/or working as fellows at the Academy of Sciences in the Czech Republic, with research expected to contribute to one of CEFRES's research areas (*Academy of Sciences of the Czech Republic, 2026*). This is a small example, but it captures the logic of Academy-university relations very clearly. A young researcher may be institutionally connected to a university, an Academy institute, and an international research centre at the same time. The boundaries between institutions become pathways rather than walls. The fellowship structure also shows how doctoral education is increasingly international and project-oriented. It connects local Czech research training with European academic networks. For AV ČR, such platforms help ensure that its institutes participate in the formation of researchers who are not only nationally trained, but internationally embedded.

Cooperation on European Research Council applications provides another important link between the Academy and universities. An expert group supporting applicants in ERC calls was established in 2021 on the basis of a Joint Declaration of Charles University and the Academy of Sciences of the Czech Republic; the group includes experts in individual ERC scientific fields and, in cooperation with Technology Centre Prague, systematically supports applicants for ERC grants at the national level (*Academy of Sciences of the Czech Republic, n.d.*). This initiative is significant because ERC grants are one of the most prestigious forms of European research funding, and success in ERC competitions depends on excellent proposals, international peer standards, institutional support, and strategic preparation. By cooperating with Charles University in this area, the Academy helps create a national support system rather than leaving applicants isolated in separate institutions. ERC support also changes the meaning of Academy-university relations. The two sectors do not merely share doctoral students or facilities; they jointly build Czech capacity for competing at the highest European level. This strengthens the whole national research system.

The relationship with universities also passes through teaching by Academy researchers. Academy employees may teach at universities, supervise theses, participate in doctoral boards, serve on scientific councils, contribute to habilitation and professorial procedures, and organise specialised seminars. Such activities allow Academy expertise to enter university education directly. They also prevent the Academy from becoming intellectually separated

from students. A researcher based in an Academy institute can bring advanced research topics into university classrooms and doctoral seminars. Conversely, university teaching can help Academy researchers communicate their fields, identify talented students, and remain connected with broader academic debates. This circulation of people and knowledge is especially important because AV ČR does not have the same mass educational function as universities. Teaching through universities allows the Academy to contribute to higher education without transforming itself into a university. It is a form of educational influence compatible with the Academy's research mission.

Universities also benefit from access to Academy infrastructures. Many Academy institutes possess laboratories, instruments, databases, archives, collections, observatories, field stations, libraries, and research teams that can support university research and teaching. Students and university researchers may gain access through joint projects, doctoral supervision, shared laboratories, and personal collaborations. This is particularly important in infrastructure-heavy fields such as physics, chemistry, biology, materials science, environmental science, and biomedical research. It also matters in humanities and social sciences, where archives, corpora, libraries, historical datasets, surveys, and editions may be essential research resources. The Academy's infrastructure therefore becomes part of the broader national research commons. The relationship is not one-directional, because universities also possess laboratories, hospitals, faculties, student communities, and international networks. The strongest collaborations arise when infrastructure is shared rather than duplicated unnecessarily. This helps the Czech research system use public resources more efficiently.

The Academy's cooperation with universities is also mediated through research programmes such as Strategy AV21. The Academy has described Strategy AV21 as a mechanism that has connected Academy institutes, universities, industrial partners, and state and public sectors for over a decade (*Academy of Sciences of the Czech Republic, 2026*). This is important because Strategy AV21 turns university relations into part of wider interdisciplinary and inter-sector cooperation. Universities participate not only as educational partners, but as research partners in programmes addressing public challenges. Such programmes may involve climate, energy, artificial intelligence, food systems, infectious disease, materials, society, identity, heritage, and public policy. The programme format allows Academy institutes and university teams to cooperate around problems rather than only around institutional agreements. It therefore moves the relationship from formal partnership to research substance. Strategy AV21 also makes cooperation visible to the public, showing that universities and the Academy can work together in the public interest.

The Academy-university relationship is particularly important in interdisciplinary research. Universities often contain broad disciplinary environments, while Academy institutes contain concentrated research expertise. Interdisciplinary programmes benefit from both. For example, artificial intelligence research may require computer science, mathematics, linguistics, psychology, law, philosophy, and social sciences. Some of these capacities are located in Academy institutes, others in universities, and many across both. Cultural heritage research may connect archaeology, art history, conservation science, chemistry, physics, digital humanities, and university training. Biomedical research may require Academy institutes, medical faculties, hospitals, and biotechnology centres. Climate research may require Academy environmental institutes, university departments, policy schools, and regional partners. The Academy's relations with universities therefore make interdisciplinary

work more realistic. They expand the pool of expertise beyond the boundaries of either sector alone.

At the same time, the relationship between AV ČR and universities is not free from structural tension. Both sectors compete for public funding, excellent researchers, doctoral students, grant success, European visibility, infrastructure investment, and influence over national research policy. Universities may argue that research funding should follow student-based institutions and degree-awarding bodies. The Academy may argue that specialised institutes provide research depth and long-term capacities that universities cannot fully replace. These positions are not mutually exclusive, but they can become politically sensitive in periods of budget pressure or policy reform. The Czech research system therefore needs a language of complementarity rather than zero-sum competition. AV ČR and universities have different missions, but they serve the same public knowledge ecosystem. The challenge is to distribute resources in a way that recognises both teaching-intensive and research-intensive functions. Cooperation is strongest when neither side treats the other as institutionally redundant.

The issue of doctoral education can also produce tension. Doctoral students may conduct research in Academy institutes while being formally enrolled at universities, which raises questions of supervision, funding, rights, responsibilities, evaluation, and institutional credit. If the arrangements are clear, the student benefits from both institutions. If they are unclear, students may find themselves between administrative systems. The Academy's governance portfolio on scientific training and cooperation with universities exists partly because such issues require system-level coordination (*Academy of Sciences of the Czech Republic, 2025*). Doctoral programmes are one of the most delicate interfaces between the sectors. They involve not only intellectual supervision, but also labour conditions, scholarships, employment contracts, access to infrastructure, teaching duties, publication expectations, and future careers. A mature Academy-university relationship must protect doctoral students from being treated as merely a resource shared between institutions. It must make cooperation visible, fair, and supportive.

Another tension concerns career pathways. Academy institutes and universities offer different career environments. Universities may provide teaching positions, habilitation pathways, professorial appointments, student communities, and faculty governance. Academy institutes may provide research positions, project teams, laboratories, long-term institutional research, and less routine teaching. Researchers may move between the sectors, hold dual affiliations, teach while employed at the Academy, or collaborate on joint projects. However, differences in evaluation, salary systems, teaching load, tenure expectations, and institutional prestige can complicate mobility. A healthy national research system needs porous boundaries between universities and AV ČR. Researchers should be able to move, cooperate, supervise, and build joint careers without institutional penalties. This is especially important for early-career researchers who need both research intensity and academic recognition. Academy-university cooperation therefore has a human-resource dimension, not only a project dimension.

The Academy's involvement in university education also strengthens the international competitiveness of Czech doctoral programmes. International doctoral education increasingly depends on access to high-quality research teams, supervisors, equipment, mobility, and publication environments. Academy institutes can provide these resources in many fields. When universities include Academy researchers in doctoral training, they can offer students a

richer research environment than the university alone might provide. This is particularly valuable for attracting foreign doctoral students and postdoctoral researchers. It also helps Czech students enter international networks earlier. The Academy's institutes often participate in European projects, bilateral cooperation, and global disciplinary networks. Doctoral students working in such institutes can therefore become international researchers from the beginning of their careers. The Academy-university relationship thus contributes to the Europeanisation and internationalisation of Czech higher education.

The relationship also affects the national visibility of Czech research. A university may be more visible to the public because of its students, degrees, and public campuses. The Academy may be more visible through discoveries, expert statements, public lectures, research achievements, and national debates. Joint projects allow these forms of visibility to reinforce each other. A biomedical centre associated with both the Academy and Charles University, a joint economics workplace, a science-communication conference prepared by the Academy and a university faculty, or an ERC support group established by joint declaration all show that institutional visibility can be shared (*Academy of Sciences of the Czech Republic, 2020*; *Academy of Sciences of the Czech Republic, 2026*; *Academy of Sciences of the Czech Republic, 2025*; *Academy of Sciences of the Czech Republic, n.d.*). This matters because public trust in research often attaches to recognisable institutions. When the Academy and universities cooperate visibly, they present science as a national system rather than as fragmented institutional competition.

The Assembly structure of AV ČR also embeds universities in Academy governance. The official mission page notes that the Academy Assembly is composed in such a way that two-thirds are representatives of all Academy institutes, while the remaining third are representatives of universities, state administration, business circles, and other notable personalities (*Academy of Sciences of the Czech Republic, n.d.*). This composition is significant because it formally includes universities within the Academy's supreme body. Universities are not external observers only. Their representatives participate in the broader deliberative life of the Academy, alongside other public and application-sector actors. This arrangement reflects the Academy's hybrid public mission. It is self-governing, but not closed. It is institute-based, but aware of the wider research and educational system. The presence of university representatives in the Assembly helps prevent institutional isolation and encourages dialogue between sectors at the highest level of Academy governance.

Joint scientific communication is another field of cooperation. The Science Communication 360° conference, for example, was prepared by the Czech Academy of Sciences, the Faculty of Social Sciences of Charles University, and the SciComHub platform, with partners including the IOCB Tech Foundation and the German Embassy (*Academy of Sciences of the Czech Republic, 2025*). Such events show that the relationship between the Academy and universities now extends beyond research projects and doctoral programmes into the public communication of science. This is important because contemporary science needs not only excellent results, but also effective institutions of communication. Universities and the Academy face similar challenges: misinformation, public distrust, politicisation of expertise, media simplification, and the difficulty of explaining uncertainty. Joint communication initiatives allow them to develop shared professional standards and public visibility. This is part of the broader movement from isolated institutional communication to system-level science communication. It also strengthens the public authority of Czech research as a whole.

Academy-university cooperation in the humanities and social sciences has a particularly strong historical meaning. Czech national scholarship was long shaped by the interaction of university chairs, archives, learned societies, museums, language scholarship, and public intellectual life. The modern Academy preserves specialised institutes in history, contemporary history, art history, philosophy, Czech language, literature, ethnology, Slavonic studies, Oriental studies, sociology, psychology, economics, and law. Universities provide teaching programmes, students, faculties, and public intellectual platforms in the same fields. Cooperation between these sectors allows Czech humanistic and social-scientific scholarship to maintain both research depth and educational continuity. Platforms such as CEFRES illustrate how this cooperation can be internationalised through French and European networks (*Academy of Sciences of the Czech Republic, n.d.*). In these fields, university relations are not only instrumental. They continue a long tradition in which scholarship, public culture, and education are inseparable.

In the natural, technical, and medical sciences, cooperation often revolves around laboratories, infrastructures, equipment, and research centres. BIOCEV is a strong example, but similar forms exist across many fields through shared projects, doctoral supervision, university appointments, and use of specialised facilities. Medical and biomedical collaboration is particularly important because the Academy does not operate as a clinical university hospital system. Its institutes contribute basic and experimental research, while universities and medical faculties connect research to clinical education and health-care environments. Chemistry, molecular biology, physiology, biotechnology, materials science, and experimental medicine all benefit from such connections. Technical fields similarly cooperate through engineering faculties, technology centres, and applied research programmes. The Academy provides depth and infrastructure; universities provide educational pipelines and additional research communities. Together, they strengthen the national capacity for translation from discovery to application.

The Academy's relationship with universities is also shaped by the Ministry of Education, Youth and Sports, which is a key public actor in higher education and research funding. The Academy Council portfolio for university cooperation explicitly includes conceptual matters of programme and project cooperation with this ministry, universities, and funding providers (*Academy of Sciences of the Czech Republic, 2025*). This indicates that university relations are inseparable from public policy. Doctoral education, structural funds, operational programmes, research infrastructures, evaluation, and national strategies are all mediated through state frameworks. The Academy and universities may cooperate directly, but their cooperation is also shaped by laws, ministries, grant agencies, and European programmes. This public-policy environment can enable cooperation through funding calls and joint initiatives, but it can also create administrative burdens. The Academy's leadership must therefore represent the interests of institute-based research while working with the higher-education policy sphere. Relations with universities are thus part of the Academy's broader negotiation with the state.

The European dimension strengthens the need for Academy-university cooperation. Horizon Europe, ERC, research infrastructures, mobility schemes, Marie Skłodowska-Curie actions, structural funds, and European research-assessment debates all reward institutions that can build strong consortia, support excellent applicants, and provide professional grant management. Universities and the Academy often need to cooperate to make Czech applicants more competitive. The ERC expert group established under the Joint Declaration of

Charles University and the Academy is a practical response to this need (*Academy of Sciences of the Czech Republic, n.d.*). It shows that European excellence is not only an individual matter. It requires institutional preparation, mentoring, peer support, and national coordination. Academy-university cooperation therefore becomes a way to strengthen Czech science in European competition. This is especially important for a research system that must compete with larger and wealthier systems in Western Europe.

The relationship also has a regional dimension. Czech universities outside Prague, especially in Brno, České Budějovice, Olomouc, Ostrava, Plzeň, and other centres, interact with Academy institutes and workplaces in various ways. The Academy's institute network is not confined to Prague, and many research capacities are regionally embedded. Cooperation with universities can strengthen regional innovation ecosystems, doctoral training, shared infrastructures, and applied research. For example, biological, environmental, geoscience, engineering, and social-science research often depends on regional field sites, local partners, and regional universities. The Academy's regional cooperation portfolio within the Academy Council further suggests that external relations are not limited to central ministries and Prague institutions (*Academy of Sciences of the Czech Republic, 2025*). Universities are among the most important regional research actors. Cooperation with them helps AV ČR function as a national rather than merely metropolitan academy. It also connects public research to regional development.

Another important aspect is the role of joint publications and shared scientific authorship. Many Academy researchers publish with university colleagues, supervise students who later become university academics, and participate in joint research teams. Such cooperation is less visible than formal agreements, but it is one of the everyday mechanisms through which the Czech research system functions. The boundary between Academy and university scholarship is often crossed through articles, monographs, edited volumes, datasets, conferences, and grant proposals. In many fields, the intellectual community is smaller than the institutional division suggests. A sociologist, physicist, historian, chemist, or linguist may have close collaborators across both sectors. These personal and team-level ties are the living tissue of institutional cooperation. Formal structures matter, but they would be empty without everyday collaboration among researchers.

The Academy-university relationship also affects evaluation and reputation. Universities are evaluated as higher education and research institutions, while Academy institutes undergo their own evaluation procedures. However, collaboration means that outputs, students, grants, and infrastructures often cross institutional boundaries. This creates both opportunities and complications. Joint success can strengthen both sides, but attribution of results, funding, and prestige may become sensitive. A research system that values cooperation must avoid evaluation models that punish collaborative work or encourage institutions to claim exclusive credit. Responsible assessment is therefore important for Academy-university relations. The Academy's involvement in reforming research assessment and emphasising peer review beyond narrow metrics can support a more nuanced understanding of collaborative research (*Academy of Sciences of the Czech Republic, 2024*). Evaluation should recognise that some of the best research emerges from institutional intersections. If assessment becomes too institutionally possessive, cooperation weakens.

The relationship with universities also contributes to public science education beyond doctoral programmes. Academy researchers participate in lectures, seminars, public events, teacher

training, science festivals, secondary-school outreach, internships, and student activities. The Academy's student internships can lead to continued cooperation, follow-up internships, or doctoral studies (*Academy of Sciences of the Czech Republic, n.d.*). Such initiatives create early pathways from education into research. Universities are natural partners in this process because they receive students who may already have encountered Academy science through internships or public programmes. The Academy's outreach therefore supports the broader educational ecosystem. It helps identify talent, demystify research, and connect young people with scientific careers. This is especially important in fields facing international competition for students and researchers.

Despite all these forms of cooperation, the Academy must preserve its distinct mission. If AV ČR were to become merely an auxiliary research arm of universities, it would lose the institutional logic that justifies its existence. Its strength lies in institute-based, long-term, non-university research. It should cooperate with universities because cooperation strengthens science, not because the Academy should dissolve into the university sector. Conversely, universities should not treat Academy institutes only as laboratories for their doctoral programmes or as external supervisors for their students. The relationship must be reciprocal and respectful. Universities bring education, degree structures, faculties, students, and academic breadth. The Academy brings concentrated research, institutes, infrastructure, long-term expertise, and public research stability. Their missions overlap, but they are not identical. A healthy system needs both.

This complementarity is especially important when discussing national research policy. Policymakers sometimes prefer institutional simplification, because it appears administratively efficient. However, a mature research system benefits from differentiated institutions. Universities, the Academy, applied research organisations, grant agencies, technology agencies, hospitals, museums, archives, and companies all play different roles. The Academy's relation with universities should therefore be defended as part of a differentiated ecosystem. The goal is not to eliminate borders, but to make them permeable where cooperation creates value. Doctoral education, joint centres, ERC support, Strategy AV21, science communication, infrastructure sharing, and international platforms all show how permeability can work. The Academy and universities do not need to become the same institution in order to work together effectively. Their difference is precisely what makes cooperation valuable.

The future of Academy-university relations will likely depend on several major issues. Doctoral reform will require clearer funding, better career conditions, stronger supervision, and more systematic involvement of Academy researchers in programme governance. European competition will require joint support for excellent grant applications and international recruitment. Knowledge transfer will require cooperation among university technology-transfer offices, Academy institutes, industry, public institutions, and legal frameworks. Open science will require shared repositories, libraries, data standards, and publication practices. Artificial intelligence and digital transformation will require cooperation across computer science, humanities, law, education, and social sciences. Public trust in science will require coordinated communication by universities and the Academy. These issues show that the relationship is becoming more complex, not less. AV ČR and universities will need deeper coordination while preserving institutional autonomy.

Thus, the relations between the Czech Academy of Sciences and universities form one of the central bridges in the Czech research and innovation system. The Academy is not a university, but it educates researchers, contributes to doctoral study programmes, provides supervisors, teaches at universities, maintains research infrastructures, and participates in joint workplaces and international platforms. Universities are not Academy institutes, but they depend on research excellence, doctoral cooperation, shared facilities, and collaboration with specialised public research institutions. The relationship is therefore based on complementarity rather than identity. It includes cooperation in doctoral education, joint centres such as BIOCEV, joint workplaces such as CERGE-EI, platforms such as CEFRES, ERC support mechanisms, Strategy AV21 programmes, science communication, infrastructure sharing, regional cooperation, and everyday scholarly collaboration. It also contains tensions over funding, prestige, students, evaluation, and policy influence. The modern Czech research system is strongest when these tensions are managed through partnership rather than institutional rivalry. AV ČR's role in relation to universities is therefore not peripheral to its mission. It is one of the ways in which the Academy transforms its institute-based research capacity into national scientific continuity, educational renewal, and European competitiveness.

2. Relations with Government, Industry, and Public Institutions

The relations of the Czech Academy of Sciences with government, industry, and public institutions reveal the external side of its modern public mission. AV ČR is not a university, not a ministry, not an industrial laboratory, and not a civic association. Yet it constantly interacts with all these worlds. Its legal status places it within the public structure of the Czech Republic, its institutes produce knowledge that can support government and public administration, and its research results may enter industrial, medical, technological, cultural, environmental, and social practice. The Academy therefore stands at a difficult intersection between autonomy and usefulness. It must remain sufficiently independent to protect scientific judgement, but sufficiently connected to serve public needs. This is why its relations with government, industry, and public institutions are not secondary to its identity. They are one of the ways in which the Academy's public research mission becomes visible outside its own institutes. The modern AV ČR does not serve society by abandoning fundamental research, but by creating pathways through which fundamental expertise can inform policy, innovation, public culture, administration, and long-term national resilience.

The legal foundation of the Academy's relation with the state is unusually strong. Act No. 283/1992 Coll. defines the Czech Academy of Sciences as an organisational body of the Czech Republic, financed from the state budget, and, for budgetary purposes, as having the status of a central authority of the Czech Republic (*Czech National Council, 1992*). This does not make AV ČR a ministry in the ordinary sense, but it does place the Academy inside the public order rather than outside it. The Academy is not merely a grant recipient or a private research association. It is a statutory institution of the Czech state, created to conduct research through its institutes and to represent a national research capacity. This legal status gives the Academy access to public resources, but it also imposes obligations of accountability, reporting, budgetary discipline, and public justification. The state does not simply purchase research from the Academy; it maintains the institutional conditions under which long-term public

research can exist. This is one of the distinctive features of the Czech model. The Academy's relation with government is therefore structural, not occasional.

At the same time, the Academy's public-law position does not imply direct governmental control over scientific conclusions. The Academy's statutes are adopted by the Academy Assembly and approved by the Government, and the President of the Academy is appointed by the President of the Republic after the Assembly's proposal has been discussed by the Government (*Czech National Council, 1992*; *Academy of Sciences of the Czech Republic, n.d.*). These procedures reveal a dual logic. The state recognises the Academy as a public institution, but the Academy's own self-governing bodies initiate its internal constitutional and leadership processes. This arrangement protects scientific self-government while maintaining public legitimacy. The Academy's relation with government is therefore not one of subordination in the intellectual sense. It is a relationship of public responsibility mediated by law. The government may approve statutes, allocate public resources through the state budget, and shape national research policy, but it does not become the source of scientific truth. The Academy serves the state best precisely by remaining a scientifically autonomous institution capable of independent expertise.

The Academy's contact with government is also mediated through national research, development, and innovation policy. The National Research, Development and Innovation Policy of the Czech Republic 2021+ presents research and innovation as essential conditions of prosperity, competitiveness, quality of life, and international recognition (*Council for Research, Development and Innovation, 2020*). AV ČR is one of the major public institutions capable of fulfilling this policy horizon because it maintains long-term expertise across natural, technical, medical, social, and human sciences. Its institutes do not operate only through isolated projects. They form a stable base of knowledge that government can draw upon when shaping research priorities, innovation strategies, environmental responses, health policy, cultural policy, security analysis, and public administration. In this sense, AV ČR is both an object and a subject of policy. It is funded and evaluated within the national system, but it also helps that system understand scientific possibilities and risks. The Academy's public role therefore includes participation in the formation of research policy itself.

The Academy Council's distribution of responsibilities for the 2025–2029 period shows how closely AV ČR is connected with state and public bodies. The President is responsible for overall management and development strategy, while other members of the Council deal with science policy and public funding in cooperation with state authorities, the Council for Research, Development and Innovation, the Ministry of Education, Youth and Sports, and other public actors (*Academy of Sciences of the Czech Republic, 2025*). Vice-Presidents and Council members have responsibilities connected with the Ministry of Industry and Trade, Ministry of Health, Ministry of Culture, Ministry of Foreign Affairs, Technology Agency of the Czech Republic, Czech Science Foundation, regional administrations, public-law entities, and other institutions (*Academy of Sciences of the Czech Republic, 2025*). This division of responsibilities is revealing because it transforms external relations into a structured governance field. Relations with government are not left to improvisation or occasional lobbying. They are distributed across leadership portfolios according to research areas, policy themes, funding channels, and public responsibilities. The Academy's external relations are therefore part of its internal architecture.

The Ministry of Education, Youth and Sports is one of the most important public actors for the Academy because it is central to higher education, research policy, doctoral training, international programmes, and parts of the research infrastructure environment. AV ČR cooperates with universities and participates in doctoral education, but the legal and financial conditions for such cooperation are strongly influenced by this ministry. Academy Council responsibilities concerning scientific training, cooperation with universities, joint institutes, doctoral study programmes, and project cooperation with the Ministry of Education, Youth and Sports show that the Academy's relation with government is inseparable from its relation with universities (*Academy of Sciences of the Czech Republic, 2025*). The ministry is therefore not simply a funder or regulator. It is part of the institutional triangle linking the Academy, universities, and the national education-research system. Through this triangle, the Academy contributes to the formation of researchers while remaining a non-university research organisation. Government policy thus shapes the conditions under which the Academy's educational mission can be fulfilled.

The Ministry of Industry and Trade represents a different interface. It is associated with the application sphere, industrial competitiveness, technology transfer, innovation policy, and the economic use of research results. The Academy Council assigns responsibility for knowledge and technology transfer, cooperation with the commercial sector, relevant providers such as the Ministry of Industry and Trade, and strategic supervision of intellectual property utilisation to the Vice-President for the First Research Area, with related responsibilities for the Second and Third Research Areas as well (*Academy of Sciences of the Czech Republic, 2025*). This indicates that industry relations are no longer treated as a marginal addition to the Academy's work. They have become a leadership-level concern. However, the Academy's relation with industry must be interpreted carefully. AV ČR does not become an industrial research department merely because it supports transfer. Its primary mission remains excellent research. The question is how to create pathways from research to application without subordinating research agendas to short-term commercial demand. The Ministry of Industry and Trade represents one public channel through which this balance is negotiated.

The Ministry of Health is another crucial partner because many Academy institutes conduct research with biomedical, physiological, microbiological, genetic, biotechnological, and medical relevance. The Vice-President for the Second Research Area is assigned liaison with relevant providers such as the Ministry of Health, as well as representation in knowledge and technology transfer and cooperation with the commercial sector for the life and chemical sciences (*Academy of Sciences of the Czech Republic, 2025*). This reflects the Academy's role in the health research ecosystem. AV ČR does not operate hospitals in the university-clinical sense, but its institutes produce knowledge that can support diagnostics, therapies, medical technologies, epidemiological understanding, physiology, microbiology, biotechnology, and public-health preparedness. Relations with health-related public institutions are therefore essential. They allow research results to move from laboratory knowledge toward clinical and public-health relevance. At the same time, the Academy's biomedical research requires ethical and legal frameworks that protect scientific integrity, patient interests, animal welfare, data protection, and public trust. Government relations in this field are therefore both scientific and regulatory.

The Ministry of Culture provides another important public interface, especially for the humanities, historical sciences, archaeology, art history, language, heritage, and public memory. The Vice-President for the Third Research Area is assigned cooperation with the

Ministry of Culture and coordination of activities in the field of archaeology concerning the protection of archaeological heritage and state monument care (*Academy of Sciences of the Czech Republic, 2025*). This portfolio reveals the Academy's cultural-public mission. AV ČR is not only a producer of laboratory science; it is also an expert institution for cultural heritage, historical interpretation, language, archives, monuments, and public memory. Its archaeological institutes, Institute of Art History, Institute of History, Institute of Contemporary History, Masaryk Institute and Archives, Czech Language Institute, Institute of Czech Literature, and other humanities institutes provide expertise that can support cultural policy, heritage protection, education, museums, archives, and public debate. Relations with the Ministry of Culture therefore show how the Academy serves the public through cultural knowledge. This is a form of relevance that cannot be reduced to industrial innovation.

The Ministry of Foreign Affairs and international public institutions also enter the Academy's external relations. Academy Council responsibilities include international cooperation, strategic priorities in foreign relations, participation in the European Research Area, trusted research, and liaison with the Ministry of Foreign Affairs (*Academy of Sciences of the Czech Republic, 2025*). This is important because science has become a field of international diplomacy, security, mobility, and strategic cooperation. AV ČR concludes agreements, participates in international projects, cooperates with foreign academies and research organisations, and represents Czech science abroad. At the same time, contemporary geopolitical conditions require attention to research security, data protection, sensitive technologies, and trusted international cooperation. The Academy must therefore balance scientific openness with institutional caution. Relations with foreign-policy actors do not mean politicising research; they mean recognising that research institutions operate in a world shaped by diplomacy, security, international norms, and strategic competition. The Academy's international public role is thus connected with both scientific universalism and national responsibility.

The Technology Agency of the Czech Republic is a particularly important actor in the application-oriented part of the research and innovation system. The Academy Council assigns conceptual matters of programme and project cooperation with the Technology Agency to the member responsible for Strategy AV21 development (*Academy of Sciences of the Czech Republic, 2025*). This is institutionally meaningful because Strategy AV21 connects top research with public interest, social challenges, and practical application. The Technology Agency's role in supporting applied research and innovation complements the Academy's own effort to connect fundamental research with application. Cooperation with such an agency can help Academy institutes move results toward prototypes, testing, partners, and applied projects. However, this cooperation again requires balance. The Academy must use applied-research instruments without allowing them to define the entire meaning of research. Technology-agency cooperation is strongest when it draws on the depth of Academy science rather than replacing it with short-term application pressure. It is one of the channels through which basic research can become publicly and economically useful.

The Czech Science Foundation represents another public funding interface, especially for fundamental research. Academy Council responsibilities include conceptual matters of programme and project cooperation with the Czech Science Foundation (*Academy of Sciences of the Czech Republic, 2025*). This relationship matters because the Academy's legitimacy depends on scientific excellence evaluated through peer competition as well as institutional funding. Researchers in AV ČR institutes compete for grants, participate in national and

international peer-review systems, and contribute to the quality of Czech research. The Czech Science Foundation supports a logic closer to investigator-driven research, while the Technology Agency supports more applied and innovation-oriented directions. AV ČR must work with both. This dual relationship mirrors the Academy's broader mission: fundamental research and applied relevance are not enemies, but different parts of the public research system. Relations with government funding agencies therefore shape the Academy's internal research culture.

Industry relations are most visible through knowledge and technology transfer. The Academy's Technology Transfer Centre, commonly referred to as CETAV or CeTTAV, was established to help CAS institutes move research results into practice, including intellectual property protection, patents, licensing, application partners, and support for commercialisation (*Academy of Sciences of the Czech Republic, 2022*; *Academy of Sciences of the Czech Republic, 2026*). This is important because researchers are not normally trained to navigate patent law, licence negotiations, spin-off creation, market analysis, or investor relations. A scientist may recognise a promising discovery, but still lack the administrative, legal, and commercial tools to bring it into application. CETAV provides an institutional bridge between research and the application sphere. It reduces the burden on individual researchers and institutes by offering specialised support. In this sense, technology transfer becomes a professional service within the Academy's public mission rather than a random by-product of individual entrepreneurship.

The PRAK programme, the Programme for Application Development and Commercialisation of the Academy, strengthens this transfer pathway. Academy communication states that PRAK has supported selected projects since 2023 and provides financial and expert assistance for developing the application potential of research results, including intellectual-property advice, finding application partners, commercialisation consultations, and preparation for spin-off creation (*Academy of Sciences of the Czech Republic, 2026*; *Technology Transfer Centre of the CAS, 2025*). The significance of PRAK lies in its intermediate position. Many research results are too early for private investment but too promising to remain only as publications. They need validation, market analysis, intellectual-property protection, prototype development, or partner search. PRAK helps fill this gap. It also gives the Academy an instrument for supporting applied potential without forcing all institutes into immediate commercial activity. A structured programme can select projects, provide expertise, and keep transfer aligned with research quality. This is a more mature model than expecting individual institutes to improvise commercialisation separately.

The creation of CAS Innovations, a joint-stock company designed to translate Academy research results into real-world applications, marks a further institutional step. Academy sources describe CAS Innovations as intended to support transparent procedures for founding technology companies, bringing external capital into Academy projects, consolidating procedures for spin-offs and start-ups, and strengthening cooperation with the application sphere (*Academy of Sciences of the Czech Republic, 2026*; *Academy of Sciences of the Czech Republic, 2026*). Its own public presentation emphasises deep-tech and life-science research emerging from the Academy and the building of competitive companies through incubation and investment (*CAS Innovations, 2026*). This is a significant development because it shows that the Academy is moving from occasional transfer toward a more systematised innovation architecture. At the same time, such a company raises important governance questions. How should public research results be valued? How should risks and returns be distributed? How

can scientific autonomy be protected when external capital enters? How can spin-offs serve public value as well as private profit? These questions do not weaken the importance of CAS Innovations; they define the responsibilities that must accompany it.

The Institute of Organic Chemistry and Biochemistry provides one of the strongest examples of successful Academy-industry relations. IOCB Tech, a subsidiary connected with the institute, has become a recognised technology-transfer actor that matches results of basic research with commercial partners and returns part of profits from licensing agreements to science through its foundation and other sponsorship activities (*Academy of Sciences of the Czech Republic, n.d.*). The IOCB example is important because it shows that basic research and commercial relevance can be linked without reducing the scientific institution to a company. High-level chemical and biochemical research can generate intellectual property, licensing revenue, pharmaceutical applications, and support for further science. However, this success is not easily generalisable to every institute or every discipline. A historical institute, linguistic institute, or ecological institute will not normally produce the same kind of licensing model. The Academy must therefore avoid using one successful commercialisation pathway as the universal standard. Different fields generate public and economic value in different ways. IOCB is a powerful model, but not the only model of relevance.

The relation with industry must also include the humanities and social sciences, although their transfer mechanisms are different. The Academy Council explicitly includes representation in knowledge and technology transfer and cooperation with the commercial sector for the Third Research Area, while also coordinating applied research in social sciences and humanities and interdisciplinary cooperation between social sciences and natural sciences (*Academy of Sciences of the Czech Republic, 2025*). This is important because knowledge transfer in the humanities and social sciences may take the form of policy analysis, legal expertise, cultural interpretation, language resources, educational materials, digital humanities, public databases, heritage conservation, communication strategies, or social diagnostics. It may involve ministries, museums, archives, courts, schools, municipalities, media, NGOs, and public-law institutions rather than only commercial companies. The concept of transfer must therefore be broad enough to include non-commercial public value. The Academy's relations with industry are important, but they do not exhaust the meaning of application. Public institutions often need knowledge more than products.

Strategy AV21 provides the broadest programme framework for relations with government, industry, and public institutions. Its motto, "Top research in the public interest", expresses the Academy's effort to connect excellent research with contemporary social challenges (*Academy of Sciences of the Czech Republic, 2017*). The strategy was designed around interdisciplinary research programmes focused on problems and challenges of contemporary society, practical application of research results in economically and socially important areas, and cooperation with the application sector, while preserving the key role of basic research (*Academy of Sciences of the Czech Republic, 2017*). Later Academy communication describes Strategy AV21 as a mechanism that has connected Academy institutes, universities, industrial partners, and the state and public sectors for more than a decade (*Academy of Sciences of the Czech Republic, 2026*). This makes Strategy AV21 one of the Academy's main bridges to external actors. It is not only an internal research programme. It is a platform through which public institutions, companies, and Academy institutes can meet around shared problems.

The Strategy AV21 model is important because it avoids a narrow commercial definition of application. Its programmes address themes such as artificial intelligence, public policy, energy, health, biodiversity, infectious diseases, materials, cultural heritage, society in motion, war and crisis, food, and global environmental change (*Academy of Sciences of the Czech Republic, 2026*). These themes involve companies in some cases, ministries in others, municipalities, schools, hospitals, museums, and civic actors in still others. Application may mean a prototype, but it may also mean an expert report, public-policy recommendation, educational resource, conservation method, open database, social analysis, or public communication strategy. This wide understanding is essential for an Academy that includes both plasma physics and philosophy, both organic chemistry and contemporary history. Strategy AV21 allows AV ČR to show that public relevance is not one thing. It is a family of relations between knowledge and society.

Science for Policy has become a particularly important expression of the Academy's public-institutional role. Academy Council responsibilities include coordination of Science for Policy, regional cooperation with state administration, self-government, public-law entities, and other institutions, and applied research in social sciences and humanities (*Academy of Sciences of the Czech Republic, 2025*). Strategy AV21 meetings in 2026 also presented Science4Policy as a platform supporting knowledge transfer and science-for-policymaking activities, including analyses for Academy leadership in communication with political representatives and consultations for research teams planning activities for public administration and evidence-based decision-making (*Academy of Sciences of the Czech Republic, 2026*). This shows that AV ČR is increasingly developing professional channels for bringing research into public decision-making. Science for Policy does not mean that scientists make political decisions. It means that public decisions should be informed by the best available knowledge. The Academy's role is to provide evidence, analysis, scenarios, expertise, and critical perspective.

This policy-facing role is especially important in areas where public administration faces complex problems. Climate adaptation requires atmospheric physics, hydrology, ecology, economics, law, regional planning, and social communication. Public health requires biomedical research, epidemiology, psychology, sociology, ethics, and public communication. Artificial intelligence requires computer science, law, philosophy, linguistics, labour-market analysis, education, and security expertise. Cultural heritage requires archaeology, conservation science, art history, local administration, law, and public education. Energy transition requires plasma physics, materials science, environmental analysis, economics, public acceptance, and regulation. No ministry can produce all this knowledge internally. AV ČR's institutes therefore act as reservoirs of specialised expertise. Through Science for Policy and related channels, this expertise can become available to public institutions in a usable form. The Academy thereby supports the state without becoming an arm of political authority.

Regional cooperation is another major public-institutional dimension. The Academy is often associated with Prague, but its institutes and workplaces are distributed across the Czech Republic. Academy Council responsibilities include regional cooperation with state administration, self-government, public-law entities, and other institutions within the regions (*Academy of Sciences of the Czech Republic, 2025*). This reflects the fact that many research problems have regional forms. Floods, drought, biodiversity, mining legacies, urban development, archaeological heritage, regional industry, local museums, education, and social transformation all require knowledge connected with place. Regional authorities may

need expertise that they cannot generate internally. Academy institutes can provide research-based support, while regional institutions provide local data, practical problems, and implementation contexts. Such cooperation helps prevent the Academy from becoming a centralised institution detached from the territory of the country. It also strengthens the public value of research by connecting it with local and regional needs.

Relations with public cultural institutions are particularly important for the Third Research Area. Archaeological institutes cooperate with monument care, museums, regional authorities, construction processes, and heritage institutions. The Institute of Art History contributes to conservation, architecture, visual culture, and heritage interpretation. The Masaryk Institute and Archives and historical institutes work with archives, editions, museums, and public memory. The Czech Language Institute provides language resources, expert guidance, dictionaries, corpora, and public linguistic consultation. The Institute of Czech Literature and other humanities institutes cooperate with libraries, schools, publishing, cultural institutions, and public education. These relations are not usually described in the language of "industry", but they are central to the Academy's public mission. Cultural institutions need research-based expertise to preserve, interpret, and communicate heritage. AV ČR supplies such expertise because it maintains specialised institutes that are not dependent only on market demand or short-term cultural projects.

Relations with public health institutions also show the importance of the Academy beyond industry. During the COVID-19 pandemic, Academy institutes tested samples, developed tests, contributed to protective materials, and provided economic and other expert advice (*Academy of Sciences of the Czech Republic, 2020*; *Academy of Sciences of the Czech Republic, 2020*). BIOCEV, a joint centre of the Academy and Charles University, was authorised for large-scale testing, demonstrating the capacity of research infrastructures to enter emergency public service (*Academy of Sciences of the Czech Republic, 2020*). The pandemic revealed that public research institutions are valuable not only when they commercialise discoveries, but also when they can mobilise expertise rapidly for society. Such mobilisation requires prior investment in laboratories, trained personnel, methods, and institutional trust. Public institutions benefit from research capacity that exists before a crisis begins. The Academy's relation with health institutions is therefore part of national preparedness.

Relations with industry also occur through direct cooperation between institutes and companies. Such cooperation may involve contract research, licensing, joint development, consulting, testing, materials analysis, instrumentation, biotech development, software, environmental technologies, energy systems, and applied social research. The Academy's transfer infrastructure helps structure these relations, but many contacts are built by individual institutes and teams. Strategy AV21 explicitly opened research programmes to partners from corporations, institutions of state and regional administration, foreign research groups, and other organisations (*Academy of Sciences of the Czech Republic, 2017*). This openness is important because industry may bring real-world problems, scaling capacities, manufacturing experience, and market knowledge that research institutions lack. At the same time, companies may benefit from the Academy's fundamental expertise and credibility. Cooperation is strongest when both sides understand the difference between scientific research and commercial development. The Academy should not become a subcontractor for routine industrial tasks, but it can be an excellent partner where advanced knowledge is needed.

Intellectual property is one of the most sensitive areas in industry relations. Academy Council responsibilities include coordination and conceptual oversight of intellectual property utilisation across research areas (*Academy of Sciences of the Czech Republic, 2025*). This is necessary because public research results may generate patents, software, licences, designs, biological materials, databases, or know-how. Without careful IP management, valuable results may be lost, misused, or blocked from wider benefit. With excessive commercial control, however, public research may become too closed or distorted. The Academy must therefore manage IP as a public research institution, not as an ordinary private corporation. It needs transparent rules, fair treatment of researchers, protection of public interests, and careful selection of commercial pathways. CETAV, PRAK, and CAS Innovations are tools for professionalising this field. They represent the Academy's recognition that transfer requires institutional competence, not only scientific excellence.

The new Act No. 328/2025 Coll., on research, development, innovation and knowledge transfer, strengthens the importance of this external orientation. The Act places knowledge transfer directly in the legal vocabulary of Czech research policy and regulates publicly supported scientific activity, ethics, information provision, expenditure, and the roles of public authorities in research, development, innovation, and knowledge transfer (*Parliament of the Czech Republic, 2025*). For AV ČR, this legal shift confirms that relations with government, industry, and public institutions will become even more central. Knowledge transfer is no longer an occasional supplement to research. It is becoming part of the expected architecture of public science. The Academy must therefore professionalise transfer while protecting its fundamental research mission. The challenge will be to ensure that transfer includes not only commercialisation, but also public-policy advice, open science, education, cultural expertise, environmental guidance, health preparedness, and social analysis. The new law intensifies the need for a broad and nuanced interpretation of public value.

Open science also shapes the Academy's relations with public institutions and society. The Academy's Open Science Principles emphasise that results of scientific activities should have the widest possible benefit for society and that open exchange of knowledge, sharing, and collaboration are important for science (*Academy of Sciences of the Czech Republic, 2024*). This principle affects relations with government, industry, and public institutions because knowledge is increasingly expected to circulate through open publications, data, repositories, standards, and transparent methods. Public institutions may need access to data and analyses; companies may need clarity about what can be shared and what must be protected; citizens may expect publicly funded research to be accessible. Open science therefore complicates and enriches transfer. It is not the opposite of intellectual property, but it requires a careful balance between openness and protection. The Academy's public role depends on navigating this balance responsibly. Knowledge must be useful, but also trustworthy and, where possible, accessible.

Relations with industry and government also require ethical safeguards. Public research institutions may face conflicts of interest, pressure from funders, political expectations, commercial confidentiality, sensitive technologies, and research-security concerns. The Academy's Code of Ethics, Code of Conduct, and scientific-integrity mechanisms are therefore relevant to external relations as well as internal culture (*Academy of Sciences of the Czech Republic, 2024*; *Academy of Sciences of the Czech Republic, 2024*). Cooperation with companies or public authorities can strengthen research, but it can also create risks if partners seek control over results, suppress inconvenient findings, or influence research agendas

improperly. Ethical governance helps protect the Academy's credibility. The Academy must be useful without becoming dependent. It must cooperate without selling its scientific judgement. Integrity is therefore one of the conditions of successful external engagement.

Public communication is another form of relation with public institutions and society. The Academy Council includes responsibilities for presentation of research results, cooperation with media, communication with the public, science popularisation, and publication activities (*Academy of Sciences of the Czech Republic, 2025*). This communication function is especially important when research results enter policy debates, industrial applications, public-health controversies, environmental conflicts, or cultural questions. Public institutions often need expert knowledge, but citizens also need explanations. The Academy must therefore communicate not only with ministries and companies, but with the public that ultimately legitimises public research. Good communication makes the Academy's relations with government and industry more transparent. It helps prevent the impression that science is either politically controlled or commercially captured. Through public communication, AV ČR can show that its external relations are grounded in public interest.

The Academy's relation with the President of the Republic and other high state representatives also has symbolic and practical significance. In 2026, President Petr Pavel visited three Academy institutes and publicly emphasised the importance of prioritising science, encountering research ranging from cancer-treatment drug development and thermonuclear fusion to sociocultural anthropology (*Academy of Sciences of the Czech Republic, 2026*). Such visits matter because they publicly affirm the Academy's national role. They show the state recognising not one discipline, but the breadth of Academy research. They also allow the Academy to present its work directly to political leadership in concrete institutional settings. Symbolic recognition does not replace budgetary support or legal autonomy, but it strengthens public visibility. In a democratic state, high-level attention to science can help communicate that research is part of national capacity, not a luxury. The Academy's relations with government therefore include gestures, visits, speeches, and public recognition as well as laws and budgets.

Relations with industry and public institutions also differ strongly across disciplines. In the first research area, cooperation may involve instruments, photonics, materials, plasma technologies, mechanics, energy, computation, and environmental modelling. In the second research area, it may involve biotechnology, pharmaceuticals, diagnostics, biomedical methods, plant science, microbiology, ecology, and global-change adaptation. In the third research area, it may involve law, heritage protection, language resources, social policy, public administration, education, media, cultural institutions, and crisis interpretation. The Academy's leadership recognises this diversity by assigning transfer and external-cooperation responsibilities across all three research areas (*Academy of Sciences of the Czech Republic, 2025*). This is essential because one model of application cannot fit all fields. The value of a legal opinion, a dictionary, a climate model, a polymer, a drug candidate, a sociological survey, and a heritage-conservation method must be understood differently. A mature Academy does not force all institutes into one template of relevance.

The Academy's relations with public institutions also include scientific societies and expert communities. Act No. 283/1992 Coll. states that the Academy supports scientific societies associated in the Council of Scientific Societies and represents the Learned Society of the Czech Republic toward similar foreign scientific institutions (*Czech National Council, 1992*).

This function connects the Academy with the wider scholarly public beyond its own institutes. Scientific societies represent disciplines, organise conferences, publish, educate, and maintain professional communities. Supporting them allows AV ČR to strengthen Czech science as a whole, not only its own institutional interests. This is another form of public service. The Academy acts as a stabilising and representative body within the national scientific ecosystem. Its relations with public institutions therefore include not only ministries and companies, but also the broader organised world of scholarship.

The relation with public administration is also visible in the Academy's statutory duty to provide expert opinions, positions, and recommendations. The Statutes state that institutes gather, process, and distribute scientific information and provide scientific expert opinions, positions, and recommendations (*Academy of Sciences of the Czech Republic, n.d.*). This is a very important provision because it formally recognises the advisory function of Academy institutes. Expert opinions may concern environmental risks, heritage protection, public health, language, law, technology, social policy, economics, education, energy, archaeology, and other areas. Such advice is not identical with political decision-making. It supplies knowledge that public authorities can use. The Academy's authority in this field depends on independence, transparency, and scientific quality. Public administration needs expertise that is not merely consultancy for hire, but research-based judgement grounded in long-term institutional competence. AV ČR is one of the few Czech institutions capable of providing such expertise across a broad disciplinary spectrum.

Industry relations can also strengthen research careers and institutional attractiveness. Technology transfer, spin-offs, applied partnerships, and industrial collaboration can create new career pathways for researchers, especially those interested in entrepreneurship, application, intellectual property, or work outside traditional academic tracks. CAS Innovations and PRAK may help create a more supportive environment for researchers who wish to develop practical applications without leaving the Academy ecosystem entirely (*Academy of Sciences of the Czech Republic, 2026*; *CAS Innovations, 2026*). However, the Academy must ensure that such pathways do not create a hierarchy in which commercialised research is valued more highly than fundamental or cultural research. Career systems must recognise different forms of excellence. A researcher who creates a spin-off, a researcher who produces a major monograph, a researcher who builds a dataset, and a researcher who provides policy expertise may all contribute to the Academy's mission. External relations should expand career possibilities, not narrow the definition of success.

The Academy's external relations also have a regional and social-equity dimension. Cooperation with industry and government often concentrates around strong urban and technological centres, but public research should serve the whole country. Regional cooperation with self-government, public-law entities, and other regional institutions can help distribute expertise beyond Prague and major university cities (*Academy of Sciences of the Czech Republic, 2025*). Environmental research can support regions facing drought, floods, mining legacies, or biodiversity loss. Social-science research can help analyse regional inequalities and demographic change. Heritage institutes can support local museums, monuments, and archaeological protection. Technical institutes can cooperate with regional companies. Such relations strengthen the Academy's public legitimacy because they show that its research is not only for elite scientific circles. It belongs to national society in its regional diversity. Public research becomes meaningful when it reaches places where problems are experienced.

The Academy must also manage the risk of instrumentalisation. Government may want quick expert confirmation of policy decisions. Industry may want profitable results without full openness. Public institutions may want authoritative support for administrative priorities. Media may want simplified statements. The Academy's role is to cooperate, but not to become an instrument. Scientific expertise must remain able to disagree, warn, qualify, or refuse overconfident conclusions. This is particularly important in controversial areas such as climate, energy, public health, cultural memory, migration, artificial intelligence, security, and law. The Academy's public value depends on its credibility, and credibility depends on independence. External relations are therefore strongest when partners understand that the Academy's usefulness comes from its autonomy. A captured Academy would be less useful, not more useful. Public trust is built when cooperation and independence coexist.

The relation with government, industry, and public institutions therefore reflects the broader European transformation of research organisations. Public research institutions are increasingly expected to produce excellent science, support innovation, transfer knowledge, cooperate with public administration, communicate with society, protect integrity, manage intellectual property, support open science, and contribute to resilience. AV ČR has responded through Strategy AV21, CETAV, PRAK, CAS Innovations, Science for Policy, open-science principles, research-assessment reform, and leadership portfolios dedicated to external cooperation. These initiatives show that the Academy is not frozen in the institutional settlement of the 1990s. It is adapting to a research system in which public value must be demonstrated through multiple channels. However, adaptation must not destroy the Academy's distinctive strength: long-term fundamental and interdisciplinary research across a broad disciplinary spectrum. External engagement must grow from that strength rather than replace it.

Thus, the Czech Academy of Sciences occupies a complex but essential position between government, industry, public administration, cultural institutions, regional authorities, health systems, scientific societies, and society at large. Its relation with government is grounded in public law, state-budget responsibility, research policy, ministry cooperation, and participation in the national RDI system. Its relation with industry is organised increasingly through professional transfer mechanisms such as CETAV, PRAK, CAS Innovations, intellectual-property management, spin-offs, licensing, and application partnerships. Its relation with public institutions includes expert opinions, Science for Policy, cultural heritage, public health, regional cooperation, open science, education, and public communication. These relations do not make the Academy less autonomous. Properly structured, they give autonomy public meaning. AV ČR serves Czech society not by becoming a ministry, company, or consultancy, but by remaining an independent public research institution whose knowledge can move responsibly into policy, innovation, culture, health, environment, and civic life. The Academy's external relations therefore form one of the main channels through which long-term research becomes public value.

3. AV ČR as a National Centre of Long-Term Expertise

The Czech Academy of Sciences occupies a distinctive place in the Czech research and innovation system because it is not designed merely to respond to immediate intellectual, political, economic, or technological demand. Its deeper function is to preserve, renew, and mobilise long-term expertise. This expertise is not a single resource stored at the centre of the

Academy. It is distributed across institutes, disciplines, laboratories, archives, libraries, field stations, collections, research teams, instruments, databases, and scholarly traditions. The Academy's statutory mission already points in this direction by defining its work through research in natural, technical, social, and human sciences, the advancement of understanding at the international level, the education of researchers, and the application of results for education, culture, competitiveness, and the solution of current problems of society (*Academy of Sciences of the Czech Republic, n.d.*). Such a mission cannot be fulfilled by short-term projects alone. It requires institutions capable of remembering, observing, comparing, interpreting, and advising over long periods. AV ČR is therefore best understood not only as a producer of research outputs, but also as a national centre of accumulated competence. Its value lies partly in what it publishes today, but also in what it is able to know tomorrow because it has sustained knowledge for decades.

Long-term expertise differs from ordinary expertise in its temporal depth. A specialist may answer a current question; a long-term expert institution can explain how that question emerged, how it has changed, what evidence has accumulated, and what uncertainties remain. This is especially important for a public research organisation whose fields range from plasma physics and molecular biology to archaeology, law, sociology, linguistics, atmospheric physics, hydrology, art history, and philosophy. Many of these fields require continuity that exceeds political cycles, grant periods, commercial planning horizons, and media attention. Climate trends, language change, demographic transformation, biodiversity decline, institutional reform, historical memory, legal development, materials durability, disease mechanisms, and technological risk cannot be understood through isolated short-term observation. They require long sequences of data, interpretive traditions, trained personnel, and institutional memory. AV ČR provides precisely these conditions. In this sense, the Academy's long-term expertise is not a passive archive. It is an active capacity to understand change because it preserves continuity.

The institute-based architecture of the Academy is the main institutional form of this long-term expertise. Each institute carries a particular scientific memory. The Institute of Mathematics preserves traditions of formal reasoning and abstract modelling. The Institute of Atmospheric Physics sustains knowledge of the physical atmosphere and its changes. The Institute of Hydrology works with water systems that require long-term observation. The Institute of Botany and the Biology Centre maintain biological and ecological expertise connected with ecosystems, taxonomy, and conservation. The J. Heyrovský Institute of Physical Chemistry and the Institute of Organic Chemistry and Biochemistry carry traditions of chemical excellence with contemporary biomedical and technological relevance. The Institute of State and Law, Institute of Sociology, Institute of History, Institute of Contemporary History, Czech Language Institute, and Institute of Art History preserve forms of social, legal, historical, linguistic, and cultural knowledge that are equally long-term in character (*Academy of Sciences of the Czech Republic, n.d.*). The Academy's national role emerges from the fact that these institutes exist together. No single institute could play this role alone, but the network can.

The natural and technical sciences show the infrastructural side of long-term expertise. Large instruments, observatories, laboratories, plasma devices, microscopy facilities, materials-testing capacities, computational systems, geological data, hydrological monitoring, and atmospheric models require stable institutional care. They cannot be built, abandoned, and rebuilt according to every short budgetary cycle. The Academy's research areas include fields in which long-term observation is explicitly central, such as atmospheric circulation in Central

Europe, typical ecosystems in selected localities, hydrological and geological processes, and bio-ecological mapping of the country (*Academy of Sciences of the Czech Republic, n.d.*). These examples reveal why the Academy matters nationally. A state must know its own territory, environment, climate risks, material capacities, and technological options. Such knowledge is not produced by administrative order. It is produced by institutes that have time, instruments, methods, and trained researchers. AV ČR therefore functions as a scientific memory of the Czech physical and environmental world.

The life and medical sciences show another form of long-term expertise: the preservation of knowledge about living systems before public need becomes urgent. Molecular mechanisms, immune processes, microbial behaviour, plant physiology, pathophysiology, environmental interactions, animal models, genomic data, and ecological change all require sustained investigation. When a public-health crisis appears, a new disease spreads, a crop problem emerges, or biodiversity declines, society often suddenly recognises the value of expertise that had been developing quietly for years. The COVID-19 pandemic made this pattern visible, but it did not create it. Research preparedness depends on institutions that existed before the emergency. Academy institutes in microbiology, experimental medicine, molecular genetics, physiology, organic chemistry and biochemistry, biotechnology, botany, and global change research provide capacities that can be mobilised when society needs them. Their public value is therefore not only in direct application. It lies in readiness. A national centre of long-term expertise keeps knowledge alive before the precise moment of need is known.

The humanities and social sciences reveal that long-term expertise is not only a matter of laboratories and datasets. Societies also need long-term interpretive capacity. They need institutions that understand language change, legal development, public opinion, social transformation, historical trauma, cultural memory, philosophical traditions, literary heritage, ethnic relations, and the meaning of political events. Czech modern history has been shaped by repeated ruptures: imperial transformation, national revival, independence, occupation, communist takeover, the Prague Spring, normalisation, the Velvet Revolution, the dissolution of Czechoslovakia, accession to the European Union, and contemporary geopolitical insecurity. Understanding these ruptures requires more than public commentary. It requires archives, editions, fieldwork, historical comparison, legal analysis, sociological data, linguistic expertise, and philosophical reflection. AV ČR's humanities and social-science institutes provide this long-term interpretive competence. They make the Academy not only a scientific institution in the narrow sense, but also a civic institution of memory and public understanding.

The Academy's long-term expertise is especially important because the Czech research and innovation system contains actors with different temporal horizons. Universities educate students and conduct research, but their institutional rhythm is strongly shaped by teaching, enrolment, accreditation, and degree programmes. Companies develop technologies and products, but their horizon is often shaped by markets, investors, competition, and commercial return. Ministries and public agencies work within political, legal, and budgetary cycles. Grant systems stimulate competition and excellence, but they usually operate through fixed-term projects. AV ČR occupies a different temporal niche. It can sustain institute-based expertise across decades while still participating in competitive funding and public policy. This does not make it isolated from the rest of the system. On the contrary, it makes the Academy valuable to the rest of the system. It supplies continuity where other actors often face shorter cycles.

The national centre function also depends on the Academy's evaluation culture. Long-term expertise cannot be defended merely by appealing to tradition. It must be regularly tested, renewed, and judged against international standards. AV ČR has performed regular internal evaluations since the 1990s and has progressively developed this process (*Academy of Sciences of the Czech Republic, 2024*). A major recent evaluation involved hundreds of teams, thousands of research outputs, and nearly two thousand international experts, with an emphasis on peer review, multiple criteria, disciplinary context, research integrity, and the protection of investments in science (*Academy of Sciences of the Czech Republic, 2026*). This matters because long-term institutions can become stagnant if they are never evaluated. At the same time, evaluation must not destroy the long horizon it is supposed to strengthen. The Academy's emphasis on peer review and disciplinary context shows that it understands evaluation as a means of renewing expertise rather than replacing expertise with mechanical indicators. Long-term expertise survives only when continuity and criticism are held together.

The Academy's participation in the reform of research assessment reinforces this logic. By signing the Agreement on Reforming Research Assessment and joining the Coalition for Advancing Research Assessment, AV ČR aligned itself with a broader movement to recognise the diversity of research contributions, place informed peer review at the centre of assessment, avoid inappropriate use of metrics, and respect different kinds of research activity (*Academy of Sciences of the Czech Republic, 2024*). This is particularly important for an institution with such disciplinary breadth. A long-term hydrological dataset, a mathematical theorem, a biological model, an archaeological excavation, a legal commentary, a critical edition, a policy report, a dictionary, and a technological prototype all represent different forms of expertise. If the Academy were judged by one narrow metric, much of its long-term value would become invisible. Responsible assessment is therefore not a bureaucratic fashion. It is a condition for preserving national expertise across the whole spectrum of knowledge.

Long-term expertise also requires talent policy. Institutions do not remember by themselves; people carry methods, questions, skills, and professional judgement. The Academy of the Future programme, launched in 2026, explicitly aims to make AV ČR more attractive to researchers from the Czech Republic and abroad and to support scientific careers, international recruitment, returns after career breaks, and the development of ambitious research ideas (*Academy of Sciences of the Czech Republic, 2026*). This initiative is important because long-term expertise can disappear if younger generations do not enter and renew it. Archives may remain, instruments may remain, and institutes may remain, but without talented researchers the knowledge tradition becomes hollow. The Academy must therefore combine institutional memory with active career support. It must attract people capable of continuing and transforming research traditions. A national centre of expertise is not a museum of earlier knowledge; it is a living environment for future knowledge.

The formation of young researchers is another crucial element. AV ČR is not a university, but it participates in doctoral education and researcher training through cooperation with universities, supervision, research teams, and specialised institutes (*Academy of Sciences of the Czech Republic, n.d.*). This gives doctoral students and early-career researchers access to environments where research is the primary mission. They learn not only techniques or facts, but also the slow craft of expertise: how to design questions, handle evidence, use instruments, read archives, interpret data, publish responsibly, cooperate internationally, and work within scientific communities. Long-term expertise is transmitted through such practices. It cannot be reduced to written outputs. The Academy's role in doctoral training

therefore has national significance. It ensures that the Czech Republic does not merely import expertise when needed, but cultivates it internally over generations.

Strategy AV21 gives the Academy's long-term expertise a public-facing and problem-oriented form. Its motto, "Top research in the public interest", captures the idea that excellent research should be connected with social needs without losing its depth (*Academy of Sciences of the Czech Republic, 2017*). The strategy works through interdisciplinary programmes that mobilise institutes around problems such as artificial intelligence, biodiversity, food, health, energy, space, society, identity, infectious diseases, cultural materiality, and global change (*Academy of Sciences of the Czech Republic, 2026*). This is important because long-term expertise can be misunderstood as inward-looking tradition. Strategy AV21 shows that accumulated knowledge can be organised toward present and future challenges. It does not replace institutes; it activates them. It creates temporary and flexible bridges across the long-standing structure of expertise. In this way, the Academy becomes capable of addressing public problems without abandoning its institute-based depth.

Science for Policy further strengthens the Academy's role as a national centre of expertise. Public authorities often need knowledge that is independent, interdisciplinary, and rapidly available in usable form. The Academy's recent leadership structure includes Science for Policy, regional cooperation, applied research in social sciences and humanities, and cooperation with public-law institutions among its recognised responsibilities (*Academy of Sciences of the Czech Republic, 2025*). Strategy AV21 has also developed Science4Policy as a platform for supporting knowledge transfer and evidence-based decision-making. This does not mean that AV ČR becomes a political institution. Rather, it means that the Academy's expertise can be translated into analyses, recommendations, policy briefs, consultations, and public-administration support. The Academy's long-term knowledge becomes public expertise when it helps decision-makers understand complexity. In this role, AV ČR serves the state without becoming intellectually dependent on the state.

The Academy's expertise is particularly valuable in areas where public problems are complex and slow-moving. Climate change is one such area. It requires atmospheric physics, hydrology, ecology, botany, geology, chemistry, modelling, economics, law, sociology, and public communication. The Academy's institutes can contribute to all these dimensions. Biodiversity decline similarly requires taxonomy, ecology, landscape history, legislation, public perception, and conservation practice. Energy transition requires plasma physics, materials science, thermomechanics, economics, law, environmental assessment, and public trust. Artificial intelligence requires computer science, information theory, mathematics, linguistics, psychology, philosophy, law, ethics, and social analysis. Cultural heritage requires archaeology, art history, history, chemistry, materials science, digital technologies, conservation, and public education. AV ČR functions as a national centre of long-term expertise precisely because it can assemble such knowledge across fields. Its breadth becomes practical when society faces problems that no single discipline can solve.

The Academy also offers expertise in sudden crises. A pandemic, war, cyber threat, energy shock, flood, drought, or public-information crisis may demand rapid mobilisation of knowledge. Yet rapid response depends on slow preparation. During the COVID-19 pandemic, Academy institutes contributed to testing, protective materials, expert advice, and economic and social analysis because relevant infrastructures and teams already existed (*Academy of Sciences of the Czech Republic, 2020*). Similarly, the Academy's Researchers at Risk

Fellowship programme after Russia's full-scale invasion of Ukraine showed that AV ČR could act as a scientific institution with ethical and geopolitical awareness, supporting researchers whose work was threatened by war or persecution (*Academy of Sciences of the Czech Republic, 2022*). Such actions are not simply humanitarian or operational episodes. They reveal a deeper institutional function. A national academy preserves not only instruments and data, but also academic freedom, scientific solidarity, and the capacity to protect knowledge under pressure.

International embeddedness is another condition of national expertise. A national centre of expertise cannot be provincial. AV ČR participates in European and global scientific organisations, including bodies that offer scientific advice to European policymakers, support scientific integrity, protect cultural heritage, and represent academies in international contexts (*Academy of Sciences of the Czech Republic, n.d.*). Such participation gives Czech expertise access to wider standards and gives the Czech Republic a voice in international science. It also allows Academy researchers to contribute to expert panels, advisory reports, and transnational policy debates. In this sense, AV ČR serves the nation by being international. Its national value increases when its knowledge is tested, compared, and recognised beyond national borders. Long-term expertise must be open to the world because modern problems are rarely purely national.

The European Research Area is particularly important in this respect. Academy leadership responsibilities include involvement in European Research Area programmes, international cooperation, trusted research, and participation in European structures (*Academy of Sciences of the Czech Republic, 2025*). This reflects the fact that Czech science operates within European funding, infrastructures, evaluation standards, mobility networks, and policy debates. AV ČR's long-term expertise must therefore be compatible with European scientific expectations. At the same time, the Academy can bring specifically Czech capacities into European cooperation: Central European environmental data, historical experience, linguistic and cultural expertise, biomedical and chemical traditions, technological skills, and institute-based research depth. European integration does not dissolve national expertise. It gives it a wider field of action. AV ČR's challenge is to be both nationally rooted and internationally consequential.

Open science changes the public meaning of long-term expertise. The Academy's Open Science Principles state that results of scientific activities should have the widest possible benefit for society and that open exchange of knowledge, sharing, and collaboration are important for science (*Academy of Sciences of the Czech Republic, 2024*). This is particularly relevant for long-term data, publications, methods, and research infrastructures. If the Academy maintains knowledge over decades, that knowledge should not remain unnecessarily locked within institutional walls. Open access, data sharing, repositories, reproducibility, and responsible communication can make long-term expertise more useful to researchers, public institutions, educators, companies, and citizens. Openness does not mean abandoning ethical, legal, security, or intellectual-property constraints. It means that the public value of publicly supported expertise is strengthened when knowledge can circulate responsibly. AV ČR's long-term role therefore increasingly includes not only producing expertise, but making it accessible.

Knowledge transfer also belongs to this national centre function. The new Czech legal framework on research, development, innovation, and knowledge transfer strengthens the

expectation that public research institutions will create pathways from knowledge to use (*Parliament of the Czech Republic, 2025*). AV ČR has responded through technology-transfer structures, application programmes, and initiatives such as CAS Innovations, which aim to professionalise the movement of research results toward real-world applications (*Academy of Sciences of the Czech Republic, 2026*). However, transfer should be understood broadly. In natural and technical sciences, it may involve patents, licences, prototypes, spin-offs, instruments, materials, or biomedical applications. In social sciences and humanities, it may involve legal expertise, policy analysis, language resources, heritage conservation, educational content, archives, public memory, and cultural interpretation. A national centre of expertise serves society through many forms of transfer. Commercialisation is one of them, but not the only one.

The Academy's long-term expertise also functions as a safeguard against the loss of difficult knowledge. Some fields are vulnerable because they do not immediately attract market funding, mass student interest, or political attention. Taxonomy, philology, manuscript editing, atmospheric observation, mathematical theory, archaeological documentation, long-term ecological monitoring, legal history, art-historical conservation, or certain areas of fundamental physics may seem remote from urgent public demand until their absence becomes a problem. AV ČR helps prevent such loss. It maintains small, specialised, and cumulative fields as part of a broader national system. This is a quiet but essential function. A country that allows difficult expertise to disappear may find itself dependent on external knowledge when crises or opportunities arise. The Academy's public mission includes keeping intellectual possibilities open.

Long-term expertise also gives AV ČR a special role in public trust. In a world of rapid information circulation, disinformation, polarisation, and short-term media cycles, society needs institutions whose authority is based on sustained research rather than immediate opinion. The Academy can provide expert voices on climate, health, language, law, history, energy, social change, technology, and culture because its institutes have accumulated knowledge over time. Trust does not arise automatically from the name "Academy". It must be earned through quality, integrity, openness, communication, and independence. The Code of Ethics, research-assessment reform, open-science principles, ombudsperson structures, and public communication all contribute to this trust (*Academy of Sciences of the Czech Republic, 2024*; *Academy of Sciences of the Czech Republic, 2024*). Long-term expertise without trust would have limited public effect. Trust turns expertise into public authority.

The Academy's public authority is strongest when it remains independent. A national centre of long-term expertise must be able to advise government, cooperate with industry, support public institutions, and communicate with society without becoming captured by any of them. This is a delicate balance. If the Academy becomes too detached, its expertise may not reach the public problems it should help address. If it becomes too dependent on political or commercial demands, its credibility may weaken. AV ČR's legal and governance architecture is designed to manage this balance through public law, self-government, evaluation, ethical standards, institute autonomy, and accountability. The Academy serves the Czech state best when it is not simply an instrument of the state. It serves industry best when it is not merely a subcontractor for industry. It serves society best when it remains committed to evidence, integrity, and long-term thinking.

The idea of long-term expertise also helps explain why AV ČR must be broad rather than narrowly specialised. A national centre of expertise cannot know in advance which forms of knowledge will become crucial. A pandemic may suddenly make microbiology, modelling, psychology, sociology, law, and public communication central. A war may make history, international relations, energy research, cybersecurity, language expertise, and migration studies urgent. A climate event may make hydrology, atmospheric physics, ecology, economics, regional planning, and public policy indispensable. A technological transformation may make artificial intelligence, ethics, linguistics, labour studies, law, and education central. A cultural conflict may make history, archaeology, ethnology, literature, and philosophy newly relevant. The Academy's breadth is therefore a form of preparedness. It keeps many kinds of knowledge alive because the future cannot be fully predicted.

This breadth also distinguishes AV ČR from purely innovation-oriented institutions. Innovation is important, and the Academy increasingly supports knowledge and technology transfer. Yet a national centre of long-term expertise cannot measure its value only by immediate innovation outputs. Some of its most important contributions are slow, indirect, or interpretive. A long-term climate dataset, a legal analysis, a critical edition, a dictionary, a sociological survey, a mathematical theory, or an archaeological map may not become a market innovation, but it can shape public decisions, cultural memory, education, scientific methods, and future research. The Academy therefore widens the meaning of national benefit. It shows that public research supports society not only through products, but through understanding. This broader understanding is essential if public policy is to recognise the full value of science and scholarship.

The Academy's role as a centre of long-term expertise also depends on infrastructure in the broadest sense. Infrastructure includes not only expensive instruments, but also libraries, archives, collections, databases, software, field sites, animal facilities, observatories, language corpora, research schools, administrative support, technology-transfer offices, open-science services, and international cooperation networks. These infrastructures allow expertise to persist beyond individual careers. A scientist may retire, move abroad, or change field, but an institute with infrastructure can preserve and transmit knowledge. The Library of the CAS, institute archives, biological collections, geological records, ecological datasets, observatories, laboratories, and digital repositories all contribute to this continuity. They are not merely support services. They are part of the Academy's national knowledge capacity. Long-term expertise lives in people, but it is sustained by institutions and infrastructures.

The Academy's long-term expertise has a regional as well as national dimension. Research on hydrology, biodiversity, geology, archaeology, atmospheric processes, regional social change, cultural heritage, and environmental risks often depends on specific places. Academy institutes and workplaces outside Prague connect the institution with Brno, České Budějovice, Ostrava, Ondřejov, Průhonice, Řež, and other locations. These regional presences allow the Academy to observe, collect, interpret, and cooperate beyond the capital. They also make expertise available to regional authorities, museums, universities, public institutions, and local communities. A national centre of expertise must not become a centralised abstraction. It must know the country in its regional diversity. AV ČR's institute geography helps make this possible.

The symbolic dimension of this role should not be underestimated. The Academy represents a continuity of Czech learned life that reaches back to early scientific societies, national revival

scholarship, the Czech Academy of Sciences and Arts, the Czechoslovak Academy of Sciences, and the post-1989 democratic reconstruction. This continuity gives AV ČR cultural legitimacy, but it also imposes responsibility. The Academy must not live only from inherited prestige. It must reinterpret its historical role for contemporary society. As a national centre of long-term expertise, it connects historical memory with future preparedness. It tells Czech society that knowledge is not a disposable service, but a public inheritance that must be renewed. The Academy's history therefore becomes part of its modern function. It gives depth to its claim that public research needs institutions able to survive political, economic, and intellectual change.

At the same time, the Academy must avoid the danger of institutional self-satisfaction. Long-term expertise can become conservative if it protects routines rather than knowledge. Institutes may become attached to established methods, internal hierarchies, or inherited reputations. The Academy's evaluation system, international peer review, career programmes, open-science policies, and interdisciplinary strategies are therefore necessary correctives. They force the institution to ask whether its expertise remains excellent, relevant, ethical, and internationally credible. Long-term expertise must be renewed through criticism. It must remain open to young researchers, new methods, foreign colleagues, interdisciplinary problems, and public scrutiny. The Academy's future depends on its ability to preserve memory without becoming trapped by memory. This is the difference between tradition and stagnation.

The Academy also has to defend the time required for serious expertise. Contemporary public life often favours speed: rapid opinions, fast innovation, immediate impact, short projects, quick indicators, and visible deliverables. AV ČR must participate in this world without fully surrendering to it. Some questions genuinely require urgent response, and the Academy must be able to mobilise rapidly when needed. Yet many of its most important contributions require slowness: long observation, deep reading, repeated experiments, gradual theory-building, careful editing, comparative analysis, and patient interpretation. A national centre of expertise protects the legitimacy of this slow knowledge. It reminds society that not every valuable result can be accelerated without loss. In this sense, the Academy's long-term mission is also a critique of short-termism in public policy and research funding.

The relationship between long-term expertise and public interest is therefore central. The Academy does not preserve expertise for its own sake. It preserves it because society needs knowledge that is deeper than current demand. Public interest includes future health, environmental resilience, cultural memory, legal stability, technological capability, social understanding, economic adaptability, and democratic self-knowledge. These cannot be produced only when they become urgent. They must be cultivated in advance. AV ČR's institutes are one of the institutional means by which the Czech Republic cultivates such capacities. The Academy's public value therefore lies not only in solving problems, but in maintaining the conditions under which problems can be understood before they become unsolvable. This is a more demanding conception of public research than simple service provision.

The Academy's role as a national centre of long-term expertise also completes the institutional logic of the modern chapter. Its legal status gives it public authority. Its governance structure gives it self-government and accountability. Its research areas and institutes give it disciplinary breadth. Its relations with universities, government, industry, and public institutions give it systemic integration. Long-term expertise is the thread that connects all these elements. The

Academy needs legal protection because long-term knowledge requires stability. It needs autonomy because expertise must not be politically commanded. It needs accountability because public trust must be justified. It needs institutes because expertise lives in durable research environments. It needs universities because expertise must be transmitted to new generations. It needs public and industrial partners because expertise becomes valuable when it can enter society responsibly. AV ČR is therefore a centre of long-term expertise not by declaration, but by the way its whole architecture is organised.

Thus, AV ČR functions as a national centre of long-term expertise because it preserves and renews knowledge that exceeds the horizon of immediate policy, market demand, and short-term project funding. Its institutes maintain research capacities in the natural, technical, medical, social, and human sciences; its evaluation systems subject these capacities to international peer judgement; its programmes such as Strategy AV21 and Science for Policy mobilise expertise for public problems; its cooperation with universities trains new researchers; its international memberships connect Czech expertise with European and global standards; and its open-science and knowledge-transfer initiatives make accumulated knowledge more available to society. The Academy's importance lies not only in individual discoveries, but in the continuity of national scientific and scholarly competence. It is the institution through which the Czech Republic keeps difficult knowledge alive, prepares for uncertain futures, interprets its past, advises its public institutions, contributes to innovation, and defends the public value of independent research. In this role, AV ČR stands as one of the central pillars of Czech public knowledge and as the modern institutional heir to the long historical ambition to make science and scholarship part of national life.

References

Academy of Sciences of the Czech Republic. (2017). *Strategy AV21: Top research in the public interest*. CAS.

Academy of Sciences of the Czech Republic. (2020). *The Czech Academy of Sciences tests samples, develops new tests and advises with economics*. CAS.

Academy of Sciences of the Czech Republic. (2020). *The Czech Academy of Sciences tests samples, develops protective materials and advises with economics*. CAS.

Academy of Sciences of the Czech Republic. (2022). *Concept for Development of Activities of the Czech Academy of Sciences*. CAS.

Academy of Sciences of the Czech Republic. (2022). *The Czech Academy of Sciences announces fellowships for researchers from Ukraine*. CAS.

Academy of Sciences of the Czech Republic. (2022). *We want to help scientists apply their research, says head of CeTTAV*. CAS.

Academy of Sciences of the Czech Republic. (2024). *Code of Ethics for Scientific Research of the Czech Academy of Sciences*. CAS.

Academy of Sciences of the Czech Republic. (2024). *European Code of Conduct for Research Integrity*. CAS.

Academy of Sciences of the Czech Republic. (2024). *Open Science Principles of the Czech Academy of Sciences*. CAS.

Academy of Sciences of the Czech Republic. (2024). *Radomír Pánek nominated for the next President of the CAS*. CAS.
Academy of Sciences of the Czech Republic. (2024). *The Academy presents Action Plan to reform research evaluation at the CAS*. CAS.
Academy of Sciences of the Czech Republic. (2025). *Czech Academy of Sciences Evaluation — Beyond Metrics: Accent on Peer Review*. CAS.
Academy of Sciences of the Czech Republic. (2025). *List of members of Academy Council*. CAS.
Academy of Sciences of the Czech Republic. (2025). *The Science Communication 360° conference will bring the Head of communications of the Max Planck Society*. CAS.
Academy of Sciences of the Czech Republic. (2025). *The Czech Academy of Sciences has appointed its new leadership for 2025–2029*. CAS.
Academy of Sciences of the Czech Republic. (2026). *Academy Assembly: Thirteen priorities to boost basic and applied research*. CAS.
Academy of Sciences of the Czech Republic. (2026). *CEFRES Platform PhD Fellowships*. CAS.
Academy of Sciences of the Czech Republic. (2026). *Czech Academy of Sciences to launch a joint-stock company*. CAS.
Academy of Sciences of the Czech Republic. (2026). *Doctors fully trust the vaccines. People do not know that*. CAS.
Academy of Sciences of the Czech Republic. (2026). *Research institutes*. CAS.
Academy of Sciences of the Czech Republic. (2026). *The Academy of the Future? A New Vision for Attracting Scientific Talent*. CAS.
Academy of Sciences of the Czech Republic. (2026). *The CAS launches new research programs as part of its Strategy AV21*. CAS.
Academy of Sciences of the Czech Republic. (2026). *We must prioritize science, Czech President Petr Pavel says on his Academy visit*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Academy Assembly*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *AI: Artificial Intelligence for Science and Society*. Strategy AV21.
Academy of Sciences of the Czech Republic. (n.d.). *CAS Head Office*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *CAS membership in international organisations*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *CEFRES Platform*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Evaluations of CAS Institutes*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Expert group — ERC*. European Research Area Section, CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Foods for the Future*. Strategy AV21.
Academy of Sciences of the Czech Republic. (n.d.). *Identities in the World of Wars and Crises*. Strategy AV21.
Academy of Sciences of the Czech Republic. (n.d.). *History overview*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Mission of the CAS*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Partners of the CAS*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Representatives of the CAS and its predecessors*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Research areas*. CAS.
Academy of Sciences of the Czech Republic. (n.d.). *Science Council*. CAS.

Academy of Sciences of the Czech Republic. (n.d.). *Society in Motion and Public Policy*. Strategy AV21.

Academy of Sciences of the Czech Republic. (n.d.). *Statutes of the Czech Academy of Sciences*. CAS.

Academy of Sciences of the Czech Republic. (n.d.q). *Student internships*. CAS.

CAS Innovations. (2026). *CAS Innovations: Scientific research to market*. CAS Innovations, a.s.

Council for Research, Development and Innovation. (2020). *Národní politika výzkumu, vývoje a inovací České republiky 2021+* [National Research, Development and Innovation Policy of the Czech Republic 2021+]. Office of the Government of the Czech Republic.

Czech National Council. (1992). *Act No. 283/1992 Coll., on the Czech Academy of Sciences*. Collection of Laws of the Czech Republic.

Library of the Czech Academy of Sciences. (2025). *New Act on Research, Development, Innovation and Knowledge Transfer*. Open Science, Library of the Czech Academy of Sciences.

Ministry of Industry and Trade of the Czech Republic. (2021). *Národní výzkumná a inovační strategie pro inteligentní specializaci České republiky 2021–2027* [National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027]. Ministry of Industry and Trade of the Czech Republic.

Parliament of the Czech Republic. (2005). *Zákon č. 341/2005 Sb., o veřejných výzkumných institucích* [Act No. 341/2005 Coll., on public research institutions]. *Sbírka zákonů České republiky* [Collection of Laws of the Czech Republic].

Parliament of the Czech Republic. (2025). *Zákon č. 328/2025 Sb., o výzkumu, vývoji, inovacích a transferu znalostí* [Act No. 328/2025 Coll., on research, development, innovation and knowledge transfer]. *Sbírka zákonů České republiky* [Collection of Laws of the Czech Republic].

Technology Transfer Centre of the CAS. (2025). *PRAK: Application Development and Commercialisation Programme of the Czech Academy of Sciences*. Technology Transfer Centre of the CAS.

Chapter Nine

Modernisation of the Academy, 1993–2025: Reform, Evaluation, and International Integration

The First Post-Transformation Decade

1. Stabilisation after Institutional Restructuring

The stabilisation of the Czech Academy of Sciences after 1993 was not a simple administrative continuation of the Czechoslovak Academy of Sciences under a new national name. It was the institutional consolidation of a research system that had already passed through political liberalisation, internal democratisation, personnel reductions, legal redefinition, and the collapse of the federal state. The Czechoslovak Academy of Sciences ceased to exist together with the federal Czechoslovak framework, while the Czech Academy of Sciences entered public life as the Czech successor to the former federal institution and as the inheritor of a much longer tradition of learned societies, specialised institutes, and national scientific representation (*Czech Academy of Sciences, n.d.*; *Czech National Council, 1992*). Yet succession did not mean mechanical continuity. The new Academy had to prove that it was not a residual structure from state socialism, not a merely symbolic learned body, and not an isolated complex of inherited institutes. It had to become a modern research organisation operating within a democratic state, a pluralistic research system, and an increasingly competitive European scientific environment. This is why the first post-transformation decade should be read as a period of stabilisation after shock rather than as a calm institutional beginning.

The legal act establishing the Academy gave the new institution an important degree of public recognition and organisational continuity. The Academy was established with its seat in Prague, performed research through its institutes, and retained the ability to conclude agreements on international scientific and technological cooperation (*Czech National Council, 1992*). It also possessed a specific position within the Czech state: its activities were financed from the state budget, and for budgetary purposes it was placed in a separate chapter, a fact that helped protect the continuity of long-term research during the unstable years of political and economic transition (*Czech National Council, 1992*). At the same time, the Act did not restore the Academy as a privileged monopolistic centre of science in the old socialist sense. Its bodies — the Academy Assembly, the Academy Council, the President, and the Council for Sciences — embodied a mixed model of public responsibility, scientific self-government, and state recognition (*Czech National Council, 1992*). This structure was crucial because it allowed the Academy to move from emergency transformation to regulated institutional life. Stabilisation therefore began not with comfort, but with the creation of rules under which conflict, competition, evaluation, and continuity could coexist.

The immediate background of this stabilisation lay in the purposeful reconstruction initiated in the final years of ČSAV under Otto Wichterle, whose symbolic importance was unusually strong. Wichterle represented not only scientific distinction, but also the moral reversal of the

post-1989 period: a scientist previously marginalised under normalisation became the figure associated with the democratic reorientation of the Academy (*Czech Academy of Sciences, n.d.*). His chairmanship from 1990 to 1992 belonged to the transitional moment, when the old institutional shell still existed but its political meaning was already changing. In those years, the Academy began to separate genuine research capacity from ideological inheritance, scientific community from party supervision, and scholarly reputation from bureaucratic rank. The transition to the Czech Academy of Sciences in 1993 therefore did not start from zero. It inherited a reform process already underway, but it also had to institutionalise that process in a new state and under new fiscal conditions. The first Czech leadership under Rudolf Zahradník then carried the task from revolutionary reconstruction into administrative, budgetary, and strategic stabilisation (*Czech Academy of Sciences, n.d.*).

The scale of the earlier restructuring made stabilisation difficult because the Academy entered 1993 as a reduced, wounded, but also internally renewed institution. Between the late socialist period and the early years of the Czech Republic, the number of personnel had fallen dramatically, with the most visible reductions completed by the end of 1993 (*Filáček, 2023*). Filáček notes that the total number of personnel declined from 13,896 persons at the end of 1989 to 7,127 at the end of 1993, while the average full-time equivalent figure fell from 12,501 in 1989 to 6,524 in 1993 and then to 6,365 in 1994 (*Filáček, 2023*). These figures matter not merely as statistics. They show that the Academy's stabilisation was built on a prior act of institutional contraction. The Academy had to preserve scientific competence after losing almost half of its personnel and after abolishing or delimiting research organisations judged weak, ideologically compromised, or insufficiently aligned with future research priorities. Stabilisation thus meant learning to function with a smaller body, a more selective profile, and a new understanding of quality.

This contraction affected disciplines unevenly, and that unevenness shaped the post-1993 institutional culture. The humanities and social sciences were particularly exposed because these fields had carried a heavier burden of ideological deformation under the previous regime (*Filáček, 2023*). In some cases, entire institutes or research programmes closely linked with Marxist-Leninist doctrine, party legitimation, or politically useful social analysis had to be abolished or reoriented. In other cases, institutes with genuine scholarly traditions survived but changed their research focus, personnel composition, and methodological orientation. The result was not a simple anti-humanities purge, although from the perspective of particular careers it could certainly appear severe. Rather, the Academy attempted to distinguish between ideological infrastructure and scholarly capacity. This distinction was never easy, because many individual researchers worked within compromised institutions while maintaining serious intellectual competence. Stabilisation therefore required not only institutional decisions, but also delicate judgements about biography, responsibility, expertise, and the future of disciplines.

In the natural, technical, and life sciences, the problems of stabilisation were different but no less serious. Many institutes possessed strong research traditions, valuable equipment, and international contacts, yet they had been formed within the economic and organisational assumptions of a state-planned system. Their laboratories had to adapt to new funding models, new procurement conditions, new forms of collaboration, and new expectations of publication and international visibility. The collapse of central planning did not simply liberate scientific creativity; it also removed predictable channels of support, weakened established industrial connections, and forced research teams to search for new partners. In this sense,

institutional restructuring reached deep into the everyday life of science. A laboratory that survived the formal evaluation still had to stabilise its technical staff, research agenda, grant strategy, equipment maintenance, and relations with universities or foreign partners. The Academy's modernisation was therefore experienced not only in statutes and councils, but also in seminars, laboratories, libraries, archives, field stations, and project offices.

The introduction of internal democracy was one of the most important mechanisms of stabilisation. Under the socialist regime, formal scientific bodies existed, but the decisive logic of appointment, ideological control, and political loyalty limited the real autonomy of the research community. After 1989, the Academy began to reconstruct its internal legitimacy through elected bodies, scientific boards, competitive procedures for directors, and greater participation of researchers in institutional governance (*Filáček, 2023*). This was not simply a moral correction after the collapse of communism. It was also a practical administrative necessity. A reduced and financially pressured institution could not stabilise itself if researchers perceived reform as an externally imposed liquidation. The Academy therefore needed forms of self-government that transformed scientists from passive objects of reform into participants in the shaping of institutional priorities. In this respect, stabilisation was inseparable from the creation of trust.

The Academy Assembly became especially important because it embodied the principle that the Academy should not be governed as a closed ministerial department. It included directors of institutes, elected representatives, university representatives, distinguished scientists, and representatives of state administration, industry, and public life, thereby expressing the Academy's hybrid position between scientific autonomy and public accountability (*Czech National Council, 1992*). The Assembly approved the annual report, budget, final account, distribution of funds, statutes, and major institutional changes (*Czech National Council, 1992*). Such powers gave the Academy a structured mechanism for converting internal debate into binding institutional decisions. This mattered greatly in the 1990s, when the Academy still had to defend its legitimacy before government, universities, and public opinion. The Academy Council, in turn, provided executive continuity between sessions of the Assembly and helped translate broad institutional principles into practical management. Stabilisation therefore depended on the balance between deliberation and executive capacity.

The presidency of Rudolf Zahradník was central to the first phase of this balance. As President of the Czech Academy of Sciences from 1993 to 2001, Zahradník stood at the point where the moral authority of scientific excellence, the demands of public negotiation, and the necessity of internal consolidation intersected (*Czech Academy of Sciences, n.d.*). He was not merely the head of a learned institution; he was also a representative of the Academy in a political environment where the role of non-university research was being questioned. In the early Czech Republic, universities, ministries, emerging grant agencies, and policy experts all had claims on the future design of national research. The Academy had to avoid two opposite dangers: nostalgic defence of its former privileged position and excessive self-reduction in the name of market-oriented reform. Zahradník's period helped present the Academy as a democratic research institution capable of self-reform, quality control, and international reintegration. His leadership therefore contributed to stabilisation by giving the institution a recognisable public face during a fragile decade.

A crucial aspect of stabilisation was the redefinition of the Academy's place in relation to universities. Under socialism, the Academy had occupied a distinctive and often privileged

position in the research system, while universities were more heavily burdened with mass teaching, ideological education, and administrative subordination. After 1989, this hierarchy could not simply continue. The Academy had to accept that it was one research sector among several and that universities would increasingly claim a stronger role in research, doctoral training, international projects, and public funding competitions (*Filáček, 2023*). This did not eliminate the Academy's importance, but it changed the terms on which importance had to be demonstrated. Instead of institutional privilege, the Academy had to rely on research quality, specialised infrastructure, long-term expertise, and the capacity to cooperate. The stabilisation of the 1990s thus included a slow transition from hierarchical separation to a more networked relationship with universities.

The Academy's institutes remained the central units of research, but their institutional meaning changed. In the older model, an institute could be imagined as a relatively stable component of a planned national scientific system. In the new model, an institute had to become a self-aware research organisation capable of defining its own profile, defending its quality, managing personnel, seeking grants, establishing partnerships, and participating in evaluation. The creation or strengthening of institute-level scientific boards was therefore essential. These boards linked local research communities to the wider governance of the Academy and provided a forum in which scientific standards, not only administrative instructions, could guide decisions. Over time, this model would be reinforced by the legal transformation of Academy institutes into public research institutions, but its cultural foundations were laid earlier. Stabilisation after 1993 was therefore not only about the Academy as a central body; it was also about the self-stabilisation of institutes as research communities.

Financial stabilisation was perhaps the hardest and most ambiguous task of the first decade. The Academy retained state budget support, but the broader environment of Czech research funding changed sharply. The creation of the Grant Agency of the Czech Republic and the growing importance of calls for proposals introduced competitive project funding into fields previously shaped by more stable institutional allocation (*Czech Science Foundation, n.d.*). This was a necessary part of democratising and modernising the research system, because it opened public funding to evaluation, competition, and wider participation. Yet for Academy institutes it also created a new vulnerability. Long-term research programmes, especially in basic science and the humanities, could not always be easily fitted into short project cycles. Stabilisation therefore required a new financial literacy: institutes had to combine institutional resources, competitive grants, international projects, and, where possible, contract or applied research revenues.

The Academy itself also developed internal mechanisms for supporting research under competitive conditions. It was among the first Czech institutions to establish its own Grant Agency, which supported projects selected through peer review and involved foreign reviewers (*All European Academies, 2015*). This was a significant move because it created a bridge between institutional continuity and competitive quality assessment. Internal grants helped encourage initiative, identify promising teams, and expose researchers to the logic of peer review before this became a pervasive feature of Czech and European research governance. They also helped the Academy present itself as an institution capable of self-regulation rather than dependent only on state protection. In the long term, this internal competitive culture prepared the ground for later evaluation regimes. In the short term, it helped stabilise morale by demonstrating that reform could create opportunities as well as losses.

The stabilisation of personnel was equally complex. The reductions of the early 1990s inevitably produced insecurity, and the shift towards part-time work and grant-dependent contracts changed the social experience of being an Academy researcher (*Filáček, 2023*). Yet the Academy also sought to preserve productive research divisions and to protect university-educated researchers more than administrative or auxiliary positions where possible (*Filáček, 2023*). This had two consequences. First, the relative proportion of qualified researchers grew, strengthening the scientific profile of the institution. Second, the internal labour culture became more demanding, because researchers were expected not only to conduct scholarship but also to compete, publish internationally, cooperate, and justify institutional support. Stabilisation, in this sense, did not mean restoring the old security of academic employment. It meant creating a new, more selective and performance-aware professional environment.

The question of scientific quality became a central stabilising principle because it allowed the Academy to move beyond political cleansing and budgetary defence. The early evaluations of institutes in 1990–1991 and again in 1992 were not merely technical procedures. They created a language through which the Academy could explain why some institutes were preserved, some transformed, and others abolished (*Filáček, 2023*). Evaluation helped separate reform from arbitrary political revenge, even if the decisions remained painful and contested. It also gave the Academy a way to align its internal structure with international standards. From this point forward, quality assessment became part of the Academy's institutional identity. Later chapters on research evaluation and institutional quality would develop this theme more fully, but its origins lie in the stabilisation period.

International reintegration also contributed to stabilisation, even before the Czech Republic's accession to the European Union. The Academy and its institutes could not rebuild their legitimacy solely within national borders. After decades of restricted mobility, ideological filtering, and uneven access to global scientific networks, researchers needed to restore contacts, participate in conferences, publish abroad, host visitors, and enter bilateral or multilateral cooperation. The 1992 Act explicitly allowed the Academy and its institutes to conclude agreements on international cooperation in scientific activity and technological development (*Czech National Council, 1992*). This legal capacity mattered because it normalised international relations as a regular part of institutional life, not an exceptional privilege. Internationalisation helped stabilise research standards by exposing institutes to external expectations. It also helped younger researchers imagine careers beyond the boundaries of a post-socialist national system.

The first post-transformation decade was also marked by the Academy's effort to rebuild its public image. In the socialist period, the Academy had been both a genuine research organisation and an institution embedded in the representational machinery of the state. After 1989, public trust could not be taken for granted. The Academy had to explain why a non-university research institution remained necessary in a democratic and market-oriented society. Its answer gradually took shape around several arguments: concentration of specialised expertise, continuity of long-term basic research, preservation of national scholarly infrastructure, contribution to doctoral education, cooperation with universities, and service to public policy. These arguments were not invented all at once, but they became increasingly important as the Academy defended its budget and status. Stabilisation therefore included a communicative dimension: the Academy had to narrate itself as useful without reducing science to immediate utility.

The relationship between autonomy and accountability was one of the defining tensions of this period. After the experience of political control, autonomy was a moral and institutional imperative. Yet the Academy could not simply claim autonomy without demonstrating responsibility for public funds, research quality, and national needs. The governance structure established in the 1990s attempted to mediate this tension by combining self-governing scientific bodies with state recognition, annual reporting, budget approval, and external representation (*Czech National Council, 1992*). The later transformation of institutes into public research institutions would strengthen this model through boards, supervisory mechanisms, annual reports, and public access to information on research activities (*Parliament of the Czech Republic, 2005*). The roots of that later legal architecture, however, can already be seen in the early search for a democratic form of research governance. Stabilisation was therefore not a retreat from accountability; it was the creation of accountability compatible with scientific freedom.

The Academy's disciplinary structure also stabilised through a new balance between continuity and thematic change. Some research programmes continued because they represented accumulated expertise, long-term datasets, collections, instruments, or nationally significant intellectual traditions. Others changed because their theoretical assumptions, political functions, or institutional environments had been transformed. In the humanities, this meant rethinking national history, literary studies, philosophy, linguistics, archaeology, and ethnology after the collapse of ideological supervision. In the social sciences, it meant rebuilding empirical sociology, economics, political science, legal studies, and public policy research in a democratic context. In the natural and technical sciences, it meant reconnecting with global research frontiers while adapting to material shortages and new funding systems. Stabilisation was therefore a disciplinary process as much as an administrative one.

The survival of long-term research programmes deserves particular attention. Transitional reforms often favour visible, short-term, and politically legible change. The Academy, however, had to preserve forms of research that produce value slowly: dictionaries, archival editions, longitudinal social research, astronomical observation, ecological monitoring, fundamental theoretical work, and experimental programmes requiring continuity. If the post-1993 Academy had dissolved too much of this long-term infrastructure, Czech science would have lost capacities that could not easily be rebuilt later. Stabilisation therefore required a conservative element, but not in the political sense. It required conservation of scholarly time, institutional memory, and technical competence. The achievement of the first decade was that radical restructuring did not wholly destroy the deeper temporalities of research.

At the same time, the Academy could not stabilise by becoming inward-looking. The 1990s demanded openness to new disciplines, new technologies, and new forms of collaboration. The shift from the socialist research economy to a democratic and increasingly European environment made interdisciplinary cooperation more important, even if institutional structures still often followed older disciplinary lines. Fields connected with molecular biology, informatics, environmental research, materials science, social transformation, European studies, and cultural memory acquired new significance. The Academy's institutes had to recognise that modernisation was not simply a matter of replacing old managers with new ones. It required rethinking research questions in light of societal transformation and global scientific development. Stabilisation thus included an intellectual reorientation towards

problems that the old system had either distorted, neglected, or isolated from international debate.

The early Czech Academy also had to manage the symbolic burden of institutional succession. On the one hand, it claimed the legacy of ČSAV and earlier Czech learned institutions, including the Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts (*Czech Academy of Sciences, n.d.*). On the other hand, it had to distance itself from the authoritarian and ideological features of the socialist Academy. This double movement was delicate. Too much emphasis on continuity could make the Academy appear unreformed; too much emphasis on rupture could weaken its historical legitimacy and obscure the genuine scientific achievements of earlier generations. The solution was to construct a layered historical identity: the Academy would acknowledge institutional breaks while presenting Czech science as a longer tradition of learned inquiry, national culture, and international scholarship. Stabilisation therefore had a historical and symbolic dimension as well as a legal one.

One reason the Academy survived the early post-socialist decade was that it did not define itself only as a corporation defending inherited assets. It accepted substantial reductions, introduced evaluation, competed for funding, opened itself to international comparison, and increasingly cooperated with universities and public institutions. These choices did not remove criticism, but they made the Academy's defence more credible. In many post-socialist contexts, academies of sciences were criticised as relics of the Soviet institutional model. The Czech case was different because the Academy could point to internal reform as evidence that it had moved away from the old model while preserving valuable research capacity (*Filáček, 2023*; *Mayntz et al., 1998*). Stabilisation thus depended on the Academy's ability to demonstrate transformation without dissolving itself. Its legitimacy rested on the argument that reform and continuity could be mutually reinforcing.

The first decade also prepared the ground for later legal and organisational reforms. Although the 2005 Act on Public Research Institutions and the 2007 transformation of Academy institutes into public research institutions belong to a later moment, they can be understood as an extension of questions already posed in the 1990s (*Parliament of the Czech Republic, 2005*). Who owns and manages research infrastructure? How should institutes be governed? What is the role of boards, directors, supervisory bodies, and external members? How should research results be reported to the public? How can public research organisations cooperate with universities, state bodies, and enterprises without losing their primary scientific mission? These questions did not appear suddenly in 2005. They emerged from the stabilisation of the 1990s, when the Academy had to convert revolutionary reform into durable institutional design.

The stabilisation of the Academy after 1993 should therefore be seen as a multi-layered process. It involved legal establishment, leadership consolidation, personnel contraction, financial adaptation, internal democratisation, disciplinary reorientation, international reopening, and public legitimation. No single measure guaranteed survival. The Academy stabilised because these elements gradually reinforced one another: law created continuity, evaluation created selectivity, self-government created legitimacy, funding competition created pressure for quality, and international cooperation created external horizons. The process was not smooth, and it should not be romanticised. Careers were disrupted, institutes were abolished, fields were rebalanced, and financial uncertainty became part of academic life. Yet the outcome was not institutional collapse. By the end of the first post-transformation

decade, the Academy had become a smaller but more autonomous and more internationally oriented research organisation.

This transformation also altered the meaning of modernisation itself. In the early 1990s, modernisation could easily have been understood as dismantling the inherited socialist institution and replacing it with a market-compatible research sector. The actual development was more complex. Modernisation meant selective preservation, democratic self-government, quality assessment, plural funding, cooperation with universities, and gradual European integration. It meant building a research institution capable of public responsibility without direct ideological control. It also meant accepting that autonomy would now be defended through performance, credibility, and openness rather than through inherited state privilege. The stabilised Academy was therefore not merely the old ČSAV after reform. It was a new institutional compromise between national scientific continuity and the norms of post-socialist democratic research governance.

Thus, the stabilisation of the Czech Academy of Sciences after institutional restructuring was the foundational phase of its modern history after 1993. The Academy survived because it transformed the traumatic consequences of post-1989 rupture into a new system of legal continuity, internal democracy, selective research quality, and public accountability. Its first decade was marked by financial pressure, personnel losses, disciplinary redefinition, and the difficult abandonment of former privilege, but these pressures also forced the institution to articulate a stronger scientific and civic identity. The Academy became smaller, more competitive, more self-conscious, and more open to international standards. At the same time, it preserved the long-term research capacities without which Czech science would have lost much of its institutional memory. Stabilisation was therefore not the end of transformation, but the condition that made later reforms in funding, evaluation, European integration, open science, and career structures possible.

2. New Funding Conditions and Research Competition

The new funding conditions of the Czech Academy of Sciences after 1993 were among the most consequential elements of its post-transformation history. The Academy did not merely lose the old political framework of the Czechoslovak socialist state; it also entered a radically different economy of public science, in which stable institutional support had to coexist with grant competition, budgetary negotiation, and increasingly formalised evaluation. Under the socialist model, the Academy's institutes had been funded within a centralised state-planning environment, where research priorities, personnel levels, equipment flows, and institutional existence were shaped by political-administrative decisions rather than by open competition. After 1989, this order could no longer be defended either politically or intellectually. Yet the replacement of central allocation by competitive and plural funding did not automatically produce a balanced research system. It created opportunities for initiative, quality selection, and internationalisation, but it also introduced uncertainty, administrative burdens, and unequal pressure across disciplines. The first post-transformation decade therefore forced the Academy to ask a difficult question: how could long-term basic research survive in a funding environment increasingly shaped by short-term projects and public justification?

The legal establishment of the Czech Academy of Sciences preserved a crucial element of financial continuity. The Act on the Czech Academy of Sciences recognised the Academy as a

public institution financed from the state budget and placed it, for budgetary purposes, in a separate chapter of the state budget (*Czech National Council, 1992*). This provision was not a minor technicality. It gave the Academy a direct institutional position in negotiations over public resources and prevented its complete absorption into a ministerial department or university-centred funding model. At the same time, the provision did not guarantee the old scale of support, nor did it protect the Academy from political criticism. Public money had become more openly contested, and the Academy had to justify why a non-university system of research institutes deserved substantial state financing in a democratic and market-oriented Czech Republic. Thus, from the beginning, financial continuity was combined with a demand for legitimation.

The early 1990s were marked by a sharp contraction of the Academy's personnel and resources, and this contraction shaped the meaning of later funding reforms. The radical reduction of staff between 1989 and 1994, discussed in relation to institutional stabilisation, was inseparable from the fiscal environment of transformation (*Filáček, 2023*). The Czech state was reorganising its entire public sector, building new political institutions, liberalising the economy, and redefining the relationship between public expenditure and national priorities. In this context, science could no longer rely on the assumption that inherited institutional structures would automatically be financed. The Academy had to become smaller, more selective, and more accountable. Funding conditions thus reinforced the internal restructuring of institutes. They made scientific quality, public credibility, and capacity for external cooperation not only intellectual values but also survival mechanisms.

The creation of the Grant Agency of the Czech Republic was one of the decisive steps in the formation of the new funding environment. Established in 1993, GA ČR became an independent public organisation supporting basic research across all fields on the basis of calls for proposals (*Czech Science Foundation, n.d.*). Its emergence changed the culture of Czech research because it introduced a national mechanism through which research teams from the Academy, universities, and other institutions could compete for funding according to project quality rather than inherited institutional position. For the Academy, this development was ambivalent. On the one hand, it opened additional resources and allowed strong teams to demonstrate their excellence beyond internal Academy channels. On the other hand, it exposed Academy institutes to direct competition with universities and other research organisations. The Academy's legitimacy increasingly depended not only on its historical role but also on its success in open grant competitions.

Competition for project funding altered the everyday professional behaviour of researchers. Writing proposals, preparing budgets, defining measurable objectives, planning deliverables, and reporting results became increasingly normal parts of scientific work. For researchers trained in the late socialist environment, this was not simply an administrative change. It required a new understanding of research as an activity that had to be narrated, justified, evaluated, and periodically renewed. Scientific ideas now had to be translated into the language of grant applications. Research groups had to learn how to present novelty, feasibility, international relevance, and expected outcomes. The Academy's institutes therefore became sites of cultural adaptation, where scholarly traditions met the managerial vocabulary of projects, calls, deadlines, panels, and evaluation reports.

The introduction of competition had positive consequences that should not be understated. It weakened the automatic reproduction of institutional privilege and created incentives for

methodological innovation, international publication, and younger researchers' initiative. It allowed excellent teams within the Academy to strengthen their position even when their institutes faced budgetary pressure. It also helped establish peer review as a normal instrument of public funding, thereby replacing political discretion with a more professionalised form of judgement. GA ČR's declared mission to support high-quality basic research and international scientific cooperation fitted well with the Academy's own claim to be a leading institution of fundamental research (*Czech Science Foundation, n.d.*). In this sense, competition was not simply an external pressure imposed upon the Academy. It became one of the mechanisms through which the Academy could demonstrate that its institutes were capable of meeting democratic and international standards.

At the same time, competition introduced new inequalities among disciplines and institutes. Research fields with strong publication traditions, relatively clear project cycles, internationally standardised methods, and access to global peer communities could adapt more easily to grant competition. Other fields, especially those dependent on long-term archival work, national collections, scholarly editions, field research, language resources, or cumulative theoretical labour, faced greater difficulty in presenting their work in short project formats. Humanities and some social sciences could participate in grant systems, but the rhythm of their work often differed from the rhythm assumed by funding calls. Long-term dictionaries, critical editions, archaeological documentation, and national historical corpora could not always be reduced to the logic of three-year project outputs. The Academy therefore had to defend the idea that competitive funding should complement, not replace, stable institutional support.

This tension between institutional and targeted funding became one of the most important structural questions of Czech science policy. Institutional funding supported the long-term conceptual development of research organisations, maintained infrastructure, preserved staff continuity, and allowed institutes to pursue strategic directions beyond immediate project cycles. Targeted or project funding, by contrast, supported specific research tasks selected through competition. Both forms were necessary, but they implied different temporalities of science. Institutional funding protected the slow accumulation of knowledge; project funding stimulated initiative and accountability. The difficulty was not the existence of competition itself, but the proportion between stable and competitive resources. If project funding became too dominant, the Academy risked losing the capacity to sustain disciplines whose value depended on continuity.

The Academy attempted to manage this tension through its own internal funding mechanisms. It was among the first Czech institutions to establish an internal Grant Agency, supporting research projects selected through peer review and involving foreign reviewers (*All European Academies, 2015*). This internal mechanism was important because it allowed the Academy to introduce competition without abandoning its responsibility for the development of institutes. It also helped researchers become familiar with peer-review procedures in a comparatively protected institutional environment. Internal grant schemes encouraged initiative among research teams and gave the Academy a tool for identifying emerging excellence. They also demonstrated that the Academy was capable of self-modernisation. Rather than waiting for external reformers to impose competitive principles, it incorporated competition into its own governance culture.

The emergence of grant competition changed the relationship between institutes and the central Academy administration. In the older model, institutes could expect a relatively direct connection between institutional existence and budgetary allocation. In the new model, institutes needed to combine Academy resources, GA ČR grants, ministerial programmes, international projects, contractual research, and later European structural or framework programme funding. This created a more plural financial environment, but also a more complex one. Institute directors increasingly had to act not only as scientific leaders but also as strategic managers of funding portfolios. They had to balance permanent staff, project staff, equipment needs, overheads, and co-financing obligations. The financial life of the Academy thus became less centralised and more project-sensitive, even while the Academy continued to defend institutional support as the foundation of basic research.

The new funding conditions also reshaped relations between the Academy and universities. Grant competition placed Academy institutes and university departments in a more direct field of comparison. This could stimulate cooperation, but it could also produce rivalry, especially in disciplines where research capacity was limited and national funding pools were relatively small. Universities, newly liberated and increasingly research-oriented after 1989, sought to strengthen their role in doctoral education, international publication, and research funding. The Academy, meanwhile, argued that its institutes provided concentration, infrastructure, and long-term expertise that universities alone could not easily sustain. In practice, the most productive outcome was not institutional rivalry but the gradual formation of joint doctoral programmes, shared projects, and collaborative research centres. Funding competition therefore contributed both to differentiation and to cooperation within the Czech research system.

The Academy's adaptation to new funding conditions must also be understood in the context of the broader post-socialist transformation of East European academies. Across the region, academies of sciences had to defend themselves against accusations of bureaucratic inheritance, low efficiency, and isolation from universities (*Mayntz, Schimank, & Weingart, 1998*). Some were drastically weakened; others preserved more of their institutional capacity. The Czech Academy's position was distinctive because it accepted substantial restructuring while maintaining a strong research profile. Funding competition was central to this outcome. It made it possible to argue that Academy institutes were not merely protected remnants of the old system but research performers capable of competing for peer-reviewed support. In this sense, competition became part of the Academy's post-socialist political language.

However, the new system also introduced what may be called the projectification of academic life. Research increasingly had to be divided into projects, each with its own title, budget, timeline, objectives, and expected outputs. This helped clarify goals and make public support more transparent, but it could also fragment intellectual agendas. A scientist might spend substantial time maintaining a chain of grant applications, reports, and renewals rather than concentrating on deeper research questions. Younger researchers learned early that career development depended on project participation and success in competitions. Directors learned that institutes could not rely on institutional funds alone. The Academy's modernisation therefore carried an internal cost: the growth of administrative labour within the scientific profession.

The legal framework of research funding became more explicit with Act No. 130/2002 Coll., which regulated support for research and development from public funds (*Parliament of the*

Czech Republic, 2002). This Act marked the consolidation of principles that had been developing throughout the 1990s: public support should be defined, classified, allocated, recorded, and evaluated within a formal national system. For the Academy, this meant that its financial environment was increasingly connected to nationwide rules of research governance. Funding was no longer only a matter of annual negotiation or institutional tradition. It was part of an expanding legal and administrative architecture, including information systems, public calls, programme rules, and later evaluation methodologies. The Academy's ability to navigate this architecture became a major factor in its institutional strength.

The distinction between basic and applied research also became more visible in the new funding order. The Academy traditionally presented itself as a leading institution of basic research, but many of its institutes also had applied capacities, technological expertise, public-service functions, and links to industry or state administration. GA ČR provided a core mechanism for basic research, while later reforms led to the creation of the Technology Agency of the Czech Republic in 2009 as a major provider for applied research and experimental development (*Technology Agency of the Czech Republic, n.d.*). Although TA ČR belongs to a later phase than the first post-transformation decade, its establishment continued a trajectory that began in the 1990s: the differentiation of funding instruments according to the type and purpose of research. This differentiation mattered for the Academy because it required institutes to define more clearly whether a given activity was basic, applied, infrastructural, strategic, or service-oriented. Funding competition thus pushed the Academy towards sharper self-description.

The problem was that the boundaries between these categories were often porous. Fundamental research can produce long-term technological consequences, while applied problems can generate new theoretical questions. Many Academy institutes worked precisely in this borderland. Materials science, biomedicine, environmental research, informatics, archaeology, and social research all produced knowledge that was at once scholarly and socially useful. Funding systems, however, tend to demand classification. They ask whether an activity belongs to basic research, applied research, innovation, infrastructure, or public service. The Academy therefore had to translate complex research practices into funding categories that did not always capture their full intellectual character. This became one of the permanent tensions of modern research governance.

The growing importance of research evaluation affected funding even before formal national methodologies became dominant. Once public money was allocated through competition, assessment criteria became politically and institutionally consequential. Peer review, bibliometrics, output registers, international panels, and institutional reports gradually became part of the financial life of research organisations. This development would later culminate in more systematic research evaluation mechanisms, but its origins lay in the funding reforms of the 1990s and early 2000s. The Academy had to learn not only how to do research but how to make research visible to evaluators. Visibility was not identical with quality, but it increasingly influenced resources. The new funding order therefore created a relationship between scientific work and the techniques used to count, classify, and judge it.

The risks of excessive quantification became visible in later debates on Czech performance-based research funding. Studies of the Czech system criticised the use of a single performance-based model for highly diverse research organisations and warned against placing institutions with different missions into a common competitive mechanism (*Arnold et*

al., 2011). This criticism was especially relevant to the Academy because its institutes differed not only from universities but also from departmental research organisations, applied research bodies, and industrially oriented institutions. The mission of an institute devoted to medieval studies, high-energy physics, plant genetics, or social transformation could not be evaluated by a single narrow logic. Funding competition was necessary, but competition without mission sensitivity could distort research behaviour. The Academy's later defence of more nuanced evaluation was therefore rooted in the funding pressures that emerged after 1993.

The crisis around the Academy's budget in the late 2000s illustrated how fragile the balance between stability and competition remained. Government proposals for significant cuts to Academy funding provoked strong reactions from the scientific community and led to public protests and negotiations (*Linková, 2015*). Although this episode belongs chronologically after the first post-transformation decade, it revealed the unresolved tension created in the 1990s. If institutional support was reduced too far, Academy institutes would become dependent on short-term grants and lose the capacity for strategic disciplinary development. Linková notes that the share of institutional funding in the Academy's budget declined substantially between 2007 and 2013, while competitive funding became increasingly important in some institutes (*Linková, 2015*). This was not only a financial issue. It concerned the very model of public research: whether the Academy would remain a stable infrastructure of national science or become a loose aggregation of grant-dependent teams.

The transformation of Academy institutes into public research institutions under Act No. 341/2005 Coll. also affected funding conditions. The new legal form strengthened the public institutional identity of research organisations and provided a clearer framework for their governance, property, reporting, and accountability (*Parliament of the Czech Republic, 2005*). This reform helped align the Academy's institutes with a modern legal environment for public research. It also clarified the relationship between institutes, their founder, public resources, and external partners. Financial management became more transparent and more closely connected with institutional strategy. The change did not eliminate funding uncertainty, but it gave institutes a legal form better suited to diversified financing and modern research governance.

European integration added another layer to the funding environment. Before the Czech Republic joined the European Union, Academy institutes had already been rebuilding international contacts and participating in selected European programmes. After accession, European framework programmes, mobility schemes, infrastructure initiatives, and structural funds became increasingly important. These resources offered opportunities that were unimaginable under late socialism, but they also required administrative competence, co-financing, international networking, and project-management capacity. Competition now occurred not only within Czech national science but also within European research space. The Academy's institutes had to compete with well-established Western European universities and research organisations, often from a weaker starting position in terms of infrastructure and salary levels. European funding therefore expanded horizons while intensifying pressure.

The internal effects of funding competition were not uniform. Some Academy institutes became highly successful in national and international grant systems, developing diversified funding portfolios and strong project offices. Others remained more dependent on institutional support because their research profiles did not easily attract large external grants. This diversity was not necessarily a sign of weakness. It reflected the heterogeneity of research

missions within the Academy. A modern academy of sciences contains laboratories, archives, collections, theoretical groups, field research teams, computational centres, and institutes serving public knowledge needs. The challenge was to design funding mechanisms that recognised this diversity without shielding weak performance. The Academy's financial modernisation therefore required a delicate balance between excellence, mission, continuity, and renewal.

Competition also had a generational dimension. Younger researchers could use grants to gain autonomy, build small teams, travel abroad, and establish independent research profiles. In this respect, competitive funding opened spaces that had been far more restricted in hierarchical institutional cultures. However, it also produced new precarity. Early-career researchers could become dependent on short-term contracts, project cycles, and the priorities of principal investigators. The same mechanisms that created opportunity also increased insecurity. For the Academy, this meant that funding reform was not merely a matter of institutional finance; it affected career structures, mentorship, recruitment, and the ability to retain talented researchers. Later debates on early-career researchers, gender, mobility, and leadership cannot be separated from this funding environment.

The administrative burden of competition became more visible as the system matured. Grant applications, financial reports, audits, procurement rules, evaluation documents, and output registrations required professional support. Institutes had to develop administrative capacities that were not peripheral but essential to research performance. The figure of the project manager, research administrator, international officer, and grant specialist became increasingly important. This development was part of the Europeanisation of research governance, but it also changed the internal sociology of the Academy. Scientific success depended more and more on collaboration between researchers and administrative professionals. Funding competition thus produced a new division of labour within the research institution.

The Academy's central leadership had to defend institutional funding not as protectionism, but as a condition of excellence. This distinction was crucial. In a democratic research system, an institution cannot simply demand public money because it has existed for a long time. It must show that stable support enables forms of research that competitive grants alone cannot sustain. The Academy's argument rested on the value of long-term basic research, scientific infrastructure, disciplinary depth, national collections, and expertise available to society and the state. At the same time, the Academy accepted that institutional funding must be connected with evaluation and accountability. Its position therefore developed into a balanced claim: competition is necessary for vitality, but stable institutional support is necessary for strategic science.

The broader Czech research policy environment gradually moved towards more formal evaluation of research organisations. Methodology 2017+ later sought to move beyond purely output-counting approaches by evaluating research organisations in relation to quality, social relevance, viability, strategy, and mission (*European Commission, 2018*). This later development confirmed a lesson already visible in the Academy's experience after 1993. Funding systems must not only reward measurable productivity; they must also understand what different research organisations are for. Institutes of the Academy are not identical to universities, applied research agencies, or industrial research units. Their funding model must reflect their role in fundamental research, long-term expertise, and national scientific

infrastructure. The movement towards more nuanced evaluation therefore represented a partial correction of earlier funding pressures.

The new funding conditions also changed the Academy's public accountability. Under socialism, accountability was formally directed towards the party-state and its ideological priorities. After 1993, accountability became more plural: to the state budget, to grant agencies, to peer reviewers, to international partners, to the public, and to the scientific community. This pluralisation was a major democratic achievement, but it also created competing expectations. A grant agency might ask for project outputs; government might ask for efficiency and innovation; society might ask for relevance; international peers might ask for excellence; institutes might ask for stability. The Academy had to operate within all these expectations without losing its scientific mission. Funding competition therefore became one of the central arenas in which the meaning of autonomy was renegotiated.

The financial transformation of the Academy should not be interpreted as a simple shift from state dependency to market responsiveness. The Academy remained a public research institution, and its strongest justification continued to be the production of public knowledge rather than private profit. What changed was the manner in which public support was allocated, justified, and monitored. The state no longer financed the Academy as part of a closed socialist science apparatus. It financed, evaluated, and negotiated with it as one of the principal actors in a plural research system. Competition did not abolish public responsibility; it reconfigured it. The Academy's task was to ensure that this reconfiguration did not reduce science to short-term measurable output.

By the end of the first post-transformation decade, the Academy had learned to operate in a mixed funding environment. It preserved institutional support, participated in national grant competition, developed internal peer-reviewed funding, and began to prepare for deeper European integration. This did not solve all problems, but it created a functional model for survival and adaptation. The Academy's institutes were increasingly expected to be scientifically productive, financially strategic, internationally visible, and administratively competent. The price of this model was increased pressure and uncertainty. Its benefit was a stronger connection between autonomy and demonstrated quality. The first decade therefore established the funding logic that would shape the Academy's later modernisation.

Thus, the new funding conditions after 1993 transformed the Czech Academy of Sciences from an institution accustomed to planned allocation into a research organisation operating within a plural, competitive, and increasingly evaluative funding system. State budget support remained indispensable, but it was no longer sufficient as a source of legitimacy or development. Grant competition through GA ČR, internal Academy schemes, later legal reforms, European programmes, and performance-oriented policy instruments changed the behaviour of institutes and researchers. These changes stimulated excellence, openness, and initiative, but they also created risks of project fragmentation, administrative overload, short-termism, and disciplinary imbalance. The Academy's central achievement was not that it escaped competition, but that it gradually learned to combine competition with institutional continuity. This balance became one of the defining features of its modernisation and prepared the ground for later debates on research evaluation, international integration, open science, and the human dimension of academic careers.

3. Rebuilding International Partnerships after 1989

The rebuilding of international partnerships after 1989 was one of the most visible and intellectually transformative dimensions of the Czech Academy's post-socialist modernisation. It was not limited to the restoration of foreign travel, the signing of bilateral agreements, or the gradual inclusion of Czech research teams in European programmes. It changed the very meaning of scientific work after the long experience of ideological control, restricted mobility, asymmetric relations within the Soviet bloc, and limited access to global scholarly communication. For the Czechoslovak Academy of Sciences in the final years of state socialism, international cooperation existed, but it was filtered through political loyalty, institutional hierarchy, security considerations, and the geopolitics of the Cold War. After 1989, international cooperation became not only more open but also more demanding. Researchers had to rebuild contacts, recover trust, enter competitive networks, meet external standards, and learn to operate in scientific environments where reputation was earned through publication, collaboration, project success, and peer recognition. The Academy's international reopening therefore belonged to the same historical process as internal democratisation, institutional evaluation, and the redefinition of research quality. It helped transform the Academy from a national research corporation emerging from socialism into a participant in the European and global circulation of knowledge.

The first meaning of internationalisation after 1989 was symbolic liberation. For many scientists, the possibility of travelling freely, corresponding without ideological suspicion, accessing foreign libraries, attending conferences, and inviting colleagues from abroad represented a return to normal scholarly life. This was especially important because Czech science possessed older traditions of European intellectual exchange that had been repeatedly interrupted by occupation, war, Stalinisation, political purges, and normalisation. The democratic transformation did not create international scientific culture from nothing; it reactivated a suppressed historical expectation that Czech scholarship belonged to a broader European republic of learning. The new Czech Academy of Sciences, established as the successor to the Czechoslovak Academy and to earlier learned institutions, could therefore present international reintegration as both modernisation and historical restoration (*Czech Academy of Sciences, n.d.*; *Czech National Council, 1992*). This duality mattered because the Academy needed to distance itself from the closed and politicised structures of the socialist period without severing itself from the deeper history of Czech scientific culture. International partnerships helped make that distinction credible. They showed that the Academy's future was not a return to a pre-socialist past, but a new participation in open scientific communication.

The legal foundation of the new Academy was already framed in international terms. Act No. 283/1992 Coll. stated that the Academy and its institutes could conclude agreements on international cooperation in scientific activities and technological development (*Czech National Council, 1992*). This provision appears brief, but its institutional implications were substantial. It recognised international cooperation as a normal function of the Academy rather than as an exceptional act requiring political permission. It also granted institutes a practical role in building international relations, which was important because real cooperation often began at the level of laboratories, archives, research groups, and individual scholarly networks. The Academy's central bodies could sign agreements, represent the institution, and set strategic priorities, but the vitality of internationalisation depended on the initiative of researchers themselves. The legal order after 1993 therefore supported a

decentralised and plural pattern of international cooperation. This was one of the ways in which the new Academy moved away from the older model of politically supervised international relations.

The rupture of 1989 also changed the geography of scientific partnership. During the socialist period, cooperation with the Soviet Union and other socialist countries had been privileged politically, even when many researchers maintained professional ambitions directed towards Western Europe or North America. After 1989, Czech scientific institutions faced the task of rebalancing their external relations. This did not mean that all contacts with former socialist countries disappeared; in many fields, personal relations, shared data, and regional expertise continued. However, the centre of gravity shifted towards Western Europe, the United States, and international organisations operating according to different standards of peer review, publication, and project coordination. The Academy had to learn how to participate in networks where political membership did not guarantee scientific relevance. This shift was intellectually liberating but also sobering. Czech researchers discovered that openness did not automatically erase disparities in funding, infrastructure, language competence, or international visibility. The rebuilding of partnerships therefore involved both enthusiasm and the difficult experience of unequal reintegration.

The first post-transformation decade was especially important because it converted spontaneous contacts into institutional channels. In the immediate aftermath of 1989, many international relations were personal, moral, and improvisational. Foreign colleagues invited Czech researchers, sent books and equipment, supported visits, and helped restore scholarly communication. Western foundations, universities, academies, and learned societies often treated Central European science as a field of democratic reconstruction. Yet such assistance could not remain purely charitable or symbolic. The Academy needed durable agreements, regular mobility schemes, joint projects, and channels of project funding. The transition from solidarity to structured cooperation was therefore a major stage in international rebuilding. It allowed Czech institutes to move from being recipients of post-socialist support to becoming partners in research agendas. This shift was essential for institutional dignity and for the long-term stabilisation of the Academy.

Bilateral cooperation played a particularly important role in this process. Agreements with foreign academies, research councils, and scientific organisations created predictable frameworks for mobility, joint workshops, research visits, and later project-based cooperation. Such arrangements were valuable because they lowered the barriers to contact at a time when Czech researchers often lacked the resources to sustain international exchange independently. They also enabled institutes to cultivate relations beyond the most visible centres of global science. Bilateral cooperation could support links with neighbouring countries, historically connected scholarly communities, and partners in disciplines where long-term trust mattered more than rapid project turnover. The present system of CAS bilateral cooperation, based on agreements with partner organisations and realised through Mobility Projects and Mobility Plus Projects, preserves this institutional logic in a more developed form (*Czech Academy of Sciences, n.d.*). Its contemporary structure shows how practices that began as post-transformation reconnection became a stable component of Academy governance. In this sense, bilateral cooperation was both a transitional tool and a durable institutional mechanism.

The relationship with Slovakia had a special character within this broader reconstruction. The dissolution of Czechoslovakia at the end of 1992 created two national academies and two state frameworks, but it did not erase shared disciplinary traditions, personal networks, archives, language proximity, or decades of common institutional life. Czech-Slovak scientific cooperation after 1993 therefore involved both internationalisation and the management of a recent institutional separation. It differed from cooperation with distant foreign partners because it emerged from a common academic biography. At the same time, it required new legal, financial, and organisational forms, since what had once been internal Czechoslovak cooperation now had to be organised across state borders. This made Czech-Slovak relations an important example of continuity within rupture. The Academy's ability to maintain close ties with Slovak partners helped soften the institutional consequences of the federal split. It also preserved a Central European research space in which language, archives, fieldwork, and disciplinary memory continued to matter.

Partnerships with Germany and Austria were also central to the Academy's post-1989 orientation. These relations were shaped by geographical proximity, historical entanglement, economic asymmetry, and the strategic importance of reintegrating Czech science into German-speaking and broader Western European networks. German universities, Max Planck institutes, research foundations, and academies offered models of research organisation, evaluation, and international visibility that were highly relevant for Czech reformers. Austrian cooperation had its own importance, especially in regional, environmental, historical, and cross-border contexts. These partnerships were not merely technical; they carried a symbolic dimension connected with Central Europe's redefinition after the Cold War. Czech science was repositioning itself from the eastern side of a divided continent into a renewed Central European and European research area. The Academy's cooperation with German and Austrian partners thus contributed to a broader cultural geography of post-socialist return to Europe.

French-Czech cooperation developed through both institutional and disciplinary channels. The presence of French research traditions in the humanities and social sciences was especially important because these fields had been deeply affected by ideological isolation under state socialism. The later CEFRES Platform, uniting the French Research Centre in Humanities and Social Sciences in Prague, Charles University, the Czech Academy of Sciences, and CNRS, illustrates how bilateral and multilateral arrangements could generate durable institutional forms in the post-transformation period (*Czech Academy of Sciences, n.d.*). Although the platform in its later form belongs to the mature phase of internationalisation, it reflects a deeper pattern established earlier: international cooperation was not only about laboratory science or technological development. It also helped rebuild theoretical pluralism, archival scholarship, historical interpretation, and social-scientific dialogue. For humanities and social sciences, foreign partnerships offered access to debates that had been partially blocked or distorted under Marxist-Leninist supervision. They therefore supported intellectual normalisation in the richest sense of the word.

Cooperation with the United States and the United Kingdom had a different but equally important role. These links often involved advanced laboratory training, postdoctoral mobility, language integration, publication practices, and access to highly competitive research environments. For younger Czech researchers, periods abroad in Anglo-American institutions could transform professional expectations. They learned not only new methods but also new norms of academic presentation, grant writing, peer review, laboratory management, and disciplinary debate. The consequences of such mobility were uneven because not all

researchers could travel, and not all fields benefited equally. Yet the return of internationally trained scientists gradually changed the Academy's internal culture. It strengthened the expectation that research excellence must be judged in relation to international standards rather than only national reputation. This expectation would later become central to evaluation reforms and career development within the Academy.

The rebuilding of international partnerships was closely connected with the restoration of scholarly communication. Access to journals, databases, books, catalogues, instruments, and conferences was not a secondary issue; it was a condition of scientific reintegration. Under late socialism, many institutes suffered from limited access to current literature and modern equipment, even when individual researchers maintained high intellectual standards. After 1989, the Academy had to overcome accumulated informational deficits. International partners helped through donations, exchanges, subscriptions, joint projects, and training. Libraries and information services became part of internationalisation because they enabled researchers to re-enter contemporary debates. In this sense, the rebuilding of partnerships was also the rebuilding of the material infrastructure of knowledge. Scientific freedom without access to information would have remained incomplete.

International partnerships also helped reshape standards of publication. In the socialist period, many valuable works were published domestically or within limited international circuits, and the criteria of publication could be shaped by institutional and ideological considerations. After 1989, the pressure to publish in internationally visible journals and with recognised academic publishers increased. This pressure was especially strong in the natural and life sciences, where global journal systems were already well developed. In the humanities and social sciences, the process was more complex because national languages, local archives, and culturally specific topics retained scholarly importance. Nevertheless, international cooperation encouraged Czech researchers to translate their work, publish in foreign languages, and enter broader disciplinary conversations. This did not eliminate the value of Czech-language scholarship. Rather, it forced the Academy to balance national scholarly responsibility with international visibility.

European research programmes became one of the decisive instruments through which international partnerships were rebuilt and formalised. The Czech Republic's participation in the 5th Framework Programme from 1999 represented an important step in the pre-accession integration of Czech research into the European Union's scientific structures (*European Commission, n.d.*). The Framework Programme was not simply a funding source. It was a training ground in multinational project consortia, administrative coordination, work packages, deliverables, evaluation criteria, and strategic research agendas. For Academy institutes, participation in European programmes required new competencies that differed from traditional bilateral exchange. Researchers had to join or coordinate international teams, negotiate roles, meet reporting standards, and align their expertise with European priorities. This experience prepared the Academy for deeper integration after the Czech Republic joined the European Union in 2004. It also helped shift international cooperation from visits and personal networks towards project-based and programme-driven collaboration.

The move into European programmes exposed Czech research to competitive asymmetries. Western European institutions often possessed stronger administrative support, better equipment, higher salaries, and longer experience with EU projects. Czech teams could contribute serious expertise, but they often had to overcome reputational and infrastructural

disadvantages. This made early participation both valuable and difficult. It trained researchers in European project culture, but it also revealed the structural gap between post-socialist science and long-established Western research systems. The Academy's response could not be passive imitation. It had to build project offices, improve language skills, professionalise management, and support researchers in proposal preparation. Internationalisation therefore generated internal organisational change. It was not an external ornament attached to research; it became a driver of institutional modernisation.

The Technology Centre of the Czech Academy of Sciences, established in 1994, belonged to this new ecosystem of international research support and European project orientation (*European Commission, n.d.*). Its creation reflected the growing need for specialised knowledge about international programmes, technology transfer, innovation policy, and participation in European research structures. Such organisations were important because the Academy's institutes could not rely solely on individual enthusiasm. They needed guidance, information, contacts, and administrative competence. The development of support structures around European cooperation showed that internationalisation was becoming institutionalised. It also indicated that research excellence increasingly depended on the capacity to navigate complex funding and policy environments. In the long run, this would become one of the defining features of Europeanised research governance.

International partnerships also affected the Academy's relation to the Czech state. Scientific cooperation became part of the country's broader post-1989 foreign-policy orientation towards European integration, transatlantic cooperation, and participation in international organisations. The Academy was not a diplomatic institution in the narrow sense, but it contributed to the intellectual infrastructure of Czech external relations. Through conferences, joint projects, expert networks, and scientific representation, it helped present the Czech Republic as a democratic country with serious research capacities. This was especially important in the 1990s, when the new state had to establish its identity in Europe after the peaceful dissolution of Czechoslovakia. Science offered a language of competence, openness, and continuity that complemented political diplomacy. The Academy's international partnerships therefore had civic and representational importance beyond the internal world of research.

The rebuilding of international cooperation also had a generational dimension. Senior researchers often reactivated contacts interrupted by normalisation or developed during limited earlier exchanges. Middle-generation scientists had to reconstruct careers that had been shaped by institutional constraints and delayed mobility. Younger researchers, by contrast, entered scientific life at a moment when foreign fellowships, doctoral stays, postdoctoral positions, and international conferences became increasingly normal. This produced generational tensions but also opportunities for renewal. Younger scientists could acquire skills and networks unavailable to many of their predecessors, while senior scholars provided institutional memory and disciplinary continuity. The Academy's challenge was to transform individual mobility into collective benefit. International experience had to return to institutes as new methods, publications, collaborations, and mentoring practices.

Brain drain was one of the persistent risks of the international opening. The same freedom that allowed Czech researchers to collaborate abroad also allowed them to leave permanently or to build careers outside the Czech system. In the early 1990s, this risk was especially acute because salaries, equipment, and career prospects in Western institutions were often much

better. Some departures represented a loss of talent that the Academy could not easily replace. Yet mobility also produced diaspora networks, return flows, and long-term collaboration. The question was not whether researchers should be prevented from leaving, since such control would have contradicted the democratic meaning of 1989. The question was whether the Academy could create conditions under which international mobility strengthened rather than depleted Czech science. This issue would remain important in later debates on career structures and early-career researchers.

International partnerships contributed to the reform of research quality by introducing external judgement. Foreign reviewers, advisory board members, visiting scientists, and project partners brought perspectives that could not be reduced to internal institutional politics. This was particularly important after the traumatic evaluation and restructuring of the early 1990s. The Academy needed external standards to demonstrate that reform was not merely domestic political adjustment but a movement towards internationally recognisable quality. International peer review also helped reduce the risk of closed academic circles reproducing themselves without sufficient comparison. Over time, foreign evaluation became increasingly important in institute assessments and grant procedures. The Academy's later evaluation culture therefore had roots in the international reopening of the first post-transformation decade.

The humanities and social sciences experienced international rebuilding in a distinctive way. For them, internationalisation was not only a matter of publication metrics or laboratory cooperation. It involved the reopening of theoretical traditions, comparative methods, archival access, intellectual pluralism, and debate about the meaning of national history after communism. Czech historians, philosophers, sociologists, economists, linguists, and literary scholars entered conversations about memory, democracy, civil society, nationalism, European identity, and post-socialist transformation. Foreign partners were sometimes fascinated by Central Europe as a laboratory of democratic change, while Czech scholars had to avoid being reduced to mere providers of local case studies. The best forms of cooperation treated Czech scholarship as an equal contributor to general knowledge. This was an important part of rebuilding academic dignity after ideological isolation.

In the natural and technical sciences, international partnerships were often tied to equipment, infrastructure, and participation in large-scale facilities. Some fields could not develop without access to expensive instruments, international data, or distributed research networks. Physics, chemistry, molecular biology, astronomy, earth sciences, and materials research increasingly depended on cooperation that exceeded the capacity of a single national institution. Academy institutes therefore had to become participants in broader infrastructures and consortia. This demanded technical competence, financial planning, and strategic alignment. It also changed the scale of research imagination. Scientific problems were no longer defined primarily by what could be done within one institute; they were defined by what Czech teams could contribute to international research systems.

Regional cooperation in Central Europe formed another layer of partnership. The Visegrad area, neighbouring academies, and cross-border programmes offered frameworks for cooperation among countries undergoing related but not identical transformations. Such cooperation was useful because post-socialist institutions faced similar problems of funding, evaluation, mobility, and European integration. At the same time, regional cooperation could not replace broader European and global integration. The Academy had to participate in Central European

networks without becoming confined to a regional periphery. The most productive model was one in which regional cooperation served as a bridge to wider international science. It allowed Czech researchers to compare transformation experiences, develop joint projects, and enter European programmes with partners sharing similar institutional histories.

The rebuilding of partnerships also changed the Academy's internal language of success. Under the socialist system, success could be measured by institutional rank, state recognition, plan fulfilment, or ideological compatibility alongside genuine scientific achievement. After 1989, international collaboration became one of the signs that an institute or research team was scientifically alive. Invitations, joint publications, foreign grants, conference roles, and membership in international organisations became markers of credibility. This did not mean that all international activity was automatically valuable. Some cooperation remained ceremonial or superficial, and some partnerships produced little scientific substance. Nevertheless, the general direction was clear: the Academy's reputation increasingly depended on its capacity to be recognised by partners outside the national system. Internationalisation became a practical test of reform.

The Academy's international partnerships also had to negotiate the relationship between national needs and global science. The Academy could not become merely a branch office of European research agendas, nor could it retreat into national self-sufficiency. Its mission required it to advance knowledge at an international level while also considering the needs of Czech society and national culture (*Czech Academy of Sciences, n.d.*). This balance was especially important in fields dealing with Czech language, history, archaeology, environment, social transformation, and public policy. International cooperation could enrich these fields through comparison and method, but their legitimacy also depended on national scholarly responsibility. The Academy therefore had to show that internationalisation did not weaken its public role in the Czech Republic. On the contrary, good international cooperation could deepen the quality of national expertise.

By the end of the first post-transformation decade, the rebuilding of international partnerships had moved beyond the first emotional phase of reopening. The Academy had established legal, organisational, and professional foundations for international cooperation. Its institutes were participating in bilateral exchanges, restoring disciplinary contacts, entering European research programmes, and developing new expectations of mobility and publication. The process remained uneven, and many weaknesses persisted: limited resources, administrative inexperience, salary gaps, infrastructural deficits, and unequal access across disciplines. Yet the direction was irreversible. Internationalisation had become part of the Academy's institutional identity. It was no longer an exception granted to selected researchers; it was increasingly a normal condition of modern research.

The later development of the Academy's international agenda confirms the durability of this transformation. Contemporary CAS bilateral cooperation is organised through partner organisations, Mobility Projects, Mobility Plus Projects, and running calls with academies and research organisations across Europe and beyond (*Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, n.d.*). The Academy's involvement in the European Research Area, Horizon programmes, open science structures, and international organisations reflects a mature stage of processes that began with the post-1989 reopening. Even newer initiatives, such as support for researchers at risk and cooperation with Ukrainian scientists after the Russian invasion, reveal that international cooperation has acquired an ethical and civic

dimension as well as a scientific one (*Czech Academy of Sciences, 2022*). This does not mean that the Academy has solved all problems of international competitiveness. It means that international partnership has become one of the basic ways in which the Academy understands its public mission, scientific quality, and European responsibility.

Thus, the rebuilding of international partnerships after 1989 was a decisive element in the stabilisation and modernisation of the Czech Academy of Sciences. It restored freedoms that had been restricted under state socialism, but it also created new demands for quality, competitiveness, mobility, language competence, project management, and external evaluation. The Academy's internationalisation developed from personal reconnections and symbolic gestures of solidarity into bilateral agreements, European programme participation, institutional support structures, and long-term scientific networks. It helped the Academy distance itself from the ideological and geopolitical limitations of the socialist period while preserving and renewing older traditions of Czech participation in European scholarship. The process was uneven, and it exposed Czech science to new inequalities, including funding gaps, infrastructural disadvantages, and the risk of brain drain. Yet without this reopening, the Academy could not have become a modern research organisation. International partnerships transformed not only the Academy's external relations, but also its internal standards, career expectations, evaluation culture, and understanding of scientific autonomy.

Evaluation of Research and Institutional Quality

1. The Development of Research Evaluation Mechanisms

The development of research evaluation mechanisms in the Czech Academy of Sciences was one of the deepest institutional changes of the post-1993 period. Evaluation did not emerge as a neutral administrative technique added to an already stable organisation. It grew out of the moral, political, financial, and scientific dilemmas created by the end of state socialism and by the transformation of the Czechoslovak Academy of Sciences into the Czech Academy of Sciences. The Academy had to demonstrate that it was no longer governed by ideological loyalty, bureaucratic inertia, or inherited institutional privilege. It also had to prove that it could preserve high-quality research without the old forms of state protection. Evaluation therefore became a language through which the Academy could speak simultaneously to scientists, government, universities, foreign partners, and the wider public. It was a mechanism of reform, but also a mechanism of survival. In the first post-transformation decade, to evaluate research meant to answer a larger question: which parts of the inherited Academy possessed genuine scientific vitality, and which parts belonged to the political and organisational world that had collapsed in 1989?

The earliest post-socialist evaluations were inseparable from institutional restructuring. Before the Czech Academy of Sciences formally began its existence in 1993, the institutes inherited from the Czechoslovak Academy had already been subjected to reviews that helped determine which units would continue, which would be reorganised, and which would be abolished or transferred. These early evaluations were not yet part of a refined, stable, and

methodologically elaborate system. They were closer to institutional triage under conditions of political rupture and financial pressure. Yet they established a principle that would define the Academy's later development: the future of an institute had to be justified by scientific quality, not merely by administrative continuity. This was a decisive departure from the late socialist model, in which institutional existence was often protected by planning, hierarchy, and political usefulness. The Academy's later evaluation culture therefore began in a moment of crisis, but its long-term significance lay in the normalisation of quality as a criterion of institutional legitimacy (*Filáček, 2023*; *Mayntz, Schimank, & Weingart, 1998*).

The post-1989 context made evaluation both necessary and painful. Many institutes contained serious researchers and internationally valuable work, but they also carried the marks of ideological supervision, personnel compromises, and uneven scientific standards. This was especially visible in those parts of the humanities and social sciences that had been more directly exposed to Marxist-Leninist doctrine, party historiography, planned social analysis, or politically sanctioned interpretations of culture and society. Evaluation in these fields had to distinguish between compromised institutional frameworks and individual scholarly competence. The same problem appeared in another form in the natural and technical sciences, where the issue was often not ideological distortion but outdated equipment, weak international visibility, excessive dependence on planned industry, or insufficient adaptability to new funding conditions. Thus, from the beginning, evaluation had to be sensitive to disciplinary difference. A single bureaucratic measure could not fairly capture the state of archaeology, molecular biology, philosophy, mathematics, physics, sociology, or materials research.

The establishment of the Czech Academy of Sciences by Act No. 283/1992 Coll. gave evaluation a new institutional setting. The Act defined the Academy's governing bodies, its public status, its connection with the state budget, and its responsibility for scientific research through institutes (*Czech National Council, 1992*). It did not reduce the Academy to a ministry-controlled organisation, but it also did not allow it to exist as a closed corporation of scholars without accountability. The Academy Assembly, Academy Council, President, and Council for Sciences together created a governance framework in which internal self-government and public responsibility could coexist. Evaluation gradually became one of the instruments by which this coexistence was managed. It allowed the Academy to defend autonomy while showing that autonomy was accompanied by internal judgement, external comparison, and public accountability. This connection between self-government and evaluation was one of the most important institutional innovations of the 1990s.

The first function of evaluation was to create confidence after rupture. Scientists who had passed through purges, ideological control, and the sudden uncertainty of transformation needed to believe that the future of their institutes would not be decided only by political revenge, personal networks, or short-term fiscal convenience. Government officials and public critics, on the other hand, needed evidence that the Academy was capable of serious self-reform. Evaluation offered a procedure through which difficult decisions could be presented as grounded in scientific judgement. It did not remove conflict, and it certainly did not make all decisions universally accepted. Careers were interrupted, institutes were closed, and research agendas were redirected. Yet evaluation introduced a more legitimate grammar of institutional change. It turned reform from a purely political act into a process that could at least claim to be guided by scholarly criteria.

Over the 1990s, evaluation became more regular and less exceptional. The Academy's own later methodology explicitly states that CAS had organised regular evaluation of its institutes since its creation in 1993 (*Czech Academy of Sciences, 2019*). This continuity is important. It shows that evaluation was not merely a one-time post-revolutionary purge, but became part of the Academy's permanent governance. The meaning of evaluation changed as the institution stabilised. In the early phase, the central question was whether institutes should survive and in what form. Later, the questions became more strategic: how strong were research teams, how internationally visible were their results, how viable were their plans, how coherent were institute profiles, and how should institutional support be differentiated? Evaluation therefore moved from emergency restructuring towards strategic management.

The growth of competitive funding reinforced this development. Once Academy institutes had to combine institutional support with grants from GA ČR, internal Academy schemes, ministerial programmes, and later European sources, evaluation could no longer remain a purely internal matter. Research quality became connected with public funding, grant success, publication visibility, international partnerships, and institutional strategy. The Academy had to demonstrate not only that its institutes were scientifically active, but also that public resources were being allocated in a rational and defensible manner. This logic was strengthened by Act No. 130/2002 Coll., which regulated support for research, experimental development, and innovation from public funds and linked institutional support to evaluation procedures (*Parliament of the Czech Republic, 2002*). Evaluation thus became part of the financial architecture of Czech research. It mediated between public money and scientific autonomy.

The Academy's evaluation mechanisms developed in dialogue with wider changes in Czech research policy. During the 1990s and 2000s, the Czech Republic gradually built a more formal research governance system, including grant agencies, national information systems, performance indicators, and methodologies for assessing research organisations. This process reflected a broader European movement towards accountability, transparency, and evidence-based allocation of public research funding. Yet the Czech case also carried specific post-socialist tensions. Evaluation had to overcome the legacy of ideological judgement without becoming a merely mechanical exercise in counting outputs. It had to stimulate international competitiveness without destroying research fields dependent on long-term national scholarly tasks. It had to support differentiation between strong and weak research without forcing all institutions into the same mould. The Academy's own evaluation experience became one of the laboratories in which these tensions were worked out.

A central feature of the Academy's evaluation culture was the gradual movement towards informed peer review. Purely internal judgement would have risked reproducing local hierarchies and personal networks. Purely quantitative assessment would have risked flattening the diversity of research into numerical indicators detached from disciplinary meaning. Informed peer review offered a middle path. It combined expert judgement with documentary evidence, selected outputs, bibliometric data where appropriate, institute reports, team profiles, and site visits or hearings. This approach recognised that serious evaluation requires interpretation. Numbers can indicate visibility, productivity, or citation patterns, but they cannot by themselves explain intellectual originality, methodological difficulty, national scholarly responsibility, or long-term potential. The Academy's later methodologies would formalise this balance, but the logic emerged gradually from the need to evaluate a diverse institution fairly.

International participation in evaluation became increasingly important. After 1989, the Academy's legitimacy depended heavily on reintegration into European and global science. It was therefore natural that foreign reviewers and international panels became part of evaluation procedures. Their involvement helped reduce the danger of local self-confirmation and exposed institutes to standards beyond the Czech environment. It also strengthened the Academy's claim that its internal reform was not provincial or merely political, but aligned with broader scientific expectations. International evaluators could assess publication practices, collaboration networks, thematic relevance, and institutional strategy in relation to developments in their fields. This did not mean that foreign judgement was infallible. External reviewers could misunderstand local conditions or undervalue nationally oriented scholarship. Nevertheless, international peer review became one of the strongest instruments for connecting Academy evaluation with global scientific quality.

The discipline-specific character of evaluation was another crucial development. The Academy included institutes working in mathematics, physics, chemistry, biology, earth sciences, medicine-related research, humanities, social sciences, law, philosophy, history, linguistics, archaeology, and many other fields. These disciplines differ profoundly in publication rhythms, authorship patterns, citation cultures, infrastructure needs, language practices, and relations to public relevance. A monograph in history, a critical edition in philology, a patent in applied materials research, a high-impact article in molecular biology, and a long-term ecological dataset cannot be assessed by identical criteria. The Academy's later methodology therefore emphasised field-based evaluation and division into panels and commissions that reflected disciplinary specificities (*Czech Academy of Sciences, 2019*). This was not a minor procedural choice. It was a defence of scientific diversity against crude managerial simplification.

The use of bibliometrics developed cautiously within the Academy's evaluation mechanisms. Bibliometric information could be useful, especially in fields where journal publication, citation patterns, and international indexing were well established. It could help evaluators identify publication visibility, collaboration patterns, and relative positioning in international literature. Yet the Academy's methodology treated bibliometric data as complementary background for informed peer review rather than as an automatic substitute for judgement (*Czech Academy of Sciences, 2019*). This distinction was important because Czech research policy had, at various moments, been criticised for excessive dependence on quantitative output systems and performance-based funding calculations. The Academy's more nuanced approach reflected the need to avoid both anti-evaluation traditionalism and metric fetishism. It recognised that indicators are instruments, not verdicts.

The national debate on performance-based research funding gave additional significance to the Academy's evaluation practices. The Czech evaluation system became known for strong reliance on recorded outputs, points, and quantifiable results, especially in earlier versions of national methodology. Critics argued that this encouraged formal productivity, strategic behaviour, and competition among very different research organisations according to insufficiently differentiated criteria (*Good, Vermeulen, Tiefenthaler, & Arnold, 2015*; *Arnold, Mahieu, Horvath, & Malkin, 2011*). Such criticism was especially relevant for the Academy because its institutes had missions different from those of universities, applied research organisations, industrial laboratories, or departmental institutes. The Academy needed evaluation, but not a system that treated all outputs and all institutions as commensurable in

a simplistic way. Its internal evaluations therefore became an argument for more differentiated, mission-sensitive assessment.

The development of evaluation mechanisms was also closely connected with institutional funding. Evaluation results became one of the background documents for differential institutional support of CAS institutes (*Czech Academy of Sciences, 2019*). This created a direct link between scientific judgement and material consequences. Such a link was necessary if evaluation was to matter, but it also made the process more sensitive. Institutes had to trust that evaluation would not become an arbitrary punishment mechanism. Evaluators had to provide information useful for improvement, not merely scores or rankings. Academy leadership had to use results strategically while preserving the stability needed for long-term research. The connection between evaluation and funding therefore intensified the need for procedural clarity, transparency, and field sensitivity.

Evaluation also reshaped the role of institute directors and scientific councils. Directors could no longer function only as administrators of inherited research units. They had to present institutional strategies, explain research profiles, respond to evaluators' comments, manage weaknesses, and use evaluation results in long-term planning. Scientific councils and boards became important mediators between evaluation findings and everyday research life. They helped translate external assessment into recruitment decisions, thematic priorities, publication strategies, infrastructure development, and cooperation with universities. In this sense, evaluation became a practical tool of institute governance. It was not confined to central Academy documents. It entered the ordinary rhythm of institutional self-description and strategic decision-making.

For research teams, evaluation created both pressure and opportunity. Strong teams could use evaluation to gain recognition, defend resources, attract early-career researchers, and strengthen their position inside institutes. Weaker teams could be asked to change direction, merge, improve international publication, or reconsider their viability. This introduced a more dynamic internal structure into Academy institutes. It also changed the social experience of research. Scientists increasingly had to articulate the significance of their work not only to colleagues in their field, but also to institutional evaluators, management bodies, and funding authorities. Evaluation therefore contributed to the professionalisation of academic self-presentation. Research became something to be performed intellectually and documented institutionally.

The humanities and social sciences posed special challenges for evaluation. Their outputs often include monographs, critical editions, dictionaries, translations, archival publications, expert reports, cultural heritage work, public interventions, and nationally significant scholarship in Czech. International journal metrics alone cannot capture these forms of work. At the same time, these disciplines could not be exempt from quality assessment merely because their outputs are diverse. The Academy had to evaluate them in a way that recognised both national scholarly responsibility and international intellectual standards. This required expert panels capable of understanding language, archive-based scholarship, methodological innovation, theoretical contribution, and public relevance. The development of evaluation mechanisms therefore forced the Academy to think seriously about what quality means in different epistemic cultures.

In the natural and life sciences, evaluation often focused more visibly on international publication, laboratory infrastructure, grant success, collaboration, and participation in global

research networks. Yet even here simple metrics were insufficient. A small team working on a difficult experimental problem, a long-term observatory programme, a specialised facility, or a national research infrastructure could have significance that was not immediately reducible to annual publication counts. Evaluation had to consider vitality, sustainability, technical capacity, international positioning, and strategic relevance. This broadened the concept of quality beyond the single article or citation number. It also encouraged institutes to explain how their research environments functioned, how equipment was used, how young researchers were trained, and how collaboration was organised.

The Academy's evaluation mechanisms increasingly incorporated the idea of societal relevance. This was not identical with immediate commercial application. Societal relevance could include contributions to public policy, education, culture, legislation, health, environment, heritage, public debate, and expert knowledge for state institutions. The Academy's later evaluation methodology explicitly included contribution to knowledge and societal relevance among the main aspects of assessment (*Czech Academy of Sciences, 2019*). This reflected a broader shift from science understood only as autonomous discovery towards science understood as publicly responsible knowledge. The change did not abolish the Academy's commitment to basic research. Rather, it required basic research institutions to explain more clearly how long-term knowledge enters society, often indirectly and over extended periods.

The emergence of Strategy AV21 later gave this development a more programmatic form. Although Strategy AV21 belongs mainly to the mature phase of the Academy's modernisation, it built upon the evaluative culture created earlier. Its emphasis on "top research in the public interest" expressed a desire to connect excellence with social responsibility (*Filáček, 2023*). Evaluation mechanisms were necessary for this ambition because public-interest research cannot simply be declared by institutional rhetoric. It must be supported by credible evidence of quality, cooperation, relevance, and strategic capacity. In this sense, the development of evaluation prepared the Academy for a broader redefinition of its public mission. Quality assessment became one of the institutional foundations of responsible science.

The relationship between Academy evaluation and national Methodology 2017+ was especially important. Methodology 2017+ was introduced as a national framework for evaluating research organisations and research, development, and innovation purpose-tied support programmes (*European Commission, 2018*; *Office of the Government of the Czech Republic, 2018*). It sought to move beyond earlier limitations by combining several modules, including quality of selected results, research performance, social relevance, viability, and strategy. The national system also recognised different categories of research organisations, including universities, institutes of the Czech Academy of Sciences, and departmental or industrial research organisations. This segmentation reflected a lesson already visible in the Academy's experience: research organisations with different missions should not be judged as if they were identical. The Academy's previous evaluations influenced the development of this more nuanced national approach (*Czech Academy of Sciences, 2019*).

The 2015–2019 CAS evaluation illustrates the mature stage of this development. It was conducted under Act No. 130/2002 Coll. and was interlinked with Methodology 2017+, while also remaining more detailed and institution-specific than the national framework (*Czech Academy of Sciences, 2021*). The evaluation distinguished between research-oriented institutes and research-infrastructure institutes, used methodological documents and

annexes, relied on coordination mechanisms, and produced final reports for institutes. It also included research reports, bibliometric background, team quality profiles, final reports, and directors' statements. This structure shows how far the Academy had moved from the early emergency evaluations of the 1990s. Evaluation had become a complex institutional procedure combining documentation, peer review, strategic assessment, and public reporting.

The COVID-19 pandemic affected the 2015–2019 evaluation process and demonstrated the practical resilience of the system. The final report notes that the evaluation took place under exceptionally difficult pandemic conditions and required operative changes to the methodology (*Czech Academy of Sciences, 2021*). This detail is more than an administrative footnote. It shows that evaluation had become important enough to be continued even during a major public crisis, but flexible enough to adapt to extraordinary circumstances. The pandemic also highlighted the wider relevance of research institutions, especially in fields connected with health, modelling, social behaviour, public communication, and expert advice. Evaluation under such conditions had to assess not only past outputs, but also institutional vitality in a rapidly changing environment. This confirmed the importance of combining quality judgement with strategic understanding.

Evaluation mechanisms also changed the Academy's relationship with transparency. The publication of evaluation materials, reports, and methodological documents made the assessment of institutes more visible to the public and to the scientific community. This visibility could be uncomfortable, because it exposed strengths and weaknesses that might previously have remained internal. Yet it also strengthened the Academy's claim to public accountability. A publicly funded research institution must be able to explain how it judges itself and how it uses public resources. Transparency did not mean that every judgement would be simple or universally accepted. It meant that procedures, criteria, and outcomes became part of the public record. This was a major difference from the opaque political-administrative control of the socialist period.

The development of evaluation mechanisms also contributed to the Academy's Europeanisation. European research policy increasingly emphasised excellence, impact, open science, integrity, international collaboration, and responsible use of public funds. The Academy's evaluation culture aligned it with these expectations while preserving its own institutional specificities. Participation in European research programmes, international panels, and comparative standards reinforced the view that evaluation is not merely a domestic bureaucratic requirement. It is part of the common language of modern research governance. At the same time, the Academy's experience shows that Europeanisation cannot be reduced to copying external models. Evaluation had to be adapted to Czech institutional history, disciplinary structure, and the Academy's special role as a network of public research institutes.

The development of evaluation mechanisms inevitably produced tensions. Researchers sometimes experienced evaluation as administrative burden, external pressure, or a source of anxiety. Institutes had to devote time and resources to preparing reports, collecting data, selecting outputs, checking bibliometric information, and responding to panels. There was also the risk that evaluation could encourage strategic behaviour: choosing fashionable topics, maximising countable outputs, avoiding risky long-term research, or privileging easily visible results. These risks are not unique to the Czech Academy; they are part of contemporary

research governance across Europe. The Academy's challenge was to ensure that evaluation served research rather than replacing research with performance theatre. The principle of informed peer review was one response to this danger.

At its best, evaluation created opportunities for institutional learning. It allowed institutes to see themselves through external eyes, compare teams, identify weaknesses, strengthen internationalisation, improve doctoral cooperation, and clarify long-term strategies. It also gave Academy leadership a more evidence-based understanding of the whole institution. Without evaluation, decisions about funding, restructuring, recruitment, and strategic initiatives would have depended more heavily on informal reputation or political negotiation. Evaluation made the Academy more legible to itself. This self-knowledge was one of the quiet but essential achievements of post-1993 modernisation. It transformed the Academy from a historically inherited system of institutes into a more reflective organisation capable of analysing its own performance and future.

The development of evaluation mechanisms therefore altered the meaning of scientific autonomy. In the post-1989 context, autonomy first meant liberation from ideological supervision and political command. Over time, however, autonomy came to mean something more demanding: the right of the scientific community to govern itself through credible standards, transparent procedures, international comparison, and responsibility for public resources. The Academy could defend independence from direct political interference precisely because it developed mechanisms of assessment and accountability. Evaluation was therefore not the enemy of autonomy, although badly designed evaluation could certainly threaten it. Properly understood, it was one of the institutional conditions under which autonomy could survive in a democratic state.

Thus, the development of research evaluation mechanisms in the Czech Academy of Sciences was a long movement from post-socialist institutional triage to systematic, field-sensitive, internationally informed, and strategically useful assessment. Its origins lay in the urgent need to distinguish scientific vitality from ideological inheritance after 1989. Its consolidation was shaped by the Academy's legal status, competitive funding, national research policy, international reintegration, and the growing demand for public accountability. Over time, evaluation became more than a procedure for judging institutes; it became a mechanism for governing the relationship between autonomy, quality, funding, strategy, and public responsibility. The Academy's experience also showed the dangers of crude quantification and the need to combine indicators with expert judgement. By the 2010s and 2020s, CAS evaluation had become one of the most developed instruments of institutional modernisation in Czech science, linking the Academy's historical mission with the contemporary standards of European research governance.

2. Quantitative Indicators, Peer Review, and Institutional Assessment

The relationship between quantitative indicators, peer review, and institutional assessment became one of the most sensitive questions in the modern history of the Czech Academy of Sciences. After the turbulent restructuring of the early 1990s, the Academy increasingly needed evaluation procedures that could be seen as credible, transparent, and methodologically defensible. Yet credibility could not be achieved simply by counting publications, citations, grants, or patents. Nor could it be achieved by relying only on traditional

peer judgement, which might reproduce disciplinary hierarchies, personal networks, or inherited reputations. The central challenge was to combine evidence and interpretation in such a way that evaluation would support research quality rather than distort it. This challenge was especially acute in the Academy because its institutes differed greatly in discipline, mission, publication culture, infrastructure needs, and relationship to public relevance. A common system of assessment had to respect the diversity of mathematics, physics, molecular biology, environmental sciences, archaeology, philosophy, history, linguistics, economics, law, and social research. The Academy's modern evaluation culture therefore developed around a central tension: how to make scientific work visible and comparable without reducing it to a crude numerical hierarchy. This tension placed the Academy within a wider European debate about research assessment, but it also reflected the specific post-socialist history of Czech science.

Quantitative indicators entered Czech research governance with considerable force because they promised objectivity, transparency, and depersonalisation. After decades in which political loyalty and administrative position had often influenced scientific careers and institutional resources, the appeal of measurable outputs was understandable. Numbers seemed to offer a way to replace opaque judgement with visible evidence. Publication counts, citation indicators, journal rankings, grant income, doctoral completions, patents, and other measurable outputs could be recorded, compared, and audited. They offered government and funding bodies a language of accountability. They also helped research organisations show that public money produced identifiable results. In this sense, quantitative indicators were not merely bureaucratic inventions imposed on scientists from outside. They responded to a genuine need for public justification in a democratic research system. The problem was that the same instruments that could increase transparency could also simplify, distort, and over-govern scientific life.

The Czech debate about performance-based research funding revealed these dangers particularly sharply. Earlier national evaluation systems placed substantial emphasis on recorded outputs and point-based calculations, which were intended to allocate institutional funding more fairly and stimulate productivity. However, such systems were later criticised for instability, unpredictability, and insufficient sensitivity to disciplinary and institutional differences (*Good, Vermeulen, Tiefenthaler, & Arnold, 2015*). A method designed to depersonalise and depoliticise funding could, paradoxically, create new incentives for formal productivity rather than genuine excellence. Researchers and institutions might adapt strategically to the scoring system by maximising countable outputs, choosing publication channels for points, or privileging short-term measurable results. This did not mean that indicators were useless. It meant that indicators became dangerous when they were treated as substitutes for scholarly judgement. The Academy's own evaluation culture can be understood partly as a response to this problem.

The Academy's position was distinctive because it had to defend both accountability and disciplinary depth. It could not reject evaluation, since its legitimacy after 1993 depended on showing that public support was linked to research quality. Yet it also could not accept a purely mechanical assessment model without damaging its own institutional mission. Many Academy institutes maintained long-term programmes that do not produce immediate, easily countable outputs every year. Some worked with collections, archives, observatories, dictionaries, long-term ecological data, national language resources, or infrastructure that supports research beyond a single publication cycle. Others produced internationally

competitive articles in fields where bibliometric indicators were meaningful. Still others combined scholarly, cultural, public-policy, and expert functions. The Academy therefore required a model of evaluation capable of seeing both measurable performance and institutional mission. This requirement explains why informed peer review became so central to CAS assessment.

Informed peer review is not a rejection of quantitative evidence. It is a disciplined attempt to place such evidence within expert interpretation. In the Academy's evaluation methodology for 2015–2019, the assessment of research-oriented institutes combined peer review of selected outputs, bibliometrics, institute and team reports, quality profiles, and other documentary materials (*Czech Academy of Sciences, 2019*). This combination recognised that research quality cannot be grasped through a single instrument. Selected outputs allow researchers to present their most significant work; bibliometrics provide contextual information about visibility and citation impact where relevant; reports explain strategy, staffing, funding, infrastructure, doctoral training, and social relevance; expert panels interpret these materials in relation to disciplinary standards. The value of this model lies precisely in the interaction among different forms of evidence. Peer review without evidence can become impressionistic. Indicators without peer review can become blind. Institutional assessment needs both, but it must organise their relationship carefully.

The use of selected outputs was especially important because it shifted attention from mere quantity to quality. A system based only on counting all outputs may reward volume rather than intellectual significance. By contrast, asking institutes or research teams to submit selected results invites them to identify work they consider most important. This creates a different evaluative conversation. The question is not simply how much was produced, but why particular works matter. A selected article, monograph, dataset, patent, edition, software tool, or policy study can be assessed in relation to originality, methodological rigour, international contribution, or societal relevance. Such selection also requires institutional self-knowledge. Research teams must understand their own strongest achievements and be able to explain them to expert reviewers. Evaluation therefore becomes a process of institutional reflection as well as external judgement.

Bibliometric indicators nevertheless retained an important place in fields where they could provide meaningful background. In many natural, medical, technical, and mathematical sciences, publication in international journals and citation patterns are part of the normal communication structure of the discipline. Bibliometric data can help identify whether a research team publishes in visible journals, participates in international debates, and receives attention from other researchers. It can also reveal collaboration patterns and changes over time. However, even in these fields, bibliometrics require caution. Citation practices vary by discipline, subfield, language, team size, and publication type. A highly specialised field may produce lower citation numbers than a fashionable field, even when the work is excellent. An interdisciplinary result may be difficult to classify within conventional categories. A young team may not yet have accumulated citation impact, while an older established team may benefit from accumulated visibility. Bibliometrics must therefore be read, not worshipped.

In the humanities and social sciences, the limits of bibliometric evaluation become even clearer. Major scholarly contributions may appear as monographs, edited volumes, critical editions, dictionaries, translations, archival publications, databases, legal commentaries, expert reports, or culturally significant works in Czech. These outputs often have intellectual

value that international citation databases capture poorly or not at all. National language scholarship may be essential for the development of Czech public culture, education, law, memory, and heritage. At the same time, humanities and social sciences cannot be exempt from standards of quality. They must be evaluated by experts capable of understanding theoretical contribution, archival depth, methodological innovation, interpretive originality, and international relevance. The Academy's institutional diversity therefore makes a strong argument for field-sensitive evaluation. A fair system cannot impose the publication culture of molecular biology on medieval studies, nor can it allow national specificity to become an excuse for weak scholarship.

The Czech Academy's evaluation system tried to address this diversity through panels and commissions structured around disciplinary areas. Such organisation recognised that meaningful assessment requires evaluators who understand the epistemic culture of the field. A panel evaluating an institute of philosophy must ask different questions from one evaluating an institute of physics or microbiology. The relevant outputs, rhythms of work, forms of collaboration, and signs of originality are not the same. Yet disciplinary specificity does not mean disciplinary isolation. Evaluation panels also help compare institutes and teams with international standards within their own fields. They can ask whether a history institute participates in leading historiographical debates, whether a biological institute contributes to internationally recognised experimental research, or whether a technical institute has an appropriate balance between fundamental and applied work. Field-sensitive peer review thus combines respect for difference with an expectation of excellence.

Institutional assessment goes beyond the evaluation of individual outputs. It asks whether an institute is intellectually coherent, strategically viable, well governed, internationally connected, and capable of sustaining future research. This broader perspective is essential for the Academy because its institutes are not merely collections of individual scholars. They are public research organisations with directors, scientific boards, budgets, infrastructure, career structures, doctoral cooperation, administrative systems, and long-term responsibilities. An institute may contain excellent individuals but still suffer from weak strategy, poor mentoring, fragmented teams, or inadequate governance. Conversely, a strategically strong institute may be building emerging capacities whose full results will appear only later. Institutional assessment therefore evaluates research environments as well as outputs. It asks whether the conditions for quality are being created and maintained. This is one of the major differences between mature evaluation and simple output counting.

The assessment of research teams within institutes added another layer of precision. The Academy's 2015–2019 evaluation included reports and quality profiles at the level of research teams, allowing evaluators to see internal variation within institutes (*Czech Academy of Sciences, 2021*). This mattered because institutes are rarely homogeneous. A single institute may contain internationally leading teams, stable mid-level groups, emerging young laboratories, and weaker units that need restructuring. Evaluating only the institute as a whole can hide such differences. Team-level assessment gives directors and Academy leadership more useful information for strategic decisions. It can support stronger teams, encourage mergers, redirect resources, or identify areas needing renewal. It also makes evaluation more directly relevant to the internal governance of institutes. In this sense, institutional assessment became a managerial and developmental tool, not merely an external judgement.

The connection between evaluation and institutional funding gave these assessments practical importance. Evaluation results were intended to provide background for differential institutional support of CAS institutes (*Czech Academy of Sciences, 2019*). This connection made evaluation consequential, but also more delicate. If results influence resources, institutes have strong reasons to care about methods, criteria, reviewer competence, and procedural fairness. A poorly designed system can damage trust, encourage defensive behaviour, and reward superficial adaptation. A well-designed system can help align resources with quality and strategic need. The Academy's challenge was therefore to ensure that assessment did not become a punitive ritual. It had to provide information for improvement, not only justification for budgetary redistribution. This distinction is crucial because research organisations need stability as well as incentives.

Peer review itself is not free from problems. Reviewers bring expertise, but also preferences, disciplinary assumptions, and sometimes bias. They may favour familiar approaches, undervalue risky work, or misunderstand the local mission of a research institute. International reviewers can strengthen objectivity, but they may also lack knowledge of Czech scholarly responsibilities, language-specific outputs, or the historical role of certain institutes. Domestic reviewers may understand the context better, but they may be too close to local networks. Evaluation therefore requires careful reviewer selection, conflict-of-interest rules, balanced panels, clear documentation, and transparent procedures. The Academy's reliance on informed peer review should not be romanticised as pure scholarly wisdom. It is a governance technology that must itself be governed.

The same caution applies to quantitative indicators. Indicators can discipline rhetoric by requiring evidence, but they can also produce artificial certainty. Publication counts may show activity but not depth. Citation impact may indicate visibility but not necessarily originality or social value. Grant income may show competitiveness but can favour fields with more funding opportunities. Patent numbers may indicate applied potential but not the quality of basic science. Doctoral numbers may reveal training activity but not necessarily mentoring quality. International co-authorship may signal cooperation but not always intellectual substance. Every indicator answers only a limited question. The Academy's evaluation culture therefore had to resist the temptation to turn partial signals into complete judgements.

One of the most damaging effects of excessive metricisation is strategic behavioural adaptation. When researchers know that particular outputs or indicators are rewarded, they may reshape their work to fit the assessment system. This can stimulate productivity, but it can also produce salami-slicing of publications, avoidance of difficult long-term questions, neglect of national scholarly tasks, preference for fashionable topics, or overproduction of low-value outputs. Institutions may invest more in improving measurable performance than in strengthening intellectual quality. Such behaviour is not a moral failure of individual researchers; it is a predictable response to incentive structures. The criticism of the Czech performance-based research funding system was precisely that it risked encouraging such distortions (*Good et al., 2015*). The Academy's more balanced assessment model therefore served as a corrective against an overly mechanical output economy.

At the same time, the Academy could not retreat into an anti-metric culture. In modern research governance, public institutions must provide evidence of performance. Government, taxpayers, international partners, and the scientific community have legitimate reasons to ask what publicly funded institutes produce. Without data, evaluation becomes opaque and

vulnerable to informal power. The question is not whether indicators should exist, but how they should be used. Indicators are useful when they support expert judgement, reveal patterns, raise questions, and identify areas for closer analysis. They become harmful when they claim to settle questions that require interpretation. The Academy's methodological development therefore represented an attempt to civilise indicators by embedding them within peer review and institutional analysis.

The national Methodology 2017+ expressed a similar move towards a more complex model of assessment. It divided evaluation into modules, including peer review of selected results, bibliometric analysis, social relevance, viability, and strategy (*Office of the Government of the Czech Republic, 2018*). This modular structure recognised that research organisations cannot be evaluated only by one dimension of performance. The first two modules address results and bibliometric context, while later modules ask broader questions about institutional environment, social contribution, and strategic development. The Academy's experience influenced this national shift, since the evaluation of CAS institutes provided an important precedent for combining international peer review, bibliometrics, and institutional assessment. Methodology 2017+ therefore can be seen not only as a national policy reform but also as a partial generalisation of lessons already learned within the Academy. It represented a movement away from simplified counting towards more differentiated judgement.

The distinction between national evaluation and Academy-specific evaluation is important. National methodologies must cover a wide variety of research organisations, including universities, Academy institutes, departmental institutes, and other public or private research bodies. They therefore require a degree of generality. Academy evaluation, by contrast, can be more closely adapted to the specific structure and mission of CAS institutes. This allows for more detailed institute reports, team-level assessments, and direct institutional learning. The Academy's evaluation can ask questions that are especially relevant to its own governance: how should institutional support be differentiated among institutes; which teams need strengthening; which areas require renewal; how do institutes contribute to Strategy AV21; how do they cooperate with universities; how do they sustain research infrastructures? This specificity is one reason why Academy evaluation remained important even within the broader national system.

Institutional assessment also included attention to management and governance. Scientific quality is not produced only by brilliant individuals; it is shaped by leadership, recruitment, infrastructure, internal communication, doctoral training, administrative capacity, and strategic coherence. An institute with weak governance may fail to support promising researchers or may allow declining teams to persist without renewal. An institute with strong governance can create conditions for excellence, international collaboration, and generational change. Evaluation therefore had to examine not only past publications but also institutional vitality. This was especially important in a post-transformation academy where leadership structures had already been rebuilt after 1989 and where directors increasingly had to operate as strategic managers. Assessment of governance linked scientific evaluation with the broader modernisation of research organisations.

The question of grants and external funding formed another part of institutional assessment. Success in competitive funding can indicate the ability of research teams to formulate strong projects and gain peer recognition. It also helps institutes diversify resources and participate in national or international networks. However, grant income cannot be used as a simple proxy

for quality. Some fields have more grant opportunities than others; some socially or nationally important work is less likely to attract large project funding; some excellent basic research may require long periods before becoming competitive in external calls. Evaluation therefore had to interpret grant success in context. For Academy institutes, the right question was not only how much external funding had been obtained, but whether the funding portfolio supported a coherent and sustainable research strategy.

Doctoral training and cooperation with universities became increasingly relevant in evaluation. Although the Academy is not a university, its institutes play an important role in doctoral education through cooperation with universities, supervision, laboratory training, archival work, and research projects. Institutional assessment therefore had to consider how institutes contribute to the formation of new researchers. This is not a secondary issue. The future of the Academy depends on its ability to attract, train, mentor, and retain younger generations. Evaluation of doctoral involvement, supervision success, and participation of students in outputs helps reveal whether institutes are living research environments or ageing structures sustained by past reputation. In this respect, evaluation connects research quality with the human dimension of institutional modernisation.

Internationalisation also entered institutional assessment as a sign of scientific vitality. Evaluation considered international collaboration, mobility, co-authorship, participation in projects, foreign grants, and the presence of researchers in international networks. Such indicators and peer judgements helped determine whether institutes were active participants in global or European science. However, internationalisation too had to be interpreted carefully. A large number of international contacts does not automatically mean deep cooperation, and a nationally oriented field may have fewer foreign co-authored publications while still maintaining high scholarly quality. The strongest evaluations looked not only at the existence of international links but at their intellectual substance. Did cooperation lead to significant outputs, methodological renewal, access to infrastructure, or training opportunities? This question connected internationalisation with quality rather than treating it as a decorative statistic.

Societal relevance complicated the relationship between quantitative indicators and peer review still further. Some contributions to society can be counted: expert reports, patents, policy documents, public lectures, media outputs, exhibitions, databases, or applied contracts. Yet the deeper social value of research often resists immediate measurement. A historical interpretation may change public memory slowly; an ecological dataset may become crucial years later; a linguistic resource may support education, translation, and cultural identity; basic biological research may have medical implications only after a long period. The Academy's evaluation therefore had to avoid reducing societal relevance to instant impact. It needed expert judgement capable of recognising indirect, delayed, and culturally embedded forms of public value. This was especially important for an Academy whose mission includes both fundamental research and expertise for society.

The assessment of research infrastructures formed another important dimension. Some CAS institutes maintain facilities, instruments, collections, databases, observatories, or archives that support wider research communities. Their value may not be visible through the ordinary output profile of a research team. Infrastructure may enable other researchers' publications, preserve long-term data, or provide national capacity in specialised areas. Evaluating such institutes requires attention to service quality, accessibility, sustainability, technical

competence, and strategic importance. The Academy's distinction between research-oriented institutes and research-infrastructure institutes acknowledged this issue. It showed that institutional assessment must adapt to organisational function. A research infrastructure cannot be evaluated exactly like a small theoretical group, even though both belong to the same Academy.

Evaluation also had a temporal dimension. Quantitative indicators often look backwards, recording outputs already produced. Peer review can also be retrospective, but institutional assessment must include the future. An institute may have excellent past performance but weak renewal capacity. Another may be younger, less visible, but strategically promising. Evaluation therefore had to ask about plans, recruitment, emerging fields, succession, infrastructure development, and long-term viability. This prospective dimension is essential for institutional governance. A public research organisation must not only reward past achievements; it must shape future capacity. In the Academy, this meant that evaluation could become an instrument of renewal rather than simply a record of accomplishment.

The presence of directors' statements in evaluation packages was important because it allowed institutes to respond to final reports. Evaluation should not be a one-way verdict issued by panels to passive institutions. It should create dialogue. Directors can clarify misunderstandings, comment on recommendations, explain constraints, and outline how the institute intends to respond. Such responses do not cancel the authority of evaluators, but they make evaluation more reflexive and institutionally useful. They also strengthen the accountability of institute leadership. Once an institute has publicly responded to evaluation findings, it becomes easier to follow whether recommendations are taken seriously. This transforms assessment into part of an ongoing governance cycle.

The publication of evaluation materials increased transparency. CAS makes general documents and institute-level evaluation materials available, including methodology, reports, selected documentation, and final assessment materials (*Czech Academy of Sciences, 2021*). This openness matters because the Academy is funded from public resources and claims a special role in national science. Public evaluation documents allow other researchers, policymakers, journalists, and citizens to see how institutes are assessed. They also make the Academy's internal standards visible. Transparency can create discomfort, especially when weaknesses are identified, but it strengthens institutional credibility. It shows that evaluation is not a secret administrative act. It is part of the public responsibility of a modern research organisation.

The interaction of indicators and peer review also changed the internal culture of institutes. Researchers became more aware of publication strategy, journal visibility, citation patterns, grant competitiveness, international collaboration, and documentation of outputs. This awareness could improve research planning, but it could also create anxiety and administrative fatigue. Scientists increasingly had to spend time explaining, recording, and framing their work. The modern Academy therefore became not only a place of research but also a place of continuous self-observation. This is a general feature of contemporary research institutions. The challenge is to ensure that self-observation supports scholarly work rather than consuming it. Evaluation must provide feedback without turning the institute into a permanent reporting machine.

Institutional assessment also influenced career structures. Teams and institutes with strong evaluations could attract researchers, support promotions, justify new positions, and

strengthen grant applications. Weak evaluations could lead to restructuring, reduced support, or pressure on leadership. Evaluation therefore entered the biography of researchers indirectly through the reputation and resources of their institutes. For early-career researchers, this could be beneficial if evaluation strengthened dynamic teams and improved mentoring. It could also be risky if institutional pressure produced short-termism, precarious contracts, or excessive focus on measurable outputs. The human dimension of evaluation is therefore unavoidable. Assessment systems do not judge abstract institutions; they affect real careers, identities, and intellectual choices.

The Academy's experience shows that the opposition between indicators and peer review is too simple. The real issue is not whether one should choose numbers or judgement, but how different forms of evidence are combined. Quantitative indicators can reveal patterns invisible to individual reviewers. Peer review can interpret meaning invisible to indicators. Institutional assessment can connect both to governance, strategy, and public mission. The quality of evaluation depends on the architecture of this combination. If indicators dominate, evaluation becomes mechanical. If peer review is unsupported by evidence, it becomes vulnerable to subjectivity. If institutional assessment is absent, neither indicators nor peer review can tell whether an institute is viable. The Academy's mature model therefore rests on triangulation rather than methodological purity.

This triangulated model also reflects the Academy's post-socialist institutional memory. After 1989, the Academy had to escape both ideological judgement and bureaucratic inertia. Quantitative indicators promised a route away from personal and political arbitrariness, while peer review promised a route back to scholarly authority. Institutional assessment promised a way to connect both with public accountability. The difficulty was that each solution contained its own risk. Indicators could become a new bureaucracy; peer review could become a new closed circle; institutional assessment could become managerial control. The Academy's evaluation culture developed by trying to balance these dangers. Its history therefore illustrates a broader lesson of democratic research governance: no evaluation instrument is innocent, and every instrument must be embedded in procedures that limit its misuse.

By the 2010s and early 2020s, the Academy's evaluation mechanisms had become more sophisticated than the simple performance-based systems that had attracted criticism in Czech research policy. They incorporated selected outputs, bibliometric background, expert panels, team reports, institute strategies, social relevance, infrastructure, governance, and future development. This did not eliminate all tensions. Researchers still faced pressure, institutes still had to prepare extensive documentation, and disagreements over quality remained inevitable. Yet the system represented a significant institutional achievement. It allowed the Academy to make differentiated judgements about a highly diverse set of institutes without abandoning either evidence or expertise. It also connected evaluation with the strategic management of public research. In this sense, evaluation became one of the central instruments through which the Academy modernised itself after the initial post-transformation decade.

Thus, the relationship between quantitative indicators, peer review, and institutional assessment in the Czech Academy of Sciences reveals the complexity of modern research governance. Indicators brought transparency, comparability, and accountability, but they also carried risks of simplification, strategic behaviour, and disciplinary injustice. Peer review brought expert interpretation and sensitivity to intellectual quality, but it required safeguards

against bias, localism, and subjectivity. Institutional assessment connected outputs and expert judgement with governance, strategy, infrastructure, social relevance, and future viability. The Academy's mature evaluation model sought to combine these elements through informed peer review rather than reduce quality to a single number. This balance was essential for an institution whose mission includes both internationally competitive research and long-term national scholarly responsibility. The development of this evaluative architecture therefore marked a major stage in the Academy's transformation from a post-socialist successor institution into a modern, accountable, and strategically self-aware research organisation.

3. The Reform of Research Evaluation in the 2020s

The reform of research evaluation in the 2020s marked a new stage in the modernisation of the Czech Academy of Sciences. It did not abolish the evaluative culture that had developed since 1993, nor did it reject the need for accountability in a publicly funded research institution. Rather, it sought to correct the distortions produced by excessively mechanical assessment, to deepen the role of qualitative judgement, and to place the Academy within a broader European movement for responsible research assessment. The issue was no longer simply whether research should be evaluated. That question had already been answered by three decades of post-socialist institutional development. The more difficult question was how evaluation should be conducted so that it would strengthen science rather than narrow it. In this sense, the 2020s reform was not a technical adjustment, but an intellectual and institutional reorientation. It asked what kind of scientific culture the Academy wanted to cultivate: one governed by proxy indicators and defensive reporting, or one capable of recognising quality, originality, public responsibility, disciplinary diversity, and long-term contribution.

The background to this reform lay in the accumulated experience of Czech research evaluation since the 1990s. Early post-transformation evaluation had helped the Academy distinguish viable research capacity from ideological inheritance and organisational inertia. Later systems connected evaluation with institutional funding, grant competition, national research policy, and public accountability. By the 2000s and 2010s, however, Czech science had also experienced the limitations of output-counting and performance-based funding systems. The criticism of the earlier Czech model was not that evaluation existed, but that it often reduced research quality to formalised result categories, points, database entries, and metrics detached from disciplinary meaning (*Good, Vermeulen, Tiefenthaler, & Arnold, 2015*; *Arnold, Mahieu, Horvath, & Malkin, 2011*). The reform of the 2020s therefore emerged from a double lesson. Evaluation was necessary for democratic accountability, but evaluation could become damaging if the instruments used to measure science began to reshape science in their own image.

Methodology 2017+ represented a major step away from the most reductionist features of the earlier national system. It introduced a modular approach to the assessment of research organisations and research, development, and innovation support programmes, combining the evaluation of selected results, research performance, societal relevance, viability, strategy, and governance (*Office of the Government of the Czech Republic, 2018*). This modular structure was important because it acknowledged that research organisations are complex institutions, not mere output machines. It also recognised that different forms of evidence are

needed to evaluate different dimensions of research quality. A selected scholarly output must be assessed differently from an institute's long-term strategy, and both differ from societal relevance or organisational governance. The Methodology therefore reflected a broader shift in Czech research policy from a narrow performance-counting model towards a more differentiated and mission-sensitive framework.

For the Czech Academy of Sciences, Methodology 2017+ had particular importance because it recognised the specific position of Academy institutes within the national research system. Universities, Academy institutes, departmental research organisations, and industrial research bodies do not have identical missions, even when they all produce research outputs. The Academy's institutes are public research organisations with strong responsibilities for basic research, national scholarly infrastructure, long-term expertise, international cooperation, and, in some cases, public-service functions. A uniform evaluation model that treated them as if they were universities or applied research agencies would be methodologically weak and institutionally unjust. The reform of research evaluation in the 2020s therefore strengthened the argument that assessment must be linked to institutional mission. In the Academy's case, this meant evaluating not only productivity but also scientific depth, strategic coherence, disciplinary responsibility, infrastructure, and contribution to society.

The 2020s also placed Czech research evaluation within a wider European debate on responsible assessment. Across Europe, universities, academies, funders, and research organisations increasingly questioned the inappropriate use of journal impact factors, h-indexes, rankings, and other proxy metrics. The San Francisco Declaration on Research Assessment had already argued that journal-based metrics should not be used as surrogate measures of the quality of individual research articles, researchers, or institutional contributions (*DORA, 2013*). The Leiden Manifesto similarly formulated principles for responsible metrics, emphasising the need to support qualitative expert assessment, account for disciplinary variation, protect locally relevant research, and avoid misplaced precision (*Hicks, Wouters, Waltman, de Rijcke, & Rafols, 2015*). The Metric Tide report in the United Kingdom also warned against metric misuse and advocated responsible metrics based on robustness, humility, transparency, diversity, and reflexivity (*Wilsdon et al., 2015*). The Academy's reform therefore did not occur in isolation. It was part of a broader attempt to rethink how modern science should be judged.

The Coalition for Advancing Research Assessment gave this European discussion a more organised institutional form. The Agreement on Reforming Research Assessment formulated a vision in which assessment should recognise diverse research outputs, practices, and activities, while relying primarily on qualitative judgement supported by responsible use of quantitative indicators (*Coalition for Advancing Research Assessment, 2022*). The Czech Academy of Sciences signed the Agreement in 2022 and prepared its own Action Plan for 2024–2027 (*Czech Academy of Sciences, 2024*). This was a significant step because it publicly connected the Academy's internal evaluation procedures with a European reform movement. It also placed the Academy under a self-declared obligation to reflect on its own assessment practices. The Action Plan did not represent an external fashion adopted for symbolic reasons; it became a framework for refining a system of institute evaluation that had already existed for decades.

The four central principles associated with the Academy's reform are especially revealing. First, research assessment should recognise the diversity of contributions that research activity produces and through which it meets the needs of society. Second, assessment should be based on qualitative approaches in which informed peer review plays a central role. Third, inappropriate uses of publication metrics should be abandoned. 4th, international rankings should not be used to evaluate research organisations (*Czech Academy of Sciences, 2024*; *Coalition for Advancing Research Assessment, 2022*). These principles directly address the weaknesses of metric-driven evaluation. They also fit the Academy's disciplinary diversity. An institution containing physical sciences, life sciences, humanities, social sciences, technical fields, archives, libraries, observatories, and research infrastructures cannot be assessed through a single hierarchy of journal metrics or rankings. Reform therefore meant defending the intellectual plurality of the Academy against the administrative temptation of simplification.

The rejection of inappropriate metrics did not mean rejecting evidence. This distinction is crucial. The Academy's reform did not propose a return to informal academic reputation, personal authority, or closed disciplinary self-confirmation. Instead, it sought to strengthen expert judgement by using evidence responsibly. Selected outputs, institute reports, team profiles, bibliometric context, case studies, governance documents, strategy statements, and international comparisons can all inform evaluation. The point is that none of these should replace the careful reading and judgement of qualified experts. A publication should be assessed for what it contributes, not merely for the journal in which it appears. A research team should be assessed for its quality, originality, methodological rigour, future potential, and environment, not simply for the number of outputs it produces. The Academy's reform therefore moved from metric-centred visibility to evidence-informed understanding.

The evaluation of CAS institutes for the period 2020–2024 embodied this reorientation. It was designed as a large-scale qualitative informed peer-review exercise involving all research institutes and their research teams. International commissions were established for the institutes, and selected outputs were assessed by external experts. The procedure sought to evaluate not only the products of research but also their context, contribution, originality, significance, and methodological rigour (*Czech Academy of Sciences, 2026*). This was an important methodological shift because it separated the assessment of research contribution from the assessment of publication venue. In older metric cultures, the journal often became a proxy for the paper, and the quantity of papers became a proxy for team quality. In the reformed model, the work itself returned to the centre of attention. This was perhaps the most important intellectual meaning of the reform.

The use of one international panel for each institute in the 2020–2024 evaluation was institutionally significant. It recognised that each institute has a specific research profile, internal structure, disciplinary environment, and strategic context. A centralised panel covering an entire broad discipline might miss the particular character of an institute. By contrast, institute-specific international commissions could examine teams, outputs, infrastructure, management, interdisciplinary links, and developmental trajectories in a more coherent way. This approach also allowed reviewers to assess the institute as an organisation rather than only as an aggregation of outputs. The Academy's reform therefore strengthened the institutional dimension of evaluation. It asked not only whether individual results were good, but whether institutes were capable of sustaining high-quality research environments.

The distinction between evaluation of research teams and evaluation of institutes became more important in the 2020s. Research teams are the immediate sites of scientific production, methodological innovation, mentoring, and collaboration. Institutes are broader organisations with leadership, strategy, infrastructure, budgets, personnel policies, public responsibilities, and long-term missions. A team may be excellent inside an institute whose strategic governance is weak, while an institute may have a strong overall mission but uneven team quality. The reformed evaluation sought to capture this internal complexity. It separated the criteria and forms of feedback appropriate to teams from those appropriate to institutes. This distinction made evaluation more useful for management, because it provided information at the level where decisions about support, renewal, restructuring, and strategy are actually made.

A major innovation of the 2020s reform was the stronger formative character of evaluation. The purpose was not simply to rank institutes or generate a public league table. It was to provide qualified, actionable feedback identifying strengths, weaknesses, risks, and opportunities for future development (*Czech Academy of Sciences, 2026*). This shift is essential for understanding the reform. Ranking produces status, but it often provides little guidance for improvement. Formative evaluation, by contrast, treats assessment as part of institutional learning. It asks what an institute can do better, how it can strengthen research quality, where it faces strategic risks, and what kind of support or restructuring may be needed. For an Academy with long-term public responsibilities, this developmental function is more valuable than symbolic ranking.

The reform also strengthened the connection between evaluation and research integrity. Quality is not only a matter of originality or citation visibility; it also depends on ethical responsibility, methodological reliability, transparency, and sound research environments. The Academy's emphasis on evaluation as a tool for protecting investment in science and supporting the integrity of research reflects this wider understanding (*Czech Academy of Sciences, 2026*). In the 2020s, research integrity became increasingly connected with open science, data management, reproducibility, responsible authorship, and public trust. Evaluation therefore had to consider not only what was produced, but how it was produced. This broadened the meaning of scientific excellence. Excellence without integrity cannot serve either science or society.

The reform's attention to disciplinary context was particularly important for humanities and social sciences. These fields had long been vulnerable to evaluation models that privilege journal articles indexed in international databases, rapid output cycles, and citation patterns more typical of natural or biomedical sciences. A historian's monograph, a philosophical interpretation, a critical edition, a dictionary, an archaeological corpus, a sociological dataset, or a legal analysis may have long-term value that cannot be captured by journal quartiles. At the same time, the reform did not exempt these fields from international standards. It required expert panels capable of judging quality within disciplinary traditions and in relation to broader scholarly debates. The 2020s reform therefore offered humanities and social sciences a more appropriate but not less demanding evaluative framework. It defended their specificity while still insisting on intellectual seriousness.

In the natural, technical, and life sciences, the reform challenged the overuse of journal-based proxies without denying the importance of international publication. Researchers in these fields often work within global journal systems, and publication visibility remains an important

part of scientific communication. However, the Academy's reform emphasised that the quality of a paper cannot be inferred simply from the journal's Article Influence Score, impact factor, or quartile. Expert assessment must look at the actual contribution, originality, methodological rigour, and significance of the work (*Czech Academy of Sciences, 2026*; *DORA, 2013*). This position is especially important in fields where journal hierarchies can shape careers, funding, and internal prestige. The reform sought to reduce the dominance of proxy prestige and return attention to scientific substance.

The handling of applied research and societal relevance also changed. In the 2020–2024 evaluation, applied research results were assessed in context, including through case-based approaches in the later phase of evaluation (*Czech Academy of Sciences, 2026*). This was a significant improvement over systems that count patents, contracts, prototypes, or reports without examining their actual meaning. Applied research can contribute to technology, public policy, environmental management, health, heritage protection, education, and social resilience. But its value cannot be measured only by the existence of a formal output category. A case-study approach allows evaluators to ask what problem was addressed, who benefited, how knowledge was used, and whether the contribution was scientifically and socially meaningful. This approach aligned evaluation with the Academy's broader public mission.

The reform also had consequences for interdisciplinary research. Traditional evaluation systems often struggle with work that crosses disciplinary boundaries. Interdisciplinary outputs may not fit neatly into journal categories, panel structures, citation fields, or institutional departments. Yet many contemporary research problems, including climate change, digitalisation, health, cultural memory, energy, biodiversity, and social transformation, require interdisciplinary cooperation. The Academy's 2020s reform explicitly recognised the need to consider the diversity of institutes and teams, including interdisciplinary research (*Czech Academy of Sciences, 2024*). This was not only a methodological issue. It was a strategic matter for the Academy's future. An institution that wishes to address complex public problems must evaluate interdisciplinary work in ways that do not punish it for lacking a single disciplinary home.

The relationship between CAS evaluation and national Methodology 2025+ also deserves attention. Methodology 2025+ continued the modular architecture of Methodology 2017+ and strengthened the idea that evaluation should combine summative and formative functions. It maintained a common national framework while recognising the role of funding providers, including the Czech Academy of Sciences, in conducting provider-level evaluations adapted to their sectors (*Research on Research Institute, 2025*). This arrangement is important because it avoids both excessive fragmentation and excessive centralisation. The national level can provide comparability and accountability, while the Academy can apply institute-specific procedures suitable for its own mission. The 2020s reform therefore matured into a two-level system: national assessment for the broader R&D&I structure and Academy assessment for institutional learning and strategic development.

The grading of research organisations in national frameworks introduced another tension. Grades can be useful for funding allocation and strategic overview, but they can also compress complex institutional realities into a single symbol. The Academy's reform responded to this problem by emphasising rich feedback, expert reports, and developmental recommendations rather than only final categories. This distinction matters because a public research institute is not a school examination candidate. It is a complex organisation with heterogeneous teams,

infrastructures, public tasks, international relations, and long-term trajectories. A grade may help policymakers, but it cannot substitute for understanding. The reform of the 2020s therefore tried to preserve the informational depth of evaluation even when national systems required simplified outputs for funding or governance.

The costs of evaluation became an explicit concern. Large-scale international peer review requires time, money, administrative coordination, expert recruitment, conflict-of-interest management, documentation, translation, data preparation, and communication with institutes. It also demands substantial work from researchers, directors, administrators, and evaluation panels. The Academy's Action Plan acknowledged the need to find a balance between the benefits and costs of evaluation (*Czech Academy of Sciences, 2024*). This is a mature institutional insight. Evaluation should not consume so many resources that it weakens the research it is meant to improve. The reform therefore had to ask not only what should be assessed, but also how often, how deeply, and at what administrative cost. Responsible evaluation includes responsibility for the evaluative burden itself.

The role of international experts remained central but became more carefully structured. International peer review protects evaluation from localism and connects the Academy with global standards. However, the selection of experts, conflict-of-interest checks, and consistency across panels are crucial. The 2020–2024 evaluation involved international panels and remote external evaluators, with coordination mechanisms established to manage procedures and objections (*Czech Academy of Sciences, 2026*). This reflects the professionalisation of evaluation governance. Internationality alone does not guarantee fairness; it must be organised through transparent rules. The Academy's reform therefore combined external judgement with procedural safeguards. This combination was necessary if institutes were to trust the process even when conclusions were critical.

The reform also changed the meaning of transparency. Earlier evaluation systems often aimed at producing results for funding and governance. The 2020s reform increasingly treated transparency as part of research culture itself. Transparent criteria, clear documentation, published methodologies, action plans, and public communication help build trust in evaluation. They also allow researchers to understand how their work will be judged. However, transparency must be balanced with confidentiality where peer-review comments, sensitive institutional information, or personnel issues are involved. The Academy's challenge was to make evaluation publicly credible without turning it into public spectacle. The best form of transparency is not exposure for its own sake, but intelligibility of purpose, process, and use.

The reform of research evaluation in the 2020s also connected with career policy. If institutes are evaluated only through publication counts or journal prestige, then researchers, especially early-career researchers, are encouraged to shape their careers around those indicators. If evaluation recognises mentoring, team science, data practices, societal contribution, methodological innovation, interdisciplinarity, and responsible research culture, then career expectations can become broader and healthier. This is one reason why assessment reform is never merely institutional. It affects the professional imagination of researchers. The Academy's participation in CoARA and DORA principles therefore has consequences for recruitment, promotion, leadership development, and the evaluation of individual researchers, even when the formal exercise concerns institutes and teams. Institutional assessment and career culture are deeply connected.

The COVID-19 pandemic formed an important background to the 2020–2024 evaluation period. It disrupted research activity, mobility, fieldwork, laboratory access, conferences, archives, and international cooperation. It also highlighted the public importance of scientific expertise, from biomedical research and modelling to social analysis and communication. Evaluation of this period therefore could not be treated as a normal snapshot of stable conditions. It had to take account of institutional resilience, adaptability, and uneven pandemic effects across disciplines. Some fields could continue remotely; others were severely constrained by access to facilities, people, or sites. The reform's emphasis on context and expert judgement was especially valuable under such conditions. Mechanical indicators would have been particularly misleading in a period of systemic disruption.

The war in Ukraine and the wider crisis of European security also influenced the atmosphere of research evaluation in the 2020s. The Academy's international responsibility, support for researchers at risk, and cooperation with Ukrainian scholars became part of a broader understanding of science as a civic and European institution. Although evaluation is not primarily a foreign-policy instrument, it cannot be entirely separated from the values of openness, solidarity, integrity, and democratic responsibility. The 2020s reminded European research organisations that academic freedom and international cooperation are not guaranteed abstractions. They are institutional achievements that must be defended. The Academy's reform of evaluation therefore took place in a world where research quality, public trust, and democratic resilience were increasingly connected.

One of the most important conceptual shifts of the 2020s was the movement from evaluating outputs to evaluating contributions. An output is a publication, dataset, patent, report, edition, software tool, exhibition, or other identifiable product. A contribution asks a larger question: what did this work add to knowledge, method, society, infrastructure, policy, culture, or future research capacity? This shift is subtle but profound. It allows evaluators to recognise that the same type of output may have very different value in different contexts. It also prevents the category of output from becoming a fetish. The Academy's reform aimed to assess the substance, originality, significance, and context of research, not merely its formal container. In this respect, it belongs to a wider movement from bureaucratic accounting to evaluative judgement.

The reform also gave new significance to institutional strategy. In a complex research environment, institutes cannot simply accumulate projects and publications without a coherent sense of direction. Evaluation in the 2020s increasingly asked whether institutes had credible strategies, whether they could renew personnel, whether they were internationally positioned, whether they managed infrastructure responsibly, whether they cultivated early-career researchers, and whether they responded to previous recommendations. Strategy became part of quality because scientific excellence depends on organisational conditions. An institute may have excellent past achievements but weak future capacity if it lacks renewal, leadership, or strategic clarity. The Academy's reformed evaluation therefore helped connect past performance with future viability. This is one of the strongest reasons for treating evaluation as formative rather than merely summative.

At the same time, the reform did not eliminate all tensions. Peer review can be slow, expensive, and sometimes inconsistent. Qualitative judgement can produce disagreement. Institutes may perceive recommendations as insufficiently sensitive to local constraints. National funding systems may still require simplified grades or indicators. Researchers may still feel

pressure from metrics in grant competitions, journals, and career evaluations outside the Academy's direct control. CoARA and DORA principles can guide reform, but they do not automatically transform academic culture. The Academy therefore faces the difficult task of aligning its internal evaluation principles with the wider incentive structures of Czech and European science. Reform is not a single declaration; it is a continuing process of institutional learning.

The reform of the 2020s is also important because it shows the Academy's capacity for self-correction. A post-socialist institution could have defended its evaluation system as already mature and refused further change. Instead, the Academy acknowledged that evaluation must continue to evolve. This reflexive capacity is part of institutional modernisation. The Academy's evaluation system began in the early 1990s as a response to rupture, developed in the 2000s and 2010s as a mechanism of accountability and funding, and in the 2020s moved towards responsible, qualitative, and formative assessment. This trajectory reflects a broader institutional maturation. The Academy no longer had to prove merely that it could survive after socialism. It now had to prove that it could lead by example in the culture of research assessment.

The reform also reveals a deeper continuity in the Academy's modern history. Since 1993, the institution has repeatedly tried to balance autonomy and accountability. In the 1990s, this meant defending scientific freedom while accepting restructuring and public responsibility. In the 2000s, it meant adapting to competitive funding and formal evaluation. In the 2010s, it meant responding to national methodologies and performance-based governance. In the 2020s, it meant reforming evaluation itself so that accountability would not undermine the values of science. The form of the problem changed, but the underlying tension remained. The Academy's history can therefore be read as a continuous negotiation between independence, quality, state support, public trust, and international standards.

The consequences of the 2020s reform will become fully visible only over time. Evaluation reports can influence funding, leadership decisions, team restructuring, career policy, strategic priorities, interdisciplinary development, and cooperation with universities or public institutions. They can also shape how researchers understand what counts as good science. If the reform succeeds, it will encourage institutes to value quality over quantity, contribution over proxy prestige, and responsible research culture over superficial performance. If it fails, metrics may return through informal channels, administrative burden may grow, and peer review may become another ritual of compliance. The outcome will depend not only on methodology but on how Academy leadership, institute directors, panels, researchers, and policymakers use evaluation results. Reforming assessment is therefore also reforming institutional behaviour.

Thus, the reform of research evaluation in the 2020s marked a decisive stage in the modernisation of the Czech Academy of Sciences. It built on the Academy's long experience of internal evaluation since 1993, but redirected that experience towards qualitative, formative, internationally informed, and mission-sensitive assessment. Through Methodology 2017+, the emerging Methodology 2025+, CoARA commitments, DORA principles, and the 2020–2024 evaluation of CAS institutes, the Academy moved further away from the inappropriate use of publication metrics and proxy indicators. The reform sought to recognise the diversity of research contributions, the specificity of disciplines, the importance of societal relevance, and the need for actionable feedback rather than rankings. It did not abolish accountability; it made

accountability more intelligent. In doing so, it connected the Academy's post-socialist struggle for autonomy with the contemporary European movement for responsible research assessment and prepared the ground for future debates on open science, research integrity, career development, and public trust.

Internationalisation and European Integration

1. Participation in European Research Programmes

Participation in European research programmes became one of the principal instruments through which the Czech Academy of Sciences moved from post-socialist reintegration to full membership in the European research system. In the early 1990s, international cooperation still carried the emotional and political meaning of reopening after decades of restricted mobility and ideological supervision. By the late 1990s and especially after accession to the European Union, it increasingly became a structured mode of research governance. European programmes brought money, mobility, infrastructure, peer review, international consortia, reporting standards, and a new vocabulary of excellence, impact, work packages, coordination, and deliverables. For the Academy, this was not simply another source of funding. It was a profound institutional school in which institutes learned to operate according to European rules of scientific competition and cooperation. The Academy's participation in European programmes therefore connected several lines of its modernisation: internationalisation, funding reform, evaluation, career development, infrastructure building, and public accountability.

The beginning of this process should not be placed only in 2004, when the Czech Republic joined the European Union. Czech research teams entered European framework cooperation earlier, during the pre-accession period, when the country was still learning how to position itself within the emerging European research architecture. Reports from the Technology Centre of the Academy noted that Czech research and development teams participated in EC Framework Programmes and the Euratom programme from 1993, beginning with the Third Framework Programme (*Technology Centre AS CR, 2007*). Later, the Czech Republic's participation in the 5th Framework Programme from 1999 marked a more formal and politically visible stage of integration into European research policy (*European Commission, n.d.*). This chronology matters because it shows that Europeanisation began before full EU membership. The Academy and other Czech research organisations had to learn European project culture while still operating from the position of a transforming post-socialist state.

The pre-accession period had a formative character. Czech institutes were not yet fully embedded in European funding networks, and their administrative capacity was limited in comparison with long-established Western institutions. Researchers had to learn how to find calls, interpret programme priorities, build consortia, negotiate roles, prepare budgets, and satisfy reporting rules. These skills were not self-evident in a scientific culture that had only recently emerged from a planned and politically supervised system. The Academy's institutes possessed scientific expertise, but European programme participation required an additional

layer of organisational competence. Thus, the first phase of participation was not only about winning projects. It was about learning the grammar of European research cooperation. This learning process gradually changed the internal culture of institutes and the expectations placed upon their directors, researchers, and administrative staff.

The establishment of the Technology Centre of the Czech Academy of Sciences in 1994 was crucial in this development. The Centre became a national information and consultation body for EU Framework Programmes and later developed into a key organisation for research and innovation policy, European programme support, analysis, and advisory services (*Technology Centre Prague, n.d.*). Its existence showed that participation in European programmes could not be left to individual improvisation alone. Researchers needed specialised guidance, information channels, partner-search tools, training, and interpretation of programme rules. The Technology Centre helped create the infrastructure of European participation. It also became a bridge between research organisations, state administration, European institutions, and the evolving national research policy system. In this sense, it represented one of the most practical institutional responses to the challenge of Europeanisation.

For the Academy's institutes, the first European projects were often transformative even when they were modest in financial scale. They opened access to international partners, comparative data, specialised equipment, training opportunities, and collaborative publication. They also exposed Czech researchers to external standards of project design and assessment. A European project required more than a good idea. It required a consortium, defined objectives, division of labour, milestones, management structures, budgets, risk awareness, and communication plans. This did not always sit comfortably with academic habits formed in more autonomous or nationally focused research environments. Yet it taught institutes how to translate research potential into project architecture. Over time, this became a normal part of scientific practice.

The Framework Programmes also altered the relationship between national and European priorities. Academy institutes had to decide how their own research agendas could fit into European calls without losing intellectual autonomy. This required strategic translation. A laboratory working on materials, ecology, molecular biology, informatics, or energy could connect its research to European technological and societal challenges. A humanities or social-science institute could connect its work to questions of memory, migration, identity, governance, cultural heritage, social change, or European integration. The danger was that European programme priorities might encourage opportunistic adaptation to fashionable topics. The opportunity was that they allowed Czech researchers to situate nationally grounded expertise within wider European debates. The Academy's participation in European programmes therefore involved constant negotiation between local scholarly identity and transnational research agendas.

The European Union's Framework Programmes also brought a new competitive environment. Academy institutes were no longer competing only with Czech universities, national institutes, or domestic grant applicants. They were competing and cooperating with research organisations across Europe, many of which had stronger infrastructure, higher salaries, larger administrative offices, and longer experience in European consortia. This asymmetry was one of the structural challenges faced by post-socialist research systems. Czech teams could contribute real expertise, but they often had to overcome weaker visibility and limited project-management capacity. Participation in European programmes therefore both revealed and

helped reduce the gap between Czech science and older EU member states. The process was demanding because it required institutional upgrading under competitive conditions.

The accession of the Czech Republic to the European Union in 2004 changed the political and practical context of participation. European research programmes now became part of the country's normal membership obligations and opportunities rather than an external pre-accession instrument. For the Academy, this meant that European programme participation was no longer a sign of exceptional international openness. It became an expected dimension of institutional performance. Institutes were increasingly judged not only by domestic outputs and national grant success, but also by their ability to enter European networks. EU membership also strengthened access to European research infrastructures, mobility schemes, policy debates, and programme committees. The Academy's Europeanisation thus deepened from project participation into broader integration within the European Research Area.

The 6th Framework Programme and the 7th Framework Programme introduced Academy institutes more fully into the large-scale structures of European collaborative research. These programmes strengthened the role of multinational consortia and large projects, often combining universities, research organisations, enterprises, public bodies, and non-European partners. For Academy institutes, such projects could be scientifically productive and institutionally demanding. Participation required clear internal coordination, administrative support, financial management, intellectual property awareness, and communication with partners across different legal and organisational systems. It also required the ability to work in English as the practical language of project negotiation and reporting. The result was a gradual professionalisation of international research administration. European participation helped produce a new type of institutional competence inside the Academy.

The role of National Contact Points was especially important in this professionalisation. The Czech support system for European programmes provided information, consultations, monitoring, training, and methodological assistance to applicants and participants. This support helped reduce the disadvantage of institutions entering complex European funding mechanisms from a post-transformation starting point. For Academy institutes, such support could make the difference between isolated attempts and systematic participation. It also created feedback loops between researchers, support offices, national policy bodies, and European programme structures. Through this support system, European participation became less dependent on exceptional individual experience and more embedded in institutional routines. This was an important step towards the normalisation of European project culture.

Horizon 2020 marked another stage in the Academy's European participation. It combined excellent science, industrial leadership, and societal challenges, thereby linking frontier research with innovation and public-policy concerns (*European Commission, n.d.*). For the Academy, this structure was both an opportunity and a challenge. Institutes strong in fundamental research could pursue excellence-oriented instruments, while others could participate in challenge-driven consortia, research infrastructures, or applied collaborations. Horizon 2020 also increased the importance of impact narratives, open access requirements, data management, ethics, communication, and exploitation plans. These elements broadened the meaning of a research project beyond the production of scholarly results. Academy

institutes had to show how their research related to wider scientific, economic, societal, or policy environments.

The European Research Council became especially important for the Academy because it represented a model of excellence-driven, investigator-led European funding. ERC grants are designed to support frontier research proposed by individual principal investigators or small groups, selected through demanding peer review and international competition (*European Research Council, n.d.*). For the Academy, ERC success carried a symbolic importance beyond the size of a grant. It signalled that researchers based in Czech institutes could compete at the highest European level. It also helped attract talent, strengthen teams, and raise institutional visibility. ERC projects often changed the local research environment by bringing resources, international postdoctoral researchers, doctoral students, equipment, and intellectual prestige. In this sense, ERC participation became a marker of the Academy's transformation from a post-socialist successor institution into a European research actor.

The Academy's later creation of support structures for ERC applicants shows how European programmes influenced internal policy. CAS developed specialised support, including ERC-related advisory activities and the ERC Incubator, designed to help researchers across Academy institutes prepare high-quality proposals and improve their chances of success (*Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, 2026*). Such measures demonstrate that participation in European programmes had become a strategic priority rather than an individual adventure. The Academy recognised that success in ERC competitions requires time, mentoring, institutional backing, proposal development, mock interviews, and expert feedback. This support also reflects a broader shift in research management. Excellence is still judged internationally, but institutions can create conditions that make excellence more competitive. European programme participation therefore reshaped the Academy's internal instruments for supporting scientific ambition.

Marie Skłodowska-Curie Actions contributed differently, by focusing on mobility, training, career development, and international circulation of researchers. For the Academy, MSCA schemes helped attract foreign postdoctoral researchers, support outgoing and incoming mobility, strengthen doctoral and postdoctoral training, and connect institutes with international career paths. These actions were particularly important for early-career researchers, because they linked professional development with international experience. They also helped institutes become more cosmopolitan workplaces. A research institute that hosts MSCA fellows must provide supervision, training, integration, and administrative support. Thus, MSCA participation affected not only individual careers but also the social and organisational culture of institutes. It made international mobility part of everyday academic life.

European research infrastructures also became a major component of participation. Many contemporary scientific problems require facilities, data systems, instruments, repositories, observatories, and distributed platforms that exceed the capacity of a single institute or even a single country. Academy institutes in fields such as physics, biology, earth sciences, environmental research, digital humanities, and social data could benefit from European infrastructure networks. Participation in such infrastructures changed the scale of research. It also required long-term commitments, national co-financing, governance participation, technical standards, and data-sharing procedures. The Academy's role in European programmes therefore cannot be understood only through individual projects. It also involved

integration into material and digital systems that structure the production of modern knowledge.

The widening instruments of Horizon 2020 and Horizon Europe had particular relevance for the Czech Republic as part of the EU13 group of newer member states. These instruments aimed to reduce disparities in research and innovation performance within Europe by supporting teaming, twinning, ERA Chairs, excellence hubs, and other capacity-building measures. Academy institutes participated in this logic not as passive recipients of assistance, but as institutions seeking to strengthen excellence, attract talent, and build new research centres. The success of CAS institutes in ERA Chair calls, including projects in plant research and environmental and technology ethics, illustrates how widening instruments could support both natural sciences and humanities-oriented excellence (*Czech Academy of Sciences, 2024*; *Czech Academy of Sciences, 2024*). Such projects show that European programmes could help create new intellectual centres within the Academy. They also reveal how capacity-building instruments became part of the Academy's strategic renewal.

Horizon Europe, launched for 2021–2027, deepened these tendencies. It is the European Union's 9th framework programme for research and innovation and is structured around Excellent Science, Global Challenges and European Industrial Competitiveness, Innovative Europe, and Widening Participation and Strengthening the European Research Area (*European Commission, n.d.*). For the Academy, Horizon Europe provided a broad field of participation: ERC, MSCA, research infrastructures, clusters addressing global challenges, missions, partnerships, and widening instruments. Its structure fitted the Academy's diverse disciplinary profile. Institutes could participate in frontier research, climate and biodiversity work, health, digitalisation, social transformations, culture, security, energy, mobility, and other areas. Horizon Europe therefore reinforced the Academy's need to think strategically across disciplines rather than treating European projects as isolated opportunities.

The mission-oriented dimension of Horizon Europe deserves particular attention. Missions were designed to address major societal challenges, such as climate adaptation, cancer, oceans and waters, climate-neutral cities, and soil health. The involvement of a scientist from the Global Change Research Institute of the Academy in a Horizon Europe Mission Board on soil health and food symbolised a new level of participation in European research policy, not only European research projects (*Czech Academy of Sciences, 2019*). This is important because the Academy's European role cannot be reduced to receiving grants. It also includes contributing expertise to the shaping of European agendas. When Academy researchers participate in boards, panels, advisory structures, or programme committees, they help define the problems that European research seeks to solve. This represents a more mature form of integration into the European Research Area.

Participation in European programmes also affected the Academy's internal understanding of impact. In national academic traditions, the value of research was often discussed in terms of scholarly contribution, cultural significance, or service to national knowledge. European programmes introduced a more explicit requirement to explain potential impact on society, economy, policy, environment, technology, and public life. This requirement could sometimes feel artificial or managerial, especially for fundamental research. Yet it also encouraged researchers to think more clearly about pathways from knowledge to use. For the Academy, whose mission includes both international-level research and attention to the needs of Czech society and national culture, the European impact agenda was not foreign in principle (*Czech*

Academy of Sciences, n.d.). The challenge was to translate impact without reducing science to short-term utility. Participation in European programmes helped develop this more nuanced language of public relevance.

The European programmes also strengthened the relationship between research and open science. Horizon 2020 and Horizon Europe gradually expanded expectations concerning open access, data management, FAIR principles, repositories, and responsible dissemination. These requirements influenced Academy institutes by making publication and data practices part of project compliance and research culture. Open science was not simply an ideological slogan; it became embedded in grant agreements, reporting rules, and evaluation expectations. For institutes with strong publication cultures, this required new administrative and library support. For fields working with sensitive data, archives, cultural heritage, or personal information, it required careful ethical and legal management. European programme participation therefore helped prepare the Academy for the broader open science agenda discussed later in this chapter.

European programme participation also strengthened cooperation between the Academy and Czech universities. Many EU projects require consortia with complementary expertise, infrastructure, training capacity, and societal partners. Academy institutes and universities therefore often entered projects together, sometimes alongside hospitals, enterprises, ministries, regional authorities, or foreign partners. Such cooperation helped soften the older separation between Academy research and university teaching. It also supported joint doctoral training, shared laboratories, interdisciplinary centres, and common international strategies. European projects could therefore function as bridges within the Czech research system. They created practical incentives for collaboration where institutional histories had sometimes encouraged separation or competition.

The role of enterprises and applied partners increased through European research and innovation programmes. The Academy's primary mission remained research across natural, technical, social sciences, and humanities, but many institutes possessed knowledge relevant to technology, medicine, environment, materials, energy, digital tools, and public policy. European projects often required cooperation with industry, SMEs, public authorities, or civil-society organisations. This pushed institutes to develop capacities in knowledge transfer, intellectual property, contracts, exploitation planning, and stakeholder communication. The Academy had to preserve its fundamental research identity while learning how to collaborate in innovation-oriented settings. European programmes thus contributed to the broader transformation from an isolated research system towards an interconnected knowledge ecosystem.

European participation also created administrative pressures. The preparation and management of EU projects required professional grant offices, legal support, financial control, audit readiness, procurement knowledge, reporting systems, and communication capacity. Researchers could not manage these tasks alone without compromising their scientific work. Institutes therefore had to invest in specialised administrative staff. This changed the internal sociology of the Academy. Project managers, international officers, financial administrators, lawyers, communication specialists, and data stewards became increasingly important to research success. European participation therefore professionalised not only researchers but also the institutional environment around research. This was one of the less visible but decisive effects of European integration.

The Academy's participation in European programmes also had a generational effect. Younger researchers increasingly encountered European calls, mobility schemes, ERC ambitions, MSCA fellowships, and international consortia early in their careers. This changed professional expectations. A successful research career in the Academy could no longer be imagined only within national publication and institutional promotion. It increasingly required international mobility, English-language communication, project experience, external funding, and participation in transnational networks. This created new opportunities but also new pressures. Early-career researchers could build independent profiles through European schemes, but they also faced competition, temporary contracts, and the need to demonstrate mobility and international visibility. European programmes therefore became part of the human dimension of modernisation.

The Academy's European participation also intersected with the problem of brain circulation. European mobility could produce brain drain if talented researchers left Czech institutes permanently for better-funded systems. Yet European programmes also created mechanisms for return, reintegration, and attraction of foreign talent. MSCA, ERC, ERA Chairs, and institutional support programmes could help build teams in Czech institutes and make them attractive to researchers from abroad. The key issue was whether mobility would become a one-way loss or a circulation of people, methods, networks, and ideas. The Academy's later initiatives to support excellence, careers, and ERC applications show that it recognised this strategic challenge (*Czech Academy of Sciences, 2026*). Participation in European programmes therefore forced the Academy to connect internationalisation with personnel policy.

The unequal participation of newer EU member states in European research programmes remained a structural challenge. Studies of EU13 participation have repeatedly noted lower success rates, weaker coordination roles, and persistent asymmetries between older and newer member states (*European Commission, 2024*; *Lepori, Reale, & Slipersæter, 2015*). The Czech Academy operated within this broader context. Its institutes could achieve excellent results, but the national system as a whole faced challenges of salary competitiveness, infrastructure gaps, limited administrative capacity, and weaker historical embeddedness in European networks. This meant that every European success had both scientific and symbolic meaning. It demonstrated that a Czech public research institute could overcome structural disadvantages and participate in European science at a high level. At the same time, the asymmetry reminded policymakers that excellence requires long-term investment.

European programmes also made coordination roles more important. Participation as a partner is valuable, but coordination demonstrates a higher level of trust, capacity, and leadership. Coordinating a European project requires intellectual leadership, administrative competence, financial responsibility, and the ability to manage diverse partners. For Academy institutes, moving from participation to coordination represented a more advanced form of European integration. It showed that Czech teams could help shape research agendas rather than only contribute to agendas designed elsewhere. This shift was gradual and uneven, but strategically important. The Academy's long-term European position depends not only on the number of projects in which its institutes participate, but also on their ability to lead consortia, host ERC principal investigators, manage infrastructures, and influence programme priorities.

Participation in multilateral European schemes beyond the main Framework Programme also mattered. The Academy's Head Office directly administers involvement in ERA-NET Cofund

activities such as NORFACE and HERA, as well as other multilateral platforms connecting European and non-European partners (*Czech Academy of Sciences, n.d.*). These schemes are important because they support fields and collaborations that may not fit easily into the largest framework calls. NORFACE and HERA, for example, have been especially relevant for social sciences and humanities, where European cooperation often concerns comparative societies, cultural heritage, memory, identity, and social transformation. Multilateral schemes therefore helped ensure that European participation was not limited to laboratory sciences and technological innovation. They widened the Academy's European integration across its disciplinary spectrum.

The humanities and social sciences benefited from European programmes in distinctive ways. Their participation often involved comparative research, archival cooperation, conceptual exchange, cultural heritage, migration, memory studies, democracy, social cohesion, populism, or European identities. Such projects helped Czech scholarship move beyond national isolation while preserving its own sources and questions. European funding could support collaboration with partners who brought different historical experiences and theoretical traditions. It could also help overcome the old post-socialist stereotype that Central European humanities were mainly national or descriptive. Through European projects, CAS institutes in these fields could contribute to general debates about Europe, society, culture, and politics. This was an important intellectual expansion of their public role.

In the natural and technical sciences, European programmes often offered access to larger experimental networks, technology platforms, data systems, and interdisciplinary consortia. CAS institutes working in physics, chemistry, biology, ecology, informatics, materials science, and biomedicine could use European projects to connect local expertise with global research problems. Participation in such projects could strengthen equipment, attract researchers, and raise publication visibility. It could also expose teams to highly demanding standards of project delivery and international collaboration. The Academy's success in these areas helped demonstrate that its institute-based model remained compatible with modern European science. European programmes therefore reinforced the Academy's argument that specialised public research institutes have a continuing role alongside universities.

The Academy's involvement in European science advice also illustrates the broadening of programme participation. SAPEA, Science Advice for Policy by European Academies, is part of the European Commission's Scientific Advice Mechanism and has been funded through Horizon 2020 (*Czech Academy of Sciences, 2019*). Participation in such structures links the Academy not only to research projects but also to the European policy-advice ecosystem. It shows that academies are valued as sources of multidisciplinary expertise, including engineering, humanities, medicine, natural sciences, and social sciences. For the Czech Academy, this kind of involvement is consistent with its self-understanding as a body serving both scholarship and society. It also demonstrates how European programmes can support the civic role of academies, not only their laboratory research.

European programmes also changed the Academy's communication culture. Projects increasingly required websites, public summaries, dissemination plans, stakeholder engagement, policy briefs, open days, exhibitions, and media communication. Researchers had to explain their work to audiences beyond their immediate disciplines. This did not always come naturally to fields shaped by specialised scholarly communication. Yet it helped the Academy develop a more outward-facing research culture. European project communication

contributed to the later emphasis on transparency, open science, and public accountability. In this sense, participation in European programmes influenced the Academy's relationship with society as well as with foreign partners.

Financially, European programmes diversified the resource base of Academy institutes. EU grants could provide substantial funding for personnel, mobility, equipment, networking, training, and coordination. However, they also required co-financing, cash-flow management, audit compliance, and careful budgeting. They could strengthen institutes, but they could not replace stable institutional funding. A research organisation dependent only on projects risks fragmentation and short-termism. The Academy therefore had to integrate European grants into a broader funding portfolio that included institutional support, national grants, internal Academy instruments, and applied or contractual funding. European participation was strongest when it reinforced long-term institutional strategy rather than becoming a patchwork of disconnected projects.

The evaluation effects of European participation were significant. Success in European programmes became a sign of international competitiveness and was often considered in institutional assessment. ERC grants, MSCA fellowships, Horizon consortia, ERA Chairs, infrastructure participation, and coordination roles provided evidence that institutes could meet external standards. Yet these indicators had to be interpreted carefully. Some fields have more opportunities in European programmes than others; some excellent research may not fit current European calls; and grant success depends partly on administrative capacity and programme priorities. Still, European participation became one of the important signals of research vitality. It linked internationalisation, funding, and evaluation in a concrete way.

By the 2020s, the Academy's participation in European programmes had become sufficiently mature to require dedicated strategic support. CAS maintained ERA-oriented information structures, ERC support, multilateral cooperation mechanisms, and links with the Technology Centre Prague. These structures reveal a shift from reactive participation to proactive positioning. The Academy no longer merely responded to calls as they appeared. It increasingly sought to prepare researchers, develop institutional capacity, identify strategic opportunities, and align European participation with long-term scientific priorities. This is a major difference from the 1990s, when European programme culture was still new and often unfamiliar. By the 2020s, European participation had become one of the ordinary languages of Academy governance.

This maturity does not mean that all problems disappeared. Administrative burden, low success rates, competition with better-resourced institutions, salary gaps, uneven participation among institutes, and the challenge of coordinating large projects remained serious issues. European programmes can sometimes push researchers towards fashionable themes, excessive reporting, or impact narratives that do not fit fundamental inquiry. They can also deepen inequalities between strong and weaker institutes if support is not carefully distributed. The Academy's task has been to use European programmes as instruments of quality and integration without allowing them to dominate scientific priorities mechanically. This balance remains one of the central questions of modernisation.

Participation in European research programmes ultimately changed the Academy's place in Czech society. It demonstrated that Czech public research could contribute to European agendas and compete internationally. It brought foreign researchers, ideas, standards, and networks into Czech institutes. It strengthened the Academy's argument for stable public

investment by showing that institutional support could leverage European resources and international recognition. It also linked Czech scientific expertise with European responses to climate change, health, digitalisation, cultural heritage, social transformation, energy, and democratic resilience. The Academy's European participation therefore was not merely an external dimension of its work. It became one of the mechanisms through which the Academy redefined its national public mission in European terms.

Thus, participation in European research programmes was a decisive component of the Czech Academy of Sciences' modernisation after 1993. It began before EU accession, developed through the Framework Programmes, deepened after 2004, and matured through Horizon 2020 and Horizon Europe. European programmes transformed the Academy's funding environment, international partnerships, administrative capacities, evaluation culture, career structures, infrastructure participation, and public communication. They created opportunities for excellence through ERC grants, mobility through MSCA, capacity building through widening instruments, and societal engagement through mission-oriented and challenge-driven projects. At the same time, they exposed the Academy to structural asymmetries, administrative burdens, and the danger of project-driven fragmentation. The Academy's achievement lay in gradually transforming European programme participation from an external opportunity into an internal element of institutional strategy. In doing so, it became not only a Czech research organisation with international contacts, but a European research actor embedded in the evolving architecture of the European Research Area.

2. International Mobility, Cooperation, and Project Networks

International mobility, cooperation, and project networks became one of the most visible signs that the Czech Academy of Sciences had moved beyond the first phase of post-socialist recovery. In the early 1990s, international mobility was still experienced as liberation from the restrictions of the previous regime. By the 2000s and 2010s, it had become a normal condition of scientific work, career development, project participation, and institutional evaluation. The Academy's internationalisation was therefore not only a matter of signing agreements or joining European programmes. It changed the social and professional texture of research life. Researchers travelled more frequently, foreign colleagues entered Czech laboratories and archives, doctoral students and postdoctoral fellows acquired international experience, and institutes learned to operate through networks rather than isolated national structures. Mobility became a mechanism through which ideas, methods, standards, instruments, and academic habits circulated. This movement did not eliminate national responsibilities or institutional identities, but it placed them within a wider field of cooperation. The modern Academy gradually became a node in a dense international system of visits, grants, workshops, consortia, advisory bodies, infrastructures, and long-term partnerships.

The post-1989 reopening of mobility had a special psychological and symbolic importance. Under state socialism, foreign travel was never merely a professional matter. It was filtered through political trust, institutional control, foreign-policy orientation, and sometimes security suspicion. After the Velvet Revolution, the ability to leave, return, invite, collaborate, and publish abroad became part of the recovery of academic freedom. For many researchers, international mobility meant the restoration of a normal scholarly biography. Conferences, archive visits, laboratory placements, research stays, and informal meetings again became ordinary components of intellectual life. Yet the freedom to move also revealed the damage

produced by decades of constrained exchange. Some disciplines had lost direct contact with contemporary debates; others had maintained scientific standards but lacked infrastructure, language confidence, or access to modern methods. Mobility therefore served both as a symbol of freedom and as a practical instrument of catching up. It connected moral transformation with the everyday rebuilding of professional competence.

The legal and institutional framework of the new Academy allowed this process to develop. The Act establishing the Czech Academy of Sciences recognised that the Academy and its institutes could conclude agreements on international cooperation in scientific activity and technological development (*Czech National Council, 1992*). This provision was important because it normalised international cooperation as part of the Academy's public mission. Institutes did not have to wait for political permission in the old sense; they could build partnerships related to their scientific profiles. This decentralised capacity was crucial, since genuine cooperation usually begins in concrete research environments rather than in ceremonial declarations. A physicist seeks access to an instrument, a historian needs an archive, a biologist needs a method, a linguist needs a corpus, and a sociologist needs comparative data. The Academy's internationalisation therefore developed through both central agreements and institute-level initiative. This combination became one of the characteristic features of the post-1993 period.

Bilateral cooperation formed the backbone of the Academy's mobility system. Agreements with partner organisations abroad created regular channels through which research teams could organise visits, joint work, workshops, and the preparation of larger projects. The CAS system of Mobility Projects and Mobility Plus Projects was designed precisely to establish or intensify scientific cooperation, support joint outputs, enable access to unique infrastructure and complementary methods, and prepare larger international projects (*Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, n.d.*). This model is significant because it treats mobility not as tourism or academic courtesy, but as a strategic investment in research capacity. A visit is valuable when it produces new methods, shared publications, better project proposals, access to equipment, or long-term cooperation. Mobility therefore became a bridge between personal contact and institutional development. It helped transform isolated international relations into durable research networks.

The distinction between ordinary mobility and project-oriented mobility is important. In the first years after 1989, short visits and invitations were often enough to restore communication. Later, mobility increasingly had to be embedded in research design. A visit abroad had to contribute to a defined project, a team relationship, a grant proposal, a shared dataset, or the development of a research infrastructure. This did not diminish the human meaning of mobility; rather, it gave it institutional weight. International travel became part of the production of knowledge, not merely a reward for established scholars. Young researchers learned techniques in foreign laboratories, archival scholars consulted collections abroad, and teams used mobility to coordinate multinational projects. The Academy's mobility schemes therefore helped professionalise international cooperation. They also linked mobility with evaluation, since sustained and productive international cooperation became one of the signs of institute vitality.

Mobility also changed the internal hierarchy of skills in Academy institutes. Scientific excellence was no longer separable from the ability to communicate internationally, write in English or other major scholarly languages, understand foreign funding systems, build

consortia, and work across institutional cultures. This did not mean that Czech-language scholarship lost its value. In many humanities and social-science fields, Czech remained essential for national scholarly responsibility, cultural interpretation, legal expertise, and public communication. Nevertheless, researchers increasingly had to operate bilingually or multilingually. International project networks required a practical command of English, familiarity with European administrative vocabulary, and the ability to translate local research questions into internationally intelligible forms. Mobility therefore reshaped the professional habitus of researchers. It produced a more outward-facing academic culture, though not without pressure and inequality.

The Academy's cooperation with neighbouring countries retained particular importance. Relations with Slovakia remained unusually close because Czech and Slovak science had shared an institutional history within Czechoslovakia. After 1993, cooperation with Slovak partners became international in legal terms but continued to be marked by linguistic proximity, disciplinary continuity, personal networks, and common archives. This was especially important in fields such as history, linguistics, archaeology, social sciences, environmental research, and regional studies. Czech-Slovak mobility did not have the exotic or symbolic character of reopening to the West, but it helped preserve a shared Central European scholarly space. It also showed that internationalisation does not always mean distance. Sometimes it means maintaining and renewing a formerly internal relationship under new state conditions. The Academy's cooperation with Slovakia thus represented continuity within institutional rupture.

Cooperation with Germany, Austria, Poland, Hungary, France, the United Kingdom, and other European partners gradually produced a more complex map of mobility. Germany was important because of its scientific strength, geographical proximity, and research organisations such as the Max Planck Society, the Leibniz Association, Helmholtz centres, and universities. Austria mattered as a neighbouring country with strong historical and regional connections to Czech scholarship. Poland and Hungary belonged to the broader Central European space of post-socialist transformation and shared research challenges. France provided important links in the humanities, social sciences, and natural sciences, including institutional platforms such as CEFRES. The United Kingdom and the United States offered access to globally influential academic environments, especially for postdoctoral training and publication culture. The Academy's mobility networks therefore developed as a layered geography of cooperation: neighbouring, regional, European, transatlantic, and global.

The role of CEFRES illustrates how mobility could create institutional spaces rather than only individual exchanges. The French Research Centre in Humanities and Social Sciences in Prague became a venue for cooperation among French, Czech, and Central European researchers. The later CEFRES Platform, involving CEFRES, Charles University, the Czech Academy of Sciences, and CNRS, showed how international cooperation could be embedded in a durable research environment (*Czech Academy of Sciences, n.d.*; *CEFRES, n.d.*). Such platforms matter because they combine mobility, doctoral training, seminars, joint projects, and intellectual exchange. They allow researchers to pass through an institution repeatedly, not merely visit once. For humanities and social sciences, where discussion, archives, language, and conceptual translation are central, these platforms can have a transformative effect. They help build international communities around topics rather than only around funding calls.

The Academy's fellowships also played a strategic role in incoming mobility. The J. E. Purkyně Fellowship was designed to attract outstanding creative scientists from abroad, including Czech scientists who had worked abroad for long periods and top foreign scientists, to CAS institutes for up to five years (*Czech Academy of Sciences, n.d.*). This type of fellowship addressed a major problem of post-socialist science: how to reverse or compensate for brain drain and how to bring internationally experienced researchers into Czech institutes. It also helped create local centres of excellence by giving institutes the means to recruit strong personalities. Such incoming mobility could change a laboratory or research group more deeply than a short visit. It brought new standards of mentoring, project leadership, publication practice, and international networking. The fellowship therefore linked mobility with institutional renewal.

The Josef Dobrovský Fellowship had a different but equally significant profile. It supported short-term study stays of foreign researchers at CAS institutes for work requiring knowledge of Czech historical, cultural, linguistic, geographical, or natural characteristics (*Czech Academy of Sciences, n.d.*). This programme is especially important for understanding the Academy's dual mission. On the one hand, it opened Czech institutes to foreign scholars. On the other hand, it strengthened Czech studies and research grounded in national or territorial specificity. It therefore showed that internationalisation does not have to erase national scholarly identity. Foreign researchers came to Czech archives, libraries, collections, landscapes, linguistic materials, and cultural resources because these local materials had international intellectual value. The fellowship thus turned Czech specificity into a basis for international cooperation.

Mobility in the Academy increasingly included doctoral and early-career researchers. This was one of the most important generational changes after 1989. Under the previous regime, younger researchers often depended on senior patronage and institutional permission to travel. In the modern period, doctoral students and postdoctoral fellows became expected participants in international mobility. They attended summer schools, spent time in foreign laboratories, joined European projects, co-authored publications with international teams, and learned research cultures abroad. This changed the meaning of academic apprenticeship. A young scientist was no longer trained only within a national institute or university department. Training increasingly involved movement across borders, exposure to different supervisory styles, and participation in international networks. The Academy's future therefore became connected with the capacity to make such mobility productive rather than accidental.

Marie Skłodowska-Curie Actions and other European mobility schemes deepened this generational shift. They supported doctoral networks, postdoctoral fellowships, staff exchanges, and international training environments. For CAS institutes, these schemes offered opportunities to host foreign researchers, send Czech researchers abroad, and participate in structured training networks. They also introduced expectations concerning supervision, career development, transferable skills, open science, ethics, and international recruitment. Mobility was no longer a simple individual stay; it became part of a programme of career formation. This was especially important for early-career researchers seeking to build independent profiles. European mobility schemes therefore connected internationalisation with the human dimension of modernisation. They helped transform the Academy from a set of national institutes into a set of training environments embedded in European research careers.

Project networks became increasingly important because modern research often requires cooperation among many institutions. A European consortium in climate research, materials science, digital humanities, social transformation, public health, or biodiversity is not merely a collection of partners. It is an organisational form through which scientific questions are divided, coordinated, funded, and communicated. Academy institutes had to learn to enter such networks as credible partners and, increasingly, as coordinators or leaders. Project networks demanded administrative competence, legal awareness, data management, intellectual property rules, and communication strategies. They also required researchers to work with different institutional cultures, from universities and academies to enterprises, hospitals, museums, NGOs, and public authorities. The Academy's participation in project networks therefore expanded its social and organisational world.

The movement from bilateral cooperation to multilateral networks was one of the defining features of the 2000s and 2010s. Bilateral mobility remains useful for establishing trust and developing focused cooperation, but many European research problems require larger networks. CAS multilateral cooperation schemes were designed to strengthen European cooperation with selected third countries and to facilitate the creation of new consortia capable of applying for funding under EU Framework Programmes (*Czech Academy of Sciences, n.d.*). This reveals the strategic role of smaller cooperative instruments. A mobility project or multilateral seed project may not be large in itself, but it can prepare the ground for a Horizon consortium, a joint infrastructure, or a long-term comparative research agenda. The Academy's network-building therefore developed through stages: contact, mobility, joint output, consortium, larger project, and sometimes permanent institutional partnership.

Research infrastructures gave cooperation networks a material foundation. Many fields now depend on instruments, databases, observatories, repositories, collections, laboratories, and digital platforms that no single institution can maintain alone. CAS institutes participate in research infrastructures both as users and as providers of specialised facilities. International mobility around infrastructures is often highly practical. Researchers travel to use an instrument, learn a protocol, access a dataset, calibrate equipment, or develop a method. Such cooperation is different from conference travel because it is embedded in the material conditions of research. It also creates long-term dependencies and obligations. Infrastructure networks therefore make international cooperation more durable, but also more complex and administratively demanding.

The humanities and social sciences have their own forms of infrastructure and networked cooperation. Archives, libraries, corpora, oral-history collections, archaeological databases, museum collections, digital editions, legal sources, and cultural heritage repositories can all become nodes of international research. Foreign scholars come to Czech institutes not only for discussion but also for access to materials that cannot be reproduced elsewhere. Czech researchers travel to foreign archives and collections for similar reasons. Digitalisation has expanded these possibilities, but it has not removed the importance of physical mobility. Working with manuscripts, artefacts, landscapes, oral-history witnesses, or local collections often still requires presence. The Academy's cooperation networks in the humanities therefore combine old and new forms of scholarly movement: archival travel, seminars, digital platforms, joint editions, comparative projects, and research schools.

International mobility also contributed to the reform of evaluation culture. Institutes that regularly hosted foreign researchers, sent staff abroad, participated in joint projects, and

published with international partners could demonstrate openness and vitality. Evaluation panels increasingly considered international cooperation as one element of research quality and institutional strategy. This did not mean that every foreign contact was automatically valuable. Ceremonial agreements, superficial co-authorships, or unfocused visits could not substitute for strong research. Nevertheless, productive mobility became evidence that an institute was connected to active scientific communities beyond the national system. It also helped reviewers judge whether institutes were aware of international standards in their fields. Mobility and evaluation therefore became mutually reinforcing elements of modernisation.

At the same time, international mobility introduced new inequalities. Not all researchers could travel equally. Family responsibilities, language barriers, health, age, teaching obligations, project commitments, visa issues, and financial constraints shaped access to mobility. Younger researchers might be expected to move frequently, but precarious contracts could make mobility risky. Women researchers could face particular difficulties when mobility expectations collided with unequal care responsibilities. Researchers in well-funded laboratory fields might have more travel resources than colleagues in underfunded humanities areas. Internationalisation therefore did not automatically produce fairness. The Academy's human-resource policies had to recognise that mobility is both an opportunity and a selective pressure. A modern institution cannot simply praise mobility; it must make mobility accessible and meaningful.

Brain drain remained a persistent risk throughout the post-1993 period. The opening of borders allowed talented Czech researchers to build careers in stronger research systems with higher salaries, better equipment, and more predictable career paths. Some departures were permanent, and they represented a real loss to Czech science. Yet mobility also created diaspora networks, return migration, joint supervision, co-authorship, and transnational careers. The J. E. Purkyně Fellowship and similar instruments were partly designed to turn outward mobility into circulation rather than loss (*Czech Academy of Sciences, n.d.*). The challenge was to create conditions under which researchers trained abroad would want to return or remain connected to Czech institutes. This required not only patriotic appeal, but competitive research environments, institutional support, project opportunities, and career prospects. Mobility therefore forced the Academy to confront the material conditions of scientific work.

International cooperation also became a form of science diplomacy. Academies have long served as institutions that connect states and societies through scholarly exchange, even when political relations are strained. The Czech Academy's membership in European academy networks such as ALLEA and EASAC placed it within a system of international scientific representation and policy advice (*ALLEA, n.d.*; *EASAC, n.d.*). These networks are not ordinary research consortia. They bring together academies as institutions that represent broad scientific communities and provide expertise on issues such as climate, energy, health, biodiversity, digital transformation, and research integrity. Through such networks, the Academy participates in the European public sphere of knowledge. It is not only a recipient of European projects, but also a contributor to European scientific advice.

SAPEA strengthened this advisory dimension. Science Advice for Policy by European Academies connects academy networks and provides evidence reviews for the European Commission's Scientific Advice Mechanism (*ALLEA, n.d.*; *SAPEA, n.d.*). For the Czech Academy, participation in this ecosystem is important because it links research excellence

with public responsibility at the European level. It also reflects a broader transformation in the role of academies. They are no longer only learned societies or collections of institutes; they are institutions expected to mediate between science, policy, and society. Cooperation networks therefore include not only laboratories and projects, but also expert panels, evidence-review groups, advisory boards, and policy dialogues. Internationalisation becomes part of public accountability.

The Academy's international cooperation also acquired an ethical dimension in the 2020s. The Russian full-scale invasion of Ukraine in 2022 forced European research institutions to respond to a direct attack on academic life, infrastructure, mobility, and personal safety. CAS introduced the Researchers at Risk Fellowship to support researchers and PhD students whose scientific work was threatened by war, persecution, or other dangers, initially focusing on Ukraine and later extending the idea to researchers from other countries where freedom of research is threatened (*Czech Academy of Sciences, 2022*; *Czech Academy of Sciences, 2024*; *Czech Academy of Sciences, n.d.*). This programme shows that mobility is not always voluntary career enhancement. Sometimes it is emergency protection. The Academy's support for at-risk researchers connected international cooperation with academic freedom, humanitarian responsibility, and democratic values. It also placed CAS within the wider European response to threats against science.

This ethical turn did not replace scientific criteria, but it widened the meaning of internationalisation. A threatened researcher hosted by a CAS institute must be able to continue scientific work in a safe environment, join a team, access infrastructure, and maintain professional identity. Such support is both humanitarian and scholarly. It prevents the destruction of scientific careers and preserves intellectual capacity that may later contribute to reconstruction in the researcher's home country. The programme also affects host institutes, which must integrate displaced researchers into ongoing work. International mobility therefore becomes a test of institutional solidarity. It shows whether a research organisation understands academic freedom not only as a national privilege but as a transnational responsibility.

International cooperation with non-European partners also expanded during the modern period. The Academy's bilateral partner organisations include academies and research institutions beyond the European Union, and Mobility Plus Projects have been used to support cooperation with partners in various regions (*Czech Academy of Sciences, n.d.*). Such cooperation reflects the globalisation of science beyond the framework of European integration. Czech researchers work with partners in Asia, the Americas, and other regions in fields ranging from natural sciences and engineering to archaeology, linguistics, area studies, and environmental research. These links are important because they prevent Europeanisation from becoming a closed continental horizon. The Academy's international networks have to be European in institutional architecture but global in scientific imagination. This balance is especially important in disciplines dealing with climate, biodiversity, health, migration, technology, and cultural exchange.

Cooperation networks also changed the everyday management of institutes. Directors and research leaders had to think in terms of international portfolios: bilateral agreements, EU projects, visiting scholars, doctoral mobility, ERC ambitions, MSCA fellows, infrastructure partnerships, and strategic alliances. Administrative staff had to support travel, visas, contracts, financial reporting, insurance, intellectual property, and data protection. Libraries

and IT departments had to support access to digital resources and remote cooperation. Communication offices had to publicise international achievements. Internationalisation therefore became distributed across the entire institution. It was no longer the responsibility of one foreign-relations office. It became a condition of normal institute functioning.

Digital communication transformed cooperation networks, especially after the COVID-19 pandemic. Online seminars, hybrid conferences, shared repositories, remote collaboration tools, and digital project management reduced some barriers to international cooperation. They also revealed that mobility is not only physical. Researchers can collaborate without travelling, supervise students across borders, share data, and participate in meetings remotely. Yet the pandemic also showed the limits of digital substitution. Laboratory work, fieldwork, archival research, trust-building, mentoring, and informal intellectual exchange often still require physical presence. The modern Academy therefore entered a hybrid regime of cooperation. Mobility became more selective but also more strategically combined with digital communication. This hybridisation is one of the new standards of research culture in the 2020s.

International project networks contributed to interdisciplinarity. Many contemporary European and global challenges cannot be addressed by one discipline alone. Climate change, public health, ageing, digitalisation, energy transition, cultural heritage protection, migration, and democratic resilience require cooperation across natural sciences, technical fields, social sciences, and humanities. CAS institutes, organised across three broad scientific areas, possess the disciplinary diversity needed for such cooperation. International projects often push institutes to connect fields that might otherwise remain institutionally separate. This can be difficult because interdisciplinary cooperation requires translation between methods, publication cultures, and evaluative expectations. Yet it is one of the major ways in which the Academy's internal structure becomes connected to external problems. Project networks therefore serve as bridges between disciplines as well as between countries.

The development of cooperation networks also influenced the Academy's public image. A research institution that hosts foreign scholars, participates in European advisory bodies, coordinates international projects, and supports researchers at risk appears not as an inherited national bureaucracy but as an active participant in global knowledge production. This matters for public legitimacy. The Academy has had to justify its role in Czech society, especially as a publicly funded non-university research system. International cooperation provides one form of evidence that its institutes are competitive, useful, and respected. However, this public image must be grounded in real research rather than ceremonial internationalism. The strongest legitimacy comes from cooperation that produces serious knowledge, trains researchers, solves problems, and contributes to society.

International mobility also affected the relationship between the Academy and Czech universities. Many mobility and project schemes involve doctoral students, university partners, joint supervision, shared laboratories, and consortia combining CAS institutes with university faculties. This helped overcome older institutional separations between research institutes and teaching universities. The Academy's institutes became attractive places for doctoral and postdoctoral training, while universities provided degree structures and teaching environments. International projects often required both types of institution, and mobility schemes created practical incentives for cooperation. Thus, internationalisation indirectly

supported the integration of the Czech research system. It showed that Academy-university relations could be strengthened through shared external networks.

The Academy's cooperation networks also required attention to research integrity and responsible partnership. International projects involve questions of authorship, data ownership, ethical approval, export controls, dual-use technologies, intellectual property, and unequal power relations between partners. As cooperation expanded beyond traditional academic exchange, the need for clear standards increased. European programmes, academy networks, and institutional policies all contributed to a more formal culture of responsible collaboration. This was especially important in sensitive areas such as health data, environmental monitoring, artificial intelligence, security, and cooperation with partners in authoritarian or unstable contexts. Internationalisation therefore increased not only opportunities but also ethical complexity. A modern Academy had to become capable of managing that complexity.

By the mid-2020s, international mobility and cooperation had become deeply embedded in the Academy's institutional life. CAS maintained bilateral and multilateral schemes, fellowships for incoming researchers, support for Czech studies, programmes for researchers at risk, participation in European academy networks, and project-based cooperation through Horizon Europe and related instruments. The result was a dense ecosystem rather than a single policy. Some instruments served short visits; others supported long-term recruitment. Some aimed at young researchers; others at established scholars. Some focused on Czech studies; others on frontier science, infrastructure, policy advice, or emergency protection. This variety is important because no single form of mobility can serve all purposes. The Academy's internationalisation matured by recognising the plurality of cooperation itself.

The meaning of project networks also changed over time. In the 1990s, international cooperation often helped Czech science reconnect with standards and partners from which it had been partly isolated. In the 2000s, it helped the Academy enter European programme structures. In the 2010s, it supported excellence, infrastructures, and strategic consortia. In the 2020s, it increasingly connected science with societal challenges, open science, research integrity, and academic freedom. This chronology shows that internationalisation is not a static condition. It changes as science, politics, technology, and society change. The Academy's task has been to adapt without losing its core mission: to conduct high-quality research across a broad spectrum of sciences and humanities while considering the needs of Czech society and national culture (*Czech Academy of Sciences, n.d.*).

Thus, international mobility, cooperation, and project networks transformed the Czech Academy of Sciences from a national institution recovering from political isolation into a research organisation embedded in European and global scientific circulation. Mobility restored academic freedom after 1989, but over time it became a strategic mechanism for building quality, training researchers, accessing infrastructure, creating consortia, attracting talent, and supporting scientists at risk. Bilateral agreements, Mobility Projects, Mobility Plus Projects, fellowships, European schemes, academy networks, and multilateral project structures all contributed to this transformation. The process brought opportunities, but also inequalities, administrative burdens, brain-drain risks, ethical dilemmas, and new demands on institute governance. Its deeper significance lies in the fact that internationalisation changed the Academy's internal culture. Research became more mobile, networked, comparative, multilingual, evaluative, and publicly accountable. In this sense, international

mobility was not an external supplement to the Academy's modernisation; it was one of the mechanisms through which modernisation became lived practice inside the institutes themselves.

3. AV ČR in the European Research Area

The position of the Czech Academy of Sciences in the European Research Area represents one of the most important outcomes of its post-1993 modernisation. The Academy did not enter the European Research Area as a newly created institution without memory, nor as a simple remnant of the socialist academy model. It entered as a restructured public research organisation carrying several historical layers: the legacy of Czech learned societies, the institutional inheritance of ČSAV, the democratic reconstitution of 1993, and the reform experience of the 1990s and 2000s. The European Research Area gave these layers a new framework. It required the Academy to think not only as a national institution of science, but also as a participant in a European system of knowledge production, mobility, infrastructures, careers, evaluation, open science, and research policy. This did not mean that the Academy abandoned its Czech public mission. Rather, it had to reinterpret that mission within a wider European space. AV ČR thus became one of the institutions through which Czech science entered the practical, political, and intellectual architecture of European research governance.

The European Research Area was conceived as more than a funding environment. It was meant to create a more coherent research space in Europe by reducing fragmentation, supporting mobility, strengthening excellence, improving coordination, and connecting national systems with European priorities (*European Commission, 2025*). For the Czech Academy, this vision had a special resonance. During the socialist period, Czech science had been embedded in a politically controlled international order, with privileged links to the Soviet bloc and limited access to many Western networks. After 1989, the first task was reopening. After 2004, the task became integration. By the 2020s, the task was no longer merely to participate in European programmes, but to influence, use, and critically assess the European Research Area as a framework for institutional development. This shift from participation to agency is central to understanding the Academy's modern role.

AV ČR's formal mission already corresponds closely to the logic of the European Research Area. The Statutes of the Czech Academy of Sciences state that the Academy conducts research through its institutes across natural, technical, social, and human sciences, pursues the advancement of knowledge at the international level, educates researchers, and applies its results for education, culture, competitiveness, and the solution of current societal problems (*Czech Academy of Sciences, n.d.*). This formulation combines three elements that are also central to the ERA: international excellence, human capital, and societal relevance. It also preserves the national dimension of the Academy's mission, especially in relation to Czech society and culture. The Academy is therefore not a purely Europeanised research platform detached from its country. It is a Czech institution whose capacity to serve national society depends increasingly on its ability to operate within European research structures.

The Academy's integration into the ERA developed through several overlapping channels. The first was participation in EU Framework Programmes, from pre-accession involvement in earlier programmes to full participation in Horizon 2020 and Horizon Europe. The second was mobility, including bilateral schemes, fellowships, European networks, and international

career instruments. The third was institutional representation in European policy and academy networks. The 4th was alignment with ERA standards in evaluation, open science, research integrity, infrastructures, gender equality, and career policy. These channels cannot be separated neatly. A Horizon Europe project may involve mobility, data policy, open access, infrastructure access, and career development at the same time. The ERA therefore entered the Academy not as one policy field, but as a dense set of expectations shaping research practice.

The creation and work of the European Research Area section at the CAS Head Office, OMS-ERA, shows how deeply European integration became institutionalised. OMS-ERA monitors European science policy and foreign funding opportunities, prepares information for CAS institutes, comments on legislative documents discussed at EU level, prepares CAS position papers, supports project managers at CAS institutes, assists ERC applicants, and administers multilateral cooperation activities such as ERA-NET Cofund schemes (*Czech Academy of Sciences, n.d.*). This is not merely an administrative service. It is an institutional mechanism for translating European policy into Academy practice and Academy interests into European debates. Without such structures, ERA participation would remain dependent on individual researchers or institute-level improvisation. OMS-ERA shows that the Academy understood the ERA as a policy space requiring professional attention, not simply as a catalogue of grant calls.

The Academy's position papers on the future of the European Research Area demonstrate that AV ČR did not approach European integration passively. It welcomed the ambition to create a coherent research area, but also criticised discrepancies between the declared purpose of the ERA and the complexity of the EU funding landscape (*Czech Academy of Sciences, 2021*). The Academy argued that fragmented European funding schemes can lead to overlapping efforts and confusion for applicants. This criticism is important because it shows the Academy speaking not only as a recipient of European policy but as an experienced research organisation capable of identifying structural problems in that policy. Such a stance reflects institutional maturity. A post-socialist institution seeking integration might have been tempted to treat European frameworks as unquestionable. AV ČR's position was more sophisticated: it supported Europeanisation, but also defended simplification, coherence, and usability.

This critical participation is one of the clearest signs that the Academy had become an actor within the ERA. To be in the European Research Area does not mean merely to accept European rules. It means to contribute to the shaping of those rules through evidence, experience, and institutional voice. CAS representatives participate in European science-policy discussions, advisory bodies, academy networks, and programme-related consultations. Such participation helps ensure that the perspective of a Central European public research organisation is not absent from debates often dominated by larger Western European systems. It also helps the Academy understand policy changes early and prepare its institutes for them. The ERA is therefore both an environment and a forum. AV ČR's role in it is both adaptive and representational.

The relationship between AV ČR and Horizon Europe illustrates this dual role. Horizon Europe is the EU's key research and innovation funding programme for 2021–2027 and supports collaboration, the dissemination of excellent knowledge and technologies, policy implementation, competitiveness, and the strengthening of the European Research Area (*European Commission, 2021*). For the Academy, Horizon Europe is not only a financial source.

It is one of the practical engines through which ERA principles enter institute life. It promotes international consortia, research infrastructures, missions, partnerships, open science, responsible research, and widening participation. CAS institutes participate in this system as research performers, project partners, coordinators, hosts of researchers, infrastructure actors, and sometimes contributors to advisory structures. Horizon Europe thus operationalises the ERA for the Academy.

However, participation in Horizon Europe also reveals the structural inequalities within the European Research Area. The ERA is formally conceived as a common research space, but European research systems differ greatly in historical resources, salary levels, administrative support, infrastructure, publication visibility, and capacity to coordinate large projects. Institutions from newer member states often face difficulties in competing with older, better-funded systems. The Academy has strong research teams and internationally respected institutes, but it operates within a national funding environment that cannot always match the resources available to leading Western European organisations. This creates a permanent tension. The Academy must compete in a European arena that is open in principle but unequal in practice. Its ERA strategy therefore necessarily combines ambition with a demand for more balanced access to excellence.

The EU's widening participation instruments are especially relevant in this context. They are designed to reduce disparities in research and innovation performance across Europe and to help institutions from less research-intensive countries build excellence and networks. For AV ČR, these instruments can support recruitment, institutional upgrading, international partnerships, and the development of new centres of expertise. Yet widening cannot be understood as charity. The Academy's strongest institutes do not need symbolic inclusion; they need fair opportunities, stable national co-investment, and access to high-level partnerships. Widening instruments are most effective when they strengthen already existing scientific potential and help it become structurally sustainable. In this sense, the Academy's role in the ERA is not that of a peripheral beneficiary, but of an institution seeking to transform uneven European integration into genuine scientific capacity.

The Academy's institute-based structure gives it a distinctive position in the European Research Area. Many European research systems are dominated by universities, while AV ČR consists of specialised public research institutes covering a broad disciplinary spectrum. This structure has advantages in the ERA. Institutes can concentrate expertise, maintain long-term programmes, manage specialised infrastructure, and respond flexibly to international project opportunities. At the same time, institute-based research must constantly negotiate its relationship with universities, doctoral training, and national higher education systems. The ERA encourages mobility and cooperation across institutional boundaries, which can strengthen collaboration between CAS institutes and Czech universities. Thus, AV ČR's presence in the ERA also reshapes domestic research relations. European integration pushes the Czech system towards more networked forms of cooperation.

Research infrastructures are one of the most important areas where the Academy's institute model aligns with ERA priorities. The ERA Policy Agenda 2025–2027 identifies research infrastructures as a long-term structural policy area, alongside open science, careers, assessment reform, gender equality, knowledge valorisation, and other priorities (*European Commission, 2025*). Many CAS institutes maintain or use facilities, collections, instruments, databases, observatories, and specialised platforms that are meaningful beyond the borders

of one institution. European infrastructure participation allows Czech researchers to access facilities abroad and foreign researchers to use Czech capacities. It also raises questions of sustainability, governance, data standards, and long-term investment. In this field, the Academy can contribute not only scientific expertise but also institutional continuity. Infrastructures require patience, planning, and trust, qualities that a stable public research organisation can provide.

Open science became another key area linking AV ČR to the ERA. The European Research Area increasingly treats open access, FAIR data, repositories, transparency, and responsible dissemination as elements of modern research culture. For the Academy, open science is not only an external requirement attached to European projects. It affects libraries, publishing practices, data management, evaluation, research integrity, and scholarly communication. CAS institutes work across fields with very different data cultures: experimental data, environmental observations, archival materials, linguistic corpora, social data, historical sources, and sensitive biomedical information. The ERA's open science agenda therefore requires institutional interpretation. The Academy has to support openness while respecting ethical, legal, disciplinary, and cultural constraints. This is precisely the kind of complexity that modern ERA participation entails.

Research careers form another major point of connection between AV ČR and the ERA. The ERA Policy Agenda 2025–2027 includes research careers among its structural policies and links them with talent attraction, mobility, and career development (*European Commission, 2025*). For the Academy, this issue is especially important because its future depends on generational renewal, postdoctoral opportunities, international recruitment, return mobility, and the retention of excellent researchers. European instruments such as Marie Skłodowska-Curie Actions, ERC grants, ERA Chairs, and mobility schemes can support these aims. Yet European career expectations also create pressure. Researchers are increasingly expected to be mobile, internationally visible, grant-successful, and productive across multiple dimensions. AV ČR must therefore translate the ERA career agenda into policies that support excellence without producing excessive precarity.

The Academy's involvement in ERC support shows how ERA participation becomes internal career policy. ERC grants are one of the strongest symbols of European research excellence, and CAS has developed support mechanisms for ERC applicants through its Head Office and related expert structures (*Czech Academy of Sciences, n.d.*). This support reflects a realistic understanding of European competition. Excellence alone may not be enough if researchers lack mentoring, proposal experience, institutional backing, and preparation for interviews. By building ERC support, the Academy turns a European funding instrument into an internal mechanism of talent development. The aim is not simply to obtain grants. It is to cultivate researchers capable of formulating ambitious projects at the European frontier. ERC participation therefore links the ERA with the Academy's internal culture of excellence.

Research assessment reform connects the Academy to another major ERA agenda. The movement towards responsible assessment, reflected in CoARA and in the Academy's own Action Plan, aligns CAS evaluation practices with European debates on qualitative peer review, the responsible use of indicators, and recognition of diverse research contributions (*Coalition for Advancing Research Assessment, 2022*; *Czech Academy of Sciences, 2024*). This is not a peripheral matter. Evaluation shapes careers, funding, institute strategy, and scholarly behaviour. By participating in European assessment reform, AV ČR contributes to the

redefinition of excellence in a way that is particularly important for a diverse academy containing both laboratory sciences and humanities. The ERA thus becomes a space where the Academy can defend a broad understanding of research quality. It can argue that world-class science cannot be reduced to journal metrics or rankings.

Gender equality and institutional culture also belong to the ERA framework. European research policy increasingly expects research organisations to address gender balance, leadership diversity, working conditions, and inclusive career environments. For AV ČR, these expectations intersect with its own post-socialist institutional history and the generational transformation of research careers. The Academy's modernisation cannot be measured only by grants and publications. It also depends on who can become a researcher, who can lead teams, whose careers are interrupted, and how institutes manage work-life balance, mobility expectations, and leadership pipelines. The ERA places these questions within a European framework and gives them policy visibility. This does not solve them automatically, but it makes them harder to ignore.

Knowledge valorisation is another ERA priority with particular relevance for AV ČR. The Academy has traditionally been associated with basic research, but many of its institutes produce knowledge relevant to industry, public administration, health, environment, cultural heritage, security, and education. European policy increasingly asks how research results are transferred, used, communicated, and embedded in society. The Academy's Strategy AV21, with its emphasis on "top research in the public interest", can be read as a Czech institutional answer to this European question (*Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, 2026*). It connects institutes, universities, industrial partners, state bodies, and the public sector around socially important topics. In this way, AV ČR translates the ERA's concern with impact and societal relevance into a national programme rooted in its own structure.

Strategy AV21 is especially important because it prevents Europeanisation from becoming purely external. The Academy does not simply import European priorities; it formulates its own interdisciplinary programmes that connect high-quality research with public needs. These programmes create consortia across CAS institutes and with partners outside the Academy. They address issues such as health, energy, society, environment, technologies, cultural heritage, and public policy. This is close to the mission-oriented logic of Horizon Europe, but it is shaped by Czech institutional conditions. Strategy AV21 therefore shows the Academy's ability to domesticate ERA principles. It transforms European ideas of public value, interdisciplinarity, and problem-oriented research into an Academy-specific mechanism of coordination.

The Academy's participation in European academy networks also strengthens its role in the ERA. Through organisations such as ALLEA, EASAC, and SAPEA, academies contribute to European science advice, research integrity, policy statements, and evidence synthesis (*ALLEA, n.d.*; *EASAC, n.d.*; *SAPEA, n.d.*). AV ČR's involvement in these networks places it within a community of institutions that speak not only for individual projects but for science as a public good. This is an older role of academies, but in the ERA it acquires new policy significance. European research governance needs not only funders and universities, but also bodies capable of offering broad, multidisciplinary, and relatively independent scientific advice. AV ČR's participation in such networks therefore extends its role from research performance to research representation.

Science for policy has become increasingly important in the European Research Area. The ERA Policy Agenda 2025–2027 explicitly includes science for policy among the areas of action and structural development (*European Commission, 2025*). This priority corresponds to one of the Academy's long-term strengths: the capacity to provide expert knowledge across many fields. CAS institutes can contribute to public policy through environmental analysis, health research, social science, legal expertise, cultural heritage, energy studies, technology assessment, and risk analysis. European science-for-policy frameworks broaden the audience for such expertise. They also create standards for evidence review, transparency, and communication with policymakers. The Academy's role in the ERA thus includes the translation of specialised knowledge into public decision-making.

The Russian invasion of Ukraine in 2022 gave the Academy's European role a sharper ethical and political meaning. AV ČR condemned the aggression, expressed support for Ukrainian colleagues, and prepared fellowship support for students, postdoctoral researchers, and scientists from Ukraine (*Czech Academy of Sciences, 2022*). This action was not merely bilateral assistance. It reflected the values underlying the European Research Area: academic freedom, international solidarity, openness, and the defence of research communities under threat. The war also showed that the ERA is not only a technocratic policy space. It is embedded in the political conditions of democracy, security, and freedom. AV ČR's support for researchers at risk therefore belongs to its European identity as much as to its humanitarian responsibility.

The European Research Area also raises questions of research security. In the 2020s, European science policy became more attentive to risks associated with geopolitical dependence, dual-use technologies, foreign interference, data security, and cooperation with authoritarian contexts. For AV ČR, these questions are delicate because science depends on openness and international collaboration, but openness must be combined with responsibility. The Academy's broad disciplinary structure means that research security cannot be reduced to one field. It may concern advanced technologies, biomedical data, artificial intelligence, environmental information, strategic materials, or politically sensitive social research. The ERA provides a forum in which these issues can be discussed collectively. AV ČR's task is to incorporate security awareness without undermining the openness that makes science possible.

The Academy's public research institute model gives it a particular responsibility within Czech participation in the ERA. Universities educate large numbers of students and play a central role in doctoral training. Businesses contribute to innovation and applied development. Ministries shape policy and funding. AV ČR contributes concentrated research capacity, long-term expertise, scientific infrastructure, and interdisciplinary programmes. Its place in the ERA must therefore be understood through complementarity rather than competition. The Academy is not a university substitute, nor merely a grant contractor. It is a national research institution whose European value lies in the combination of depth, continuity, disciplinary breadth, and public mission. This distinctive profile allows it to contribute to ERA goals in ways that differ from other Czech actors.

The Academy's ERA integration also affects its relationship with Czech society. European participation can sometimes appear distant from national public concerns, especially when programmes use abstract policy language or complex administrative categories. AV ČR has to show that participation in the ERA strengthens its ability to serve Czech society rather than

diverting attention away from it. This is where the Academy's dual mission becomes crucial. International excellence and national relevance are not opposites. European networks can improve Czech environmental policy, health research, technological capability, cultural heritage protection, education, and democratic resilience. The Academy's challenge is to make these connections visible. ERA participation must be translated into public value.

At the same time, the Academy must avoid reducing its European role to immediate utility. The ERA supports excellent knowledge, research infrastructures, careers, open science, and long-term innovation capacity, not only short-term solutions. AV ČR's strongest contribution may often lie in basic research whose social value appears only later. Mathematics, theoretical physics, molecular biology, archaeology, linguistics, philosophy, or long-term ecological monitoring cannot always be justified by immediate application. Yet the European Research Area depends precisely on such depth. The Academy therefore has to defend the place of fundamental inquiry within European policy frameworks increasingly oriented towards competitiveness and societal challenges. Its role is to remind the ERA that useful science often begins as free, curiosity-driven research.

The relationship between European competitiveness and scientific autonomy is one of the central tensions of the 2020s. Horizon Europe and the ERA increasingly emphasise competitiveness, technology, strategic autonomy, industrial transformation, and response to global challenges (*European Commission, 2021*). These aims are legitimate, especially in a world of technological rivalry and ecological crisis. Yet the Academy must ensure that competitiveness does not become the only language of value. Its mission includes education, culture, knowledge, and the solution of societal problems, not merely economic growth. AV ČR's participation in the ERA should therefore be understood as a negotiation between European policy priorities and the broader intellectual mission of science. The Academy strengthens Europe not only by producing innovation, but by preserving independent research capacity.

The Academy's experience also illustrates that the European Research Area is not a finished reality. It remains a project marked by fragmentation, inequality, administrative complexity, and uneven implementation. AV ČR's critique of fragmented European funding reflects this unfinished character (*Czech Academy of Sciences, 2021*). The existence of ERA agendas, forums, and policy actions does not by itself create a seamless European research space. Researchers still face different national salaries, pension systems, career structures, evaluation cultures, legal rules, and administrative burdens. Institutes from different countries have unequal access to networks and resources. The Academy's practical experience therefore provides an important corrective to overly optimistic descriptions of the ERA. Integration is real, but incomplete.

By the mid-2020s, however, AV ČR had become deeply embedded in ERA structures. Its institutes participated in European projects, infrastructures, missions, partnerships, mobility schemes, and advisory networks. Its Head Office monitored European policy, supported ERC applicants, trained project managers, and prepared position papers. Its evaluation reforms aligned with European research-assessment debates. Its Strategy AV21 translated public-interest research into an Academy-wide coordination mechanism. Its support for Ukrainian researchers and researchers at risk linked international cooperation with academic freedom. These developments show that the Academy's Europeanisation was not limited to one

administrative domain. It entered the Academy's funding, governance, values, communication, careers, and public mission.

The place of AV ČR in the European Research Area therefore represents a mature stage of the institutional history traced throughout this project. Earlier chapters emphasised the Academy's emergence from learned societies, its socialist formation as ČSAV, its ideological deformation, its normalisation, its democratic rupture in 1989, and its post-1993 stabilisation. In the ERA, all these earlier layers acquire a new meaning. The Academy's struggle for autonomy becomes part of a European debate on academic freedom and responsible assessment. Its disciplinary breadth becomes relevant to interdisciplinary European challenges. Its national cultural mission becomes compatible with European cultural and scientific cooperation. Its public accountability becomes linked to open science, research integrity, and societal relevance. The ERA therefore does not replace the Academy's history; it reframes it.

Thus, AV ČR's position in the European Research Area should be understood as the outcome of a long transformation from post-socialist recovery to European agency. The Academy entered the ERA through programmes, mobility, partnerships, and evaluation reforms, but gradually became more than a participant in external schemes. It developed structures for monitoring and influencing European policy, supported ERC and Horizon participation, joined European academy networks, aligned assessment and open-science practices with wider reforms, and translated European priorities into its own Strategy AV21. At the same time, it preserved a distinct national mission rooted in Czech society, culture, and long-term scholarly responsibility. The Academy's role in the ERA therefore lies in a productive tension: it is simultaneously Czech and European, autonomous and accountable, basic-research oriented and publicly engaged, historically grounded and future-facing. This tension is not a weakness. It is precisely the form through which a modern academy of sciences can contribute to Europe's knowledge system while remaining responsible to its own society.

Open Science, Digitalisation, and New Standards of Research Culture

1. Open Access and Research Data Policies

Open access and research data policies became one of the clearest signs that the modernisation of the Czech Academy of Sciences had entered a new phase. In the 1990s, the Academy had to rebuild autonomy, stabilise institutes, defend public funding, and reconnect with international research. In the 2000s and 2010s, it had to adapt to competitive grants, evaluation mechanisms, European programmes, and project networks. By the 2020s, however, the question was no longer only who produced research, how it was funded, or how it was evaluated. It was also how research results circulated, who could access them, under what conditions they could be reused, and what responsibilities publicly funded science had towards society. Open science therefore did not appear as an isolated technical reform of libraries or repositories. It emerged as a new norm of research culture, linking transparency,

reproducibility, public accountability, digital infrastructure, intellectual property, data governance, and the European Research Area.

The Czech Academy's open science agenda should be understood as a continuation of its post-1989 transformation rather than as a sudden fashion imported from Brussels. The Academy's democratic legitimacy after 1993 depended on the claim that publicly funded research served society while preserving scientific autonomy. Open access gave this claim a new practical form. If research is supported by public money, its results should, wherever possible, be accessible to other researchers, institutions, teachers, students, policymakers, enterprises, journalists, and citizens. This principle does not mean that every document, dataset, or method can be made public without restriction. It means that closure must be justified rather than assumed. In this sense, open science transformed the moral economy of public research. Knowledge produced within public institutions was increasingly treated not as an internal possession of institutes or journals, but as a shared intellectual resource.

The Academy had already moved in this direction before the full vocabulary of open science became dominant. Its earlier Open Access Policy, approved in 2010, belonged to a period when the main concern was access to publications. That policy reflected the growing dissatisfaction across Europe with subscription barriers, expensive journal packages, and the paradox that publicly funded research often became inaccessible to the public because it was locked behind commercial paywalls. For Academy institutes, open access was initially connected above all with scholarly communication and institutional repositories. It concerned articles, books, reports, and publication metadata. Yet even this early phase was significant. It required researchers to think about rights, versions, repositories, publisher contracts, and the public visibility of their work. It also placed the Library of the Czech Academy of Sciences in a more strategic role as a coordinator of research information.

The later Open Science Principles of the Czech Academy of Sciences, approved in 2024, represented a broader and more mature stage of this development. They replaced the earlier Open Access Policy and expanded the focus from publications to the openness of the research cycle as a whole (*Czech Academy of Sciences, 2024*). The document linked open access, research data, software, metadata, repositories, licensing, FAIR principles, and institutional support. This change reflected the wider transformation of European research culture. Open science no longer meant only that a published article should be readable without payment. It also meant that data should be managed responsibly, that code and tools should be shared where possible, that outputs should be reusable, and that research practices should become more transparent. The Academy's move from open access to open science therefore marked an important conceptual enlargement.

The principle "as open as possible, as closed as necessary" became central to this policy culture. It is a deliberately balanced formula. It rejects both secrecy by default and naive total openness. In scientific practice, some materials cannot be fully opened because of personal data protection, intellectual property, security concerns, ethical obligations, contractual restrictions, cultural sensitivity, endangered species locations, archaeological site protection, or the rights of research participants. At the same time, such restrictions should not be used as a convenient excuse for withholding data that could reasonably be shared. The formula therefore requires judgement. It asks researchers and institutes to identify what can be opened, what must remain closed, and what can be shared under controlled or delayed

conditions. This is especially important for an Academy whose institutes work across very different fields and data cultures.

The FAIR principles became another foundation of the Academy's research data policy. FAIR means that data should be findable, accessible, interoperable, and reusable (*Wilkinson et al., 2016*). These principles are often misunderstood as identical with open data, but they are not the same thing. Data can be FAIR even when access is restricted, provided that metadata, conditions, identifiers, formats, and reuse rules are clear. This distinction is essential for fields dealing with sensitive biomedical data, personal information, protected cultural heritage, or legally restricted materials. For the Academy, FAIR therefore offered a practical language for improving data governance without ignoring legitimate constraints. It moved the discussion beyond the simple opposition between open and closed. The central question became whether research data are managed in a way that makes them discoverable, understandable, preserved, and reusable under appropriate conditions.

Data management plans became one of the principal instruments through which this culture entered research practice. A data management plan asks researchers to think at the beginning of a project about what data will be collected, how they will be described, where they will be stored, who will have access, what formats will be used, what ethical or legal restrictions apply, and how long-term preservation will be ensured. This is a major shift from older habits in which data management often occurred informally, locally, and sometimes only at the end of a project. The Academy's open science policy encouraged institutes to manage data according to FAIR principles and to use trusted repositories within the timeframes specified in the data management plan (*Czech Academy of Sciences, 2024*). In practical terms, this meant that data stewardship became part of scientific professionalism. A well-designed project now had to include not only research questions and methods, but also a plan for the responsible life of the data it produced.

The Library of the Czech Academy of Sciences acquired a central role in this transformation. Libraries in modern research organisations are no longer merely places where books and journals are stored. They are infrastructures for access, metadata, repositories, licensing, digital preservation, bibliometrics, research information, and open science support. The creation of a specialised Open Science Department at the Library strengthened this role and gave institutes a point of contact for advice on open access, research data management, data management plans, and compliance with funders' requirements (*Czech Academy of Sciences, 2025*). This institutional support was necessary because open science cannot be implemented only through declarations. Researchers need practical tools, templates, consultations, training, and legal guidance. Without such support, open science risks becoming an additional administrative burden rather than a meaningful improvement in research culture.

The ASEP institutional repository became a key component of the Academy's open access infrastructure. Deposit of publications in ASEP helped ensure that outputs of CAS institutes were recorded, discoverable, and, where permitted, accessible. The Open Science Principles recommended that CAS employees deposit the version of record or the author accepted manuscript at the time of publication at the latest (*Czech Academy of Sciences, 2024*). This recommendation matters because repository deposit preserves institutional memory and reduces dependence on commercial platforms. It also supports evaluation, visibility, and public access. For an Academy composed of many specialised institutes, a common

repository helps create a shared record of research activity. It connects institute-level work with the Academy's public responsibility as a whole.

Open access also changed the relationship between authors and publishers. Under traditional publishing models, researchers often transferred rights to publishers and then found themselves unable to share their own work freely. Open access policies therefore required attention to copyright, licences, embargoes, author accepted manuscripts, and rights retention. The Academy's emphasis on Creative Commons licences, especially CC BY or equivalent licences where appropriate, reflected the need to make reuse conditions transparent (*Czech Academy of Sciences, 2024*). This was not merely a legal technicality. It defined what readers, researchers, teachers, and digital systems could do with published material. Open access is strongest when it allows not only reading but also lawful reuse, quotation, teaching, text and data mining, translation, and integration into new research. The licence therefore became part of scholarly communication.

European policy strongly reinforced these institutional changes. Horizon Europe treats open science as a central mode of research practice and requires open access to publications as well as open access to research data under the principle "as open as possible, as closed as necessary" (*European Commission, 2021*). For Academy researchers participating in European projects, open science was not optional rhetoric. It was part of grant compliance, proposal evaluation, reporting, and project management. This changed behaviour inside institutes. Researchers had to understand open access routes, data management plans, repository choices, FAIR data, metadata, ethics, and reuse conditions. European funding therefore helped translate open science from a general value into daily administrative and methodological practice. It also connected the Academy's internal policies with the European Research Area.

The European Open Science Cloud gave the data dimension of this agenda an infrastructural horizon. EOSC was designed to support access to research data, services, tools, and infrastructure across Europe, creating conditions for data-intensive and cross-disciplinary science. For the Czech research system, EOSC also encouraged the development of national data infrastructure and coordination. CESNET, an association of universities and the Czech Academy of Sciences, plays a key role in the Czech e-infrastructure environment and has been identified as the national mandated organisation in EOSC-related structures (*EOSC Association, 2025*). This matters for the Academy because open data cannot exist without secure storage, identifiers, metadata standards, interoperability, computing capacity, and long-term preservation. Open science is therefore as much about infrastructure as it is about ideals. It requires a material and digital system capable of keeping knowledge usable.

The Czech national policy environment also shaped the Academy's open science development. The National Strategy for Open Access to Scientific Information of the Czech Republic for 2017–2020 and its action plan helped place open access and data issues within national research policy (*Government of the Czech Republic, 2017*; *Government of the Czech Republic, 2019*). Later, Act No. 241/2022 Coll. amended the public R&D support framework and introduced obligations concerning research data produced in publicly funded projects announced after August 2022 (*Parliament of the Czech Republic, 2022*). These changes show that open science was no longer only an institutional preference of the Academy or a condition of European projects. It became part of the legal and policy architecture of Czech research.

The Academy's own principles therefore emerged in dialogue with national law, European policy, and international recommendations.

UNESCO's Recommendation on Open Science gave this agenda a global normative framework. It defined open science as an inclusive construct combining open scientific knowledge, open science infrastructures, science communication, open engagement of societal actors, and dialogue with other knowledge systems (*UNESCO, 2021*). This broader understanding is important because it prevents open science from being reduced to repository deposit or publication fees. It links openness with equity, participation, collaboration, and trust. For the Czech Academy, the UNESCO framework reinforced the idea that open science is part of scientific responsibility. An academy of sciences is not only a producer of expert knowledge. It is also a public institution that helps shape the conditions under which knowledge circulates. Open science therefore became an ethical and civic question, not merely an information-management procedure.

The Academy's broad disciplinary structure made open science both necessary and difficult. In some natural and technical sciences, large datasets, code, laboratory protocols, and computational workflows can be shared in structured repositories, although even here problems of proprietary methods, patentability, or sensitive information may arise. In environmental research, long-term monitoring data can be of great public value but may require careful documentation and quality control. In biomedical research, personal data and ethical constraints are central. In archaeology, opening precise site information can endanger heritage resources. In linguistics and social sciences, consent, anonymisation, and cultural sensitivity are crucial. In the humanities, digitised sources, editions, corpora, and bibliographies may be open, but copyright, archival restrictions, and interpretive context matter. The Academy therefore needed an open science policy flexible enough to respect disciplinary differences while still establishing common principles.

The humanities and social sciences have a particularly complex relationship with open access. Their research often appears in monographs, edited volumes, critical editions, dictionaries, catalogues, and national-language publications, not only in journal articles. Commercial open access models based on article processing charges may not fit these fields well. Book processing charges can be expensive, and the audience for Czech-language scholarship may include teachers, local institutions, cultural workers, and citizens as well as international scholars. Open access can greatly increase the public value of humanities research, but it must be implemented in ways that do not damage small scholarly publishers, national-language publishing, or specialised editorial work. For the Academy, this meant that open access could not be designed only around the publication practices of biomedical or physical sciences. It had to include the scholarly ecology of books, editions, archives, and cultural heritage.

Research data policies also changed the meaning of reproducibility. In experimental sciences, reproducibility is often associated with the ability to verify methods, repeat analyses, and inspect data. In humanities and social sciences, reproducibility may take different forms: access to sources, transparency of interpretation, documentation of coding decisions, openness of corpora, or clarity about archival selection. Open science therefore encouraged each field to articulate what verification and reuse mean in its own terms. This was important because the Academy's institutes could not all follow one uniform model. A molecular biology dataset, an astronomical observation, a sociological interview corpus, a medieval manuscript

edition, and a climate model output require different standards. The policy challenge was to establish shared commitments without flattening epistemic diversity.

Open science also intersected with research integrity. Data availability, transparent methods, open protocols, responsible authorship, and clear licensing can reduce the risk of error, irreproducibility, and questionable research practices. They also make it easier for other researchers to verify, criticise, reuse, or build upon published work. The Academy's Open Science Principles explicitly linked openness with higher quality, transparency, sustainability, and reproducibility of research (*Czech Academy of Sciences, 2024*). This connection is essential. Open science is not only about generosity towards readers; it is about the reliability of scientific knowledge. When data and methods are invisible, trust depends heavily on authority. When they are responsibly documented and accessible, trust can be supported by verification. Open science therefore strengthens the epistemic foundations of public research.

At the same time, openness can create new risks if it is implemented without care. Data may be misinterpreted when separated from context. Sensitive information may be exposed. Indigenous or local knowledge may be appropriated. Commercial actors may reuse public research without fair return. Researchers may be pressured to share data before they have had a reasonable opportunity to analyse it. Poorly documented datasets may become technically open but practically useless. Open science therefore requires governance, not just enthusiasm. The Academy's formula "as open as possible, as closed as necessary" responds to precisely this problem. It recognises that responsible openness includes protection, timing, explanation, and stewardship.

The economics of open access posed another difficulty. Traditional subscription models restrict readers, while many gold open access models shift costs to authors or institutions through article processing charges. This can create inequalities between well-funded and poorly funded researchers, disciplines, and countries. Transformative agreements, institutional publishing platforms, repositories, and diamond open access models all attempt to solve parts of this problem, but none is simple. For the Academy, the issue was not only how to make publications open, but how to do so sustainably and equitably. A public research institution must avoid replacing one barrier with another. If paywalls exclude readers, high publication fees can exclude authors. Open access policy therefore became linked to budgeting, library negotiation, institutional support, and national consortia.

The Academy's open science agenda also affected evaluation. If research assessment rewards only journal prestige or publication counts, researchers may have weak incentives to share data, software, negative results, protocols, or public-facing outputs. The Academy's research assessment reforms in the 2020s, especially its alignment with responsible assessment principles, therefore complemented open science. The CAS Open Science Principles explicitly noted that implementation of open science practices should be rewarded in the evaluation of research and professional activities of CAS institutes (*Czech Academy of Sciences, 2024*). This is important because cultural change requires incentives. Researchers will take open science seriously when it is recognised as part of good research practice, not treated as an optional administrative afterthought. Evaluation and open science are thus mutually connected.

Open science also changed the role of software. In many fields, research results depend on code, scripts, workflows, models, and computational environments. If these remain hidden, the published result may be difficult to verify or reuse. The Academy's Open Science Principles recommended that program code necessary for reusing or validating published data should,

where possible, be made available under an open-source licence in a public repository (*Czech Academy of Sciences, 2024*). This recommendation reflects the growing importance of computational research. Software is no longer a secondary technical tool. It is often part of the method itself. Making code available strengthens transparency and allows others to reproduce analyses, improve tools, or detect errors. Yet software sharing also requires documentation, licensing, maintenance, and sometimes protection of sensitive or proprietary elements.

Training became a central condition of implementation. Open science demands skills that many researchers were not formally taught: metadata creation, repository selection, data anonymisation, licensing, version control, persistent identifiers, data management plans, FAIR assessment, and rights retention. Senior researchers may have to change long-established habits, while early-career researchers may face expectations that are still unevenly supported. The Library of the CAS and its Open Science Department therefore play a pedagogical role as well as an administrative one. Tools such as the CAS FAIR Wizard for data management plans help make new requirements more manageable (*Czech Academy of Sciences, 2025*). Such support matters because open science cannot become part of research culture if it is experienced only as an external obligation. It must be taught as a set of practical competences.

The public dimension of open science is especially important for AV ČR because the Academy presents itself as conducting top research in the public interest. Public access to publications, datasets, educational materials, and expert outputs can strengthen the relationship between science and society. Open science can help teachers use current knowledge, journalists consult reliable sources, public bodies access evidence, enterprises develop innovations, and citizens understand research funded from public resources. It can also strengthen trust by showing that scientific institutions are willing to expose their methods and results to scrutiny. However, public access does not automatically produce public understanding. Open science must be accompanied by communication, explanation, and mediation. Raw data alone rarely speaks to society. The Academy's wider communication and public-engagement activities therefore remain essential.

The digital transformation of scholarly communication also raised questions of preservation. Digital publications, datasets, code, and repositories require long-term maintenance. Without preservation planning, open outputs may disappear, become unreadable, lose metadata, or remain accessible only in obsolete formats. Public research institutions therefore have responsibilities that extend beyond immediate publication. They must think about durable identifiers, archival standards, trusted repositories, file formats, metadata quality, and institutional memory. The Academy's long tradition of libraries, archives, collections, and documentation gives it a historical sensitivity to preservation. Open science translates this older responsibility into the digital age. The problem is no longer only how to preserve books and manuscripts, but how to preserve complex digital research objects.

The relationship between open science and intellectual property required careful balance. The Academy's institutes sometimes produce knowledge with potential for patents, technologies, applied contracts, software, or collaboration with industry. Premature openness can undermine legitimate protection or commercialisation. Conversely, excessive secrecy can limit public value and scientific verification. The Open Science Principles therefore explicitly recognise the need to protect intellectual property while encouraging openness (*Czech Academy of Sciences, 2024*). This balance is especially important in fields such as biotechnology, materials science, energy, informatics, and medical research. The Academy's

task is not to choose between open science and innovation. It is to develop governance that allows both public access and responsible protection where justified.

Open science also interacts with international cooperation. European projects increasingly require shared repositories, data management plans, open access publications, common standards, and interoperable metadata. International consortia cannot function well if each partner manages data in incompatible ways. For Academy institutes, open science therefore became part of the technical foundation of cooperation. FAIR data makes collaboration easier because partners can find, understand, combine, and reuse each other's results. Open access publications increase the visibility of Czech research in international networks. Open-source code can support joint method development. Thus, open science strengthens the Academy's integration into the European Research Area not only normatively but practically.

The Academy's open science policies also reflect a broader transformation of academic authority. In older scholarly cultures, authority often rested on institutional prestige, individual reputation, and publication in recognised venues. These remain important, but open science adds another dimension: the credibility of processes. A result becomes more trustworthy when its data, methods, code, and supporting materials can be inspected under appropriate conditions. This does not eliminate the need for expertise; open data without expertise can lead to misunderstanding. But it changes the relationship between expertise and transparency. The Academy's public authority in the 2020s increasingly depends on both high-level knowledge and the openness of the processes through which that knowledge is produced.

The implementation of open science will remain uneven. Some institutes and disciplines are better prepared than others. Some have well-established data standards and repositories; others are still developing them. Some researchers welcome open science as an improvement in collaboration and trust; others fear administrative burden, loss of control, misuse of data, or inadequate recognition. These tensions are normal in a major cultural transition. The Academy's role is to provide common principles while allowing field-specific pathways. It must support early adopters, help hesitant institutes, avoid one-size-fits-all rules, and ensure that openness does not become merely formal compliance. Successful implementation depends on trust, training, infrastructure, incentives, and leadership.

By the mid-2020s, open science had become part of the Academy's broader institutional self-definition. It connected with research evaluation, European integration, digital libraries, scholarly communication, public accountability, research integrity, and career development. It also reflected the Academy's historical movement from a closed and politically supervised system to an autonomous, transparent, and internationally embedded research organisation. The contrast with the socialist period is striking. Under state socialism, information circulation was shaped by ideology, hierarchy, restricted mobility, and unequal access to foreign knowledge. In the contemporary Academy, the institutional aim is the widest possible responsible dissemination of research outputs. This does not mean that all obstacles have disappeared. It means that openness has become a recognised norm against which institutional practice can be judged.

Thus, open access and research data policies represent a decisive stage in the modernisation of the Czech Academy of Sciences. They extend the post-1989 ideals of freedom, autonomy, and international integration into the digital and infrastructural conditions of contemporary research. The Academy's transition from the 2010 Open Access Policy to the 2024 Open Science Principles shows a movement from publication access towards the responsible

openness of publications, data, software, methods, and research processes. This transformation has been shaped by Czech national policy, Horizon Europe requirements, EOSC, FAIR principles, UNESCO recommendations, and the Academy's own public mission. It creates new opportunities for transparency, reproducibility, collaboration, education, and trust, but it also brings challenges of cost, data protection, intellectual property, disciplinary difference, and administrative burden. The Academy's achievement lies in recognising that open science is not an external technical demand but a new form of public responsibility. In this sense, open access and research data policies have become part of the institutional culture through which AV ČR defines itself as a modern European academy of sciences.

2. Digital Libraries, Archives, and Scholarly Communication

Digital libraries, archives, and scholarly communication form one of the most important infrastructures of the modern Czech Academy of Sciences. They are not only technical services attached to research institutes. They are the institutional memory, public interface, and communicative nervous system of the Academy. Since 1993, AV ČR has had to define itself as a modern public research organisation capable of producing new knowledge, preserving older knowledge, making results visible, and connecting its scholarly output with Czech society and international research communities. Digitalisation gave this task a new material form. The Academy's libraries, archives, repositories, catalogues, journals, and digital platforms became instruments through which continuity and openness could be held together. They preserved the Academy's historical inheritance while also creating new channels for dissemination, reuse, evaluation, and public access.

The transformation of scholarly communication after 1989 should be understood against the background of the previous regime's restricted circulation of knowledge. In the socialist period, scholarly communication was shaped by ideological supervision, limited access to foreign literature, controlled international exchange, and uneven availability of journals and databases. After the Velvet Revolution, the Academy's international reopening required not only travel and cooperation, but also informational reconstruction. Researchers needed access to contemporary publications, foreign databases, digital catalogues, and new channels of publication. Libraries therefore became strategic institutions in the post-socialist modernisation of science. They were not passive storehouses of books. They were mediators between the Academy's institutes and the rapidly changing global information environment.

The Library of the Czech Academy of Sciences became central to this transformation. Its role expanded from traditional library services towards digital infrastructure, electronic information resources, open access support, bibliometrics, institutional repositories, digitisation, and research communication. This expansion reflects a broader European and global change in research libraries. The modern research library manages not only printed collections, but also licences, metadata, digital preservation, repositories, scholarly journals, persistent identifiers, and data services. In the Academy's case, this role is especially important because the institution is not a single university campus but a dispersed network of specialised institutes. The Library helps connect these institutes through common systems of access, publication evidence, digital preservation, and scholarly visibility. It therefore functions as one of the integrative institutions of AV ČR.

The Digital Library of the Czech Academy of Sciences is perhaps the clearest example of this integrative role. It contains digitised periodicals and monographs produced by institutes of the Academy and their predecessors, while also including born-digital publications such as newer articles and electronic monographs published by CAS institutions (*Library of the Czech Academy of Sciences, n.d.*). This combination of digitised heritage and born-digital scholarship is historically significant. It means that the Digital Library is not merely a retrospective archive of old materials. It is also a platform for contemporary scholarly communication. The long-term aim of making publications of CAS units accessible through the digital library expresses a particular understanding of institutional memory. The Academy's intellectual production should not disappear into scattered shelves, obsolete formats, inaccessible journals, or departmental websites. It should be preserved as part of a shared scholarly corpus.

The Digital Library also gives visible form to the Academy's layered history. Publications of present CAS institutes sit alongside works produced by their predecessors, including institutes of ČSAV and earlier learned organisations. This matters for the institutional history of the Academy because many research traditions survived political rupture, legal transformation, and organisational restructuring. A digitised periodical, monograph, or report may reveal continuities that administrative documents alone cannot show. It may trace the evolution of a discipline, a school of thought, a research programme, or a scientific community across regimes. Digital access therefore turns the Academy's history into an active research resource. It allows scholars to study not only the Academy as an institution, but also the intellectual output through which that institution justified itself over time.

The access model of the Digital Library reveals the complexity of openness in practice. Some documents can be read, downloaded, and printed publicly because they are out of copyright or made available by licence. Other documents are accessible after login under arrangements for works unavailable on the market, while still protected by copyright. Some materials can only be consulted within the library study room because of licensing restrictions (*Library of the Czech Academy of Sciences, n.d.*). This layered access structure shows that digitalisation does not automatically mean unrestricted openness. It must operate within copyright law, licence agreements, institutional responsibilities, and the rights of authors and publishers. The Academy's digital communication therefore rests on a careful balance between public access and legal responsibility.

The involvement of the Digital Library of the CAS in the Czech Digital Library places the Academy within the national system of digital cultural and scholarly infrastructure. The Czech Digital Library acts as a national aggregator of digital libraries operated in the Kramerius system and provides a common access point for digitised documents from participating institutions (*National Library of the Czech Republic, n.d.*). Through this system, the Academy's digitised materials enter a broader Czech information ecosystem and, through aggregation channels such as Europeana, can become visible within the European cultural heritage space (*Library of the Czech Academy of Sciences, n.d.*). This is a powerful example of how national and European infrastructures intersect. The Academy's digital heritage is not isolated behind institutional walls. It becomes part of a wider network of memory institutions, libraries, and digital humanities resources.

The Kramerius system is particularly important in this context. It is an open-source digital library system used by numerous institutions in the Czech Republic and Slovakia, and the Library of the Academy of Sciences has played a major role in its development and coordination

(*National Library of the Czech Republic, n.d.; *Kramerius, n.d.*). Kramerius represents more than software. It is a technological form of cooperation among libraries and memory institutions. It supports the presentation and management of digitised books, periodicals, maps, sheet music, historical prints, and born-digital documents. For AV ČR, participation in and development of such infrastructure demonstrates that the Academy contributes not only content but also technical solutions to the public knowledge environment. Digital scholarly communication therefore includes software, standards, and interoperability, not only texts.

The Academy's digitisation activities also strengthen preservation. Printed books, periodicals, reports, and rare materials are vulnerable to physical degradation, loss, dispersal, or restricted access. Digital copies cannot replace the originals, especially where material features matter, but they can reduce handling, broaden access, and create backup forms of preservation. The Digitisation Centre of the Library focuses especially on journals and monographs published by the Academy and makes the scanned documents available through the Digital Library (*Library of the Czech Academy of Sciences, n.d.*). This work converts a vulnerable and dispersed printed heritage into a searchable and more accessible digital corpus. It also supports historical research on the Academy itself, since institutional publications are among the most important sources for reconstructing scientific priorities, terminology, networks, and self-representation.

The mandatory submission of electronic publications issued by CAS departments to the Library gives digital preservation an institutional basis. This obligation ensures that electronic publications do not remain only on temporary project websites or local institute servers. It creates a pathway for collecting, archiving, and making available valuable scientific materials for future researchers and the public (*Library of the Czech Academy of Sciences, n.d.*). This is especially important in the digital age because born-digital materials are often more fragile than printed books. Websites disappear, formats become obsolete, and local files can be lost during organisational changes. A public research academy must therefore treat digital preservation as a core responsibility. The digital archive becomes the contemporary equivalent of the institutional shelf, but with more complex technical and legal requirements.

The AS Journals platform adds another dimension to the Academy's scholarly communication. It provides presentation and access to scientific periodicals published by the Academy of Sciences in open access mode, offering separate websites for journals and full-text browsing of journal content (*Library of the Czech Academy of Sciences, n.d.*). This platform is important because scholarly journals remain one of the main forms through which research communities organise communication, peer review, debate, and disciplinary identity. For CAS institutes, journals are also instruments of national and international scholarly presence. Many Academy journals operate in fields where Czech-language or Central European scholarship remains important, especially in the humanities and social sciences. AS Journals therefore supports both openness and disciplinary continuity.

The significance of AS Journals is particularly visible in fields where commercial publishing models do not fully serve scholarly needs. Many humanities and social-science journals have modest budgets, specialised audiences, multilingual traditions, and strong links to national scholarly communities. Open access through an institutional platform can protect such journals from both paywalls and excessive author charges. It can also strengthen editorial independence, public availability, and long-term archiving. In this respect, the Academy's journal platform corresponds to the logic of diamond or institutionally supported open access,

where access is free for readers and publication is not necessarily financed through high article processing charges. This model is especially valuable for small-language scholarship. It allows Czech and Central European research to remain visible without being forced entirely into commercial international publishing circuits.

The ASEP system represents another pillar of scholarly communication within AV ČR. Originally connected with the evidence of publication activity, ASEP developed into a crucial institutional infrastructure for recording, presenting, linking, and preserving research outputs. Its data repository stores data files with metadata created by authors from CAS institutes, enables versioning, links data with bibliographic records, and is registered in the re3data registry of research data repositories (*Library of the Czech Academy of Sciences, n.d.*). This development shows how publication evidence, repositories, and research data policy have converged. The institutional record of research is no longer limited to bibliographic descriptions of articles and books. It now includes datasets, persistent identifiers, licences, and links between outputs and underlying materials. Scholarly communication has become more complex, but also more transparent.

ASEP is also important for evaluation. Research assessment requires reliable information about publications, datasets, affiliations, outputs, and institutional activity. Without a common evidence system, evaluation would depend on fragmented local records or commercial databases that do not capture all fields equally. ASEP helps the Academy maintain its own record of research production across disciplines. This is especially important for humanities and social sciences, where monographs, edited volumes, critical editions, and Czech-language outputs may be poorly represented in international citation databases. By maintaining its own evidence infrastructure, the Academy preserves the ability to see and evaluate its research in a more field-sensitive way. Digital scholarly communication therefore supports both openness and institutional self-knowledge.

The relationship between repositories and research data also changes the meaning of authorship and responsibility. When researchers deposit datasets, code, metadata, or supporting resources, they make part of the research process visible beyond the final publication. This increases the responsibility of authors to document their work carefully, choose appropriate licences, protect sensitive data, and ensure that materials can be reused. It also changes the role of readers, who may become users, validators, re-analysts, or collaborators. The Academy's data repository therefore supports a more interactive model of scholarly communication. Research outputs are no longer only finished texts moving from author to reader. They are connected objects within a digital knowledge environment.

The Masaryk Institute and Archives of the Czech Academy of Sciences represents the archival dimension of this infrastructure. It manages extensive archival and library holdings and is responsible for records of the Academy of Sciences, archival fonds of older scientific institutions, and personal fonds of scientists working in the Czech lands (*Masaryk Institute and Archives of the CAS, n.d.*). It also provides pre-archival care and shredding supervision within the Academy. This role is vital because an institution as complex as AV ČR continuously produces records of governance, research, personnel, correspondence, projects, evaluations, and institutional memory. Archives ensure that these records are preserved, described, and made available under appropriate conditions. Without such archival work, the history of the Academy would fragment into anecdote and administrative residue.

The fonds of ČSAV and AV ČR preserved by the Masaryk Institute and Archives are especially significant for the institutional history of Czech science. They include records of bodies, units, and institutes of the Czechoslovak Academy of Sciences from 1952 to 1992 and of the Czech Academy of Sciences since 1993 (*Masaryk Institute and Archives of the CAS, n.d.*). This continuity of archival preservation allows researchers to trace institutional change across the socialist and post-socialist periods. It makes possible the study of restructuring, disciplinary development, leadership, personnel policy, international cooperation, evaluation, and the changing relationship between science and the state. The archive therefore performs not only a bureaucratic function but also a historiographical one. It supplies the sources through which the Academy can be critically studied.

The digital availability of archival guides and databases adds a further layer to this function. Online guides to fonds and collections make archival knowledge discoverable beyond the reading room and help researchers identify relevant materials before visiting the archive (*Masaryk Institute and Archives of the CAS, n.d.*). This is a major change in archival culture. Earlier, access often depended heavily on local knowledge, personal contact, or printed finding aids. Digital catalogues and databases make archival research more transparent and efficient. They also allow international researchers to discover Czech scientific archives more easily. Digital archival communication therefore supports both national scholarship and internationalisation.

The archival dimension is especially important for a history of the Academy because the institution has repeatedly been redefined by political change. The socialist foundation of ČSAV, the reforms of the 1960s, the purges of normalisation, the crisis of 1989, the birth of AV ČR in 1993, and later evaluation and Europeanisation all generated institutional records. These records are not neutral. They contain traces of power, language, hierarchy, conflict, ambition, and self-justification. The archive preserves them, but also makes them available for critical interpretation. This is why digital archives and archival databases should not be treated only as service tools. They are instruments of institutional transparency and historical accountability.

The Library's collection of manuscripts, early printed books, and rare works connects the Academy's modern research communication with deeper cultural memory. The collection includes printed books from the 16th to 19th centuries, incunabula, manuscripts, and materials inherited or acquired from older learned and cultural institutions (*Library of the Czech Academy of Sciences, n.d.*). Its selective digitisation and presentation through digital platforms show how the Academy participates in the preservation of Czech and European book culture. This is not unrelated to contemporary science. Historical collections are research infrastructures for codicology, bibliography, intellectual history, philology, religious history, art history, and cultural heritage studies. Their digital accessibility broadens the community of potential users and connects rare materials with new methods of digital humanities.

Knihověda.cz offers another example of the Academy's contribution to digital humanities and scholarly communication. The portal provides access to bibliographic resources, interpretive texts, and research tools for Czech book culture, including a comprehensive bibliographic database of Bohemian printed books, manuscripts, and modern literature, and it links older retrospective bibliographical traditions such as Knihopis and the Bibliography of Foreign-Language Printed Bohemica up to 1800 (*Library of the Czech Academy of Sciences, n.d.*). This kind of resource shows that digital scholarly communication is not limited to digitising pages. It also involves creating structured knowledge environments, databases, maps,

encyclopaedias, and analytical tools. The database becomes a research argument in its own right. It organises a field and enables new questions.

Digital humanities tools developed or supported within the Academy illustrate the changing relationship between libraries, archives, and research. Traditional divisions between librarian, archivist, editor, historian, philologist, programmer, and data specialist become less rigid in digital projects. A digital bibliography, corpus, map, or repository requires scholarly expertise, metadata standards, software development, user-interface design, preservation planning, and sometimes machine-learning tools. The Library of the CAS has explicitly described its applied research in terms of software tools and systems for digitising and managing digital documents, including open-source solutions and tools for digital humanities (*Library of the Czech Academy of Sciences, n.d.*). This shows that the Academy's information infrastructure is itself a site of research and innovation. Libraries do not merely support science; they can produce research technologies.

Electronic information resources and licensing also changed the Academy's scholarly communication. Access to international journals, databases, e-books, and citation indexes is essential for research competitiveness. The CzechELib consortium and related national arrangements for electronic information resources helped centralise licensing and improve access for Czech research and educational institutions (*CzechELib, n.d.*). For CAS institutes, such access is a condition of international participation. A researcher cannot contribute effectively to global debates without current literature. At the same time, the economics of licensed databases and commercial publishing created new tensions. Libraries had to negotiate access while supporting open access alternatives. Scholarly communication therefore became a field of economic and political negotiation, not simply intellectual exchange.

The coexistence of subscription access, open access platforms, institutional repositories, and digital libraries reflects the transitional character of contemporary scholarly communication. The Academy does not operate in a fully open knowledge economy. Researchers still rely on subscription databases, commercial journals, publisher platforms, and licensed resources. At the same time, they are increasingly expected to deposit publications, share data, publish open access, and support public availability. This hybrid system is administratively complex and sometimes contradictory. Libraries must support access under both old and new models. Researchers must navigate publisher rules, funder requirements, institutional policies, and evaluation expectations. The modernisation of scholarly communication therefore involves managing transition rather than simply declaring openness.

Digital scholarly communication also affects the visibility of Czech research. Publications in small languages, institute series, national journals, and specialised editions can remain invisible if they are not indexed, digitised, described, and made accessible. Platforms such as the Digital Library, AS Journals, ASEP, and Knihověda help counter this invisibility. They allow Czech research outputs to be found by international users, included in aggregators, linked to identifiers, and preserved for long-term consultation. This is particularly important for humanities and social sciences, where national-language scholarship often carries high cultural value but may be marginal in global commercial databases. Digital infrastructure therefore helps defend scholarly diversity. It makes smaller research cultures more visible without forcing them entirely into English-language commercial publication systems.

At the same time, digital visibility introduces new evaluative pressures. When outputs become easier to count, index, harvest, and compare, they can also become easier to reduce to indicators. Repositories and bibliographic systems support evaluation, but they can also feed metric-driven cultures if used without interpretation. The Academy's broader reform of research assessment is therefore relevant here. Digital scholarly communication should make research more visible and reusable, not merely more countable. A monograph, database, edition, digital map, or archival guide may have value that is not captured by citation metrics. The Academy's task is to connect digital evidence systems with informed peer review and field-sensitive assessment. Otherwise, infrastructure designed for openness could unintentionally strengthen crude quantification.

Digital communication also changes the relationship between the Academy and the public. A digitised journal, an online archival guide, an open database, or a searchable digital collection can be used by teachers, students, journalists, local historians, policymakers, and interested citizens. This expands the audience of the Academy beyond professional researchers. It also makes public accountability more concrete. A citizen can see research outputs, explore older publications, consult historical materials, or access open journals without passing through institutional gates. However, wider access does not automatically produce understanding. Digital platforms must be accompanied by explanation, navigation, metadata, translation, educational materials, and public communication. The Academy's digital infrastructure therefore works best when connected with science communication and outreach.

The COVID-19 pandemic highlighted the importance of digital libraries, repositories, and electronic communication. When physical access to libraries, archives, laboratories, conferences, and reading rooms was restricted, digital access became not merely convenient but essential. Researchers depended on electronic resources, remote databases, digitised materials, online meetings, and repository access. The pandemic did not create digital scholarly communication, but it accelerated recognition of its importance. It also revealed inequalities: not all materials were digitised, not all disciplines could shift online equally, and not all users had the same access to licensed resources. For the Academy, the pandemic confirmed that digital infrastructure is part of institutional resilience. A modern research organisation must be able to preserve communication under crisis conditions.

Digital archives and libraries also raise questions of authenticity and context. A digitised image of a manuscript or printed book is immensely useful, but it does not replace the material object. Binding, paper, marginalia, watermarks, provenance marks, damage, and physical scale may all matter. Similarly, digital archival descriptions can guide research, but archival interpretation still requires understanding of provenance, arrangement, institutional history, and record creation. Digital access therefore should not be confused with complete transparency. It opens doors but does not remove the need for expertise. The Academy's libraries and archives must therefore combine accessibility with scholarly mediation. Digitalisation should deepen, not flatten, historical and material understanding.

Long-term preservation of digital scholarly communication remains one of the most serious challenges. Digital objects require maintenance, migration, metadata, persistent identifiers, backup, format monitoring, and institutional commitment. Open access journals can disappear without preservation systems, and project websites can vanish after funding ends (*Laakso, Matthias, & Jahn, 2021*). The Academy's repository, digital library, and mandatory submission systems respond to this risk by embedding digital outputs in institutional

infrastructure. This is crucial because research communication must outlast individual projects and temporary technologies. AV ČR's responsibility is not only to disseminate knowledge now, but also to preserve it for future scholarship. Digital modernisation therefore has a temporal depth similar to traditional archival work.

The digital transformation of scholarly communication also produced new professional roles. Librarians, archivists, data stewards, repository managers, digitisation specialists, metadata experts, copyright advisers, software developers, bibliometric analysts, and open science officers became increasingly important. Their work is often less visible than that of researchers, but it is essential for the functioning of modern science. The Academy's institutes cannot participate effectively in open science, European projects, data sharing, or digital preservation without such expertise. This changes the human structure of research institutions. Scientific excellence depends not only on principal investigators and research teams, but also on professional infrastructures of knowledge management. The modern Academy is therefore a more complex organisation than the older image of scholars working within self-contained institutes suggests.

Digital scholarly communication also strengthens interdisciplinary work. Databases, corpora, repositories, digital maps, and linked metadata can connect fields that previously worked separately. A historical source database may be used by historians, linguists, computer scientists, educators, and cultural heritage professionals. Environmental data may be relevant to ecologists, climatologists, geographers, policymakers, and social scientists. Digital platforms create shared objects around which interdisciplinary cooperation can form. The Academy's broad disciplinary structure makes it particularly well suited to such work. Digital libraries and repositories can become meeting points between the humanities, social sciences, natural sciences, and technical fields. They therefore support not only access but also new forms of research collaboration.

The international dimension of digital scholarly communication is equally important. Digital platforms make Czech materials discoverable abroad, while international standards make Czech repositories interoperable with European systems. Aggregation through the Czech Digital Library and Europeana places CAS materials within wider European cultural heritage networks. Registration of data repositories in international registries, use of persistent identifiers, and compliance with FAIR principles help integrate Academy outputs into global research infrastructures. This means that digital communication is one of the practical mechanisms of the Academy's European Research Area participation. Internationalisation no longer depends only on physical mobility or project consortia. It also depends on whether digital objects can be found, cited, harvested, reused, and preserved across borders.

Digital scholarly communication also has a democratic dimension. It supports a more open relationship between science and society by reducing barriers to knowledge. Yet it also creates responsibilities concerning misinformation, misuse, and interpretation. Public access to scientific materials does not guarantee that they will be used correctly. Data can be taken out of context; archival documents can be politicised; preliminary findings can be misrepresented; historical sources can be read without methodological caution. The Academy therefore has to combine openness with explanation and expertise. Digital communication makes knowledge more available, but it also increases the need for responsible mediation. The Academy's authority in the public sphere depends partly on how it manages this balance.

By the mid-2020s, digital libraries, archives, repositories, and journal platforms had become essential to AV ČR's institutional identity. They supported open science, research evaluation, historical memory, public access, international visibility, digital humanities, and long-term preservation. They also showed that the Academy's modernisation was not confined to laboratories, grants, or evaluation panels. It extended into the infrastructures through which knowledge is recorded, organised, shared, and remembered. The Library of the CAS and the Masaryk Institute and Archives therefore stand as central institutions within the modern Academy. They make visible the fact that scientific modernisation is also documentary, archival, bibliographic, and communicative. Knowledge must be produced, but it must also be preserved and transmitted.

Thus, digital libraries, archives, and scholarly communication transformed the Czech Academy of Sciences into a more open, connected, and historically self-aware research institution. The Digital Library of the CAS preserved and disseminated publications of Academy institutes and their predecessors; AS Journals supported open access to Academy periodicals; ASEP connected publication evidence, repositories, data, and evaluation; and the Masaryk Institute and Archives preserved the institutional memory of ČSAV and AV ČR. These infrastructures linked the Academy's national scholarly responsibility with European and global standards of digital access, interoperability, and preservation. They also revealed new tensions involving copyright, licensing, digital fragility, metricisation, disciplinary diversity, and public interpretation. The deeper significance of this transformation lies in the fact that the Academy's history and its present research activity became increasingly accessible as organised digital knowledge. In this sense, digital scholarly communication did not merely support the Academy's modernisation. It became one of the forms through which that modernisation was realised.

3. Research Integrity, Transparency, and Public Accountability

Research integrity, transparency, and public accountability became central elements of the Czech Academy of Sciences' modernisation because the legitimacy of public research after 1989 could no longer be based on institutional authority alone. The Academy had to show not only that it produced high-quality research, but also that this research was conducted honestly, responsibly, openly, and in a manner compatible with democratic public life. In the socialist period, the problem of integrity had often been obscured by ideological loyalty, political supervision, and administrative hierarchy. After the Velvet Revolution, the Academy's claim to autonomy required a different foundation. Scientific freedom had to be joined with responsibility, and public funding had to be joined with trust. This is why integrity and accountability cannot be treated as secondary ethical appendices to the history of AV ČR. They are part of the institutional architecture through which the Academy moved from the inherited logic of state-controlled science to the norms of a modern European research organisation.

The meaning of research integrity in the Academy is broader than the avoidance of misconduct. It includes honesty in designing, conducting, reviewing, and communicating research; reliability in methods and records; respect for colleagues, students, research participants, and the public; and accountability for the consequences of scholarly work. This wider understanding corresponds to the European Code of Conduct for Research Integrity, which defines reliability, honesty, respect, and accountability as fundamental principles of good research practice (*ALLEA, 2023*). For AV ČR, these principles are especially important because

the Academy covers a broad spectrum of disciplines. Integrity in molecular biology, archaeology, mathematics, social research, philosophy, environmental monitoring, and digital humanities cannot be implemented through identical routines. Yet all these fields require a common moral grammar: careful work, truthful reporting, respect for evidence, fair attribution, and willingness to be scrutinised.

The Code of Ethics for Researchers of the Czech Academy of Sciences provides one of the basic institutional expressions of this grammar. It formulates general principles of academic conduct and includes freedom of research, fairness, equal opportunities, responsibility, honesty, diligence, trust, and respect for others among the fundamental values of the academic environment (*Czech Academy of Sciences, n.d.*). These principles are significant because they connect individual behaviour with institutional culture. A research organisation cannot maintain integrity only by punishing the most obvious violations. It must cultivate habits of accuracy, mutual respect, responsible authorship, transparent supervision, fair evaluation, and serious treatment of evidence. The Code therefore functions not only as a disciplinary document but as a statement about what kind of scholarly community the Academy wishes to be.

The principle of freedom of research deserves particular attention in the Czech context. After decades in which ideology could shape research topics, institutional careers, publication opportunities, and permissible interpretations, freedom became one of the most important values of post-1989 science. Yet freedom without integrity is fragile. If research freedom is used to justify carelessness, plagiarism, fabrication, harassment, or manipulation, it destroys the public trust on which autonomy depends. The Academy's ethical framework therefore links freedom to responsibility. Researchers must be free from political command, but they must also be accountable to evidence, method, colleagues, students, research participants, and society. This balance is one of the central achievements of democratic scientific culture.

The institutionalisation of research integrity is visible in the role of the Scientific Integrity Committee of the CAS. The Statutes of the Academy provide that the Council for Sciences establishes a committee dealing with general questions of ethics of scientific work and with significant breaches of this ethics (*Czech Academy of Sciences, n.d.*). This mechanism is important because integrity cannot depend only on informal reputation or local institute culture. A central committee provides a point of reference for difficult cases, cross-institute issues, and general ethical questions affecting the Academy as a whole. It also symbolises the fact that research integrity is not only a private matter between individuals. It is an institutional responsibility. The Academy must have structures capable of receiving, interpreting, and responding to concerns about scientific conduct.

The existence of such a committee also reflects the evolution of accountability inside the Academy. In the immediate post-socialist period, accountability was strongly connected with institutional restructuring, personnel review, and the rejection of ideological control. By the 2000s and 2010s, it became more connected with evaluation, funding, open access, and international standards. In the 2020s, it increasingly includes research culture, safe working environments, equality, respectful behaviour, and the protection of those who report problems. The creation of the CAS ombudsperson position in 2025 belongs to this wider development. Its purpose is to protect people working in the CAS community from undesirable conduct and to contribute to a safe, fair, and respectful working environment (*Czech Academy*

of Sciences, 2025). This broadens institutional integrity from research outputs to working relations.

The ombudsperson role is important because misconduct and lack of integrity are not limited to falsified data or plagiarism. A research institution may produce excellent publications while tolerating bullying, abuse of power, discrimination, exploitative supervision, authorship pressure, or retaliation against whistle-blowers. Such practices damage science because they distort careers, silence criticism, weaken trust, and make research environments unsafe. Modern research integrity therefore includes questions of workplace culture and leadership. The Academy's Code of Conduct and ombudsperson mechanism indicate that AV ČR increasingly recognises this connection. A modern academy cannot defend intellectual excellence while ignoring the social conditions under which researchers work. Integrity is cultural before it is procedural.

Transparency is the second major element of this modern research culture. It has several meanings in the Academy's context. It means openness of research outputs through open access and data policies. It means publication of annual reports, institutional documents, evaluation materials, strategies, and legal regulations. It means clear rules for governance, funding, assessment, and ethical procedures. It also means public communication about the Academy's activities, achievements, controversies, and responsibilities. Transparency therefore connects the internal world of science with the external world of society. It allows the public to see how a publicly funded research institution functions and why it matters.

The Academy's Open Science Principles make the link between transparency and integrity explicit. They describe open science as a path to higher quality, transparency, sustainability, and reproducibility of research (*Czech Academy of Sciences, 2024*). This connection is crucial. Transparency is not merely a public-relations value. In science, transparency improves the conditions for verification, criticism, reuse, and correction. Open access to publications, responsible data management, FAIR principles, open software where possible, and trusted repositories all help make research more inspectable and reusable. They reduce the distance between claim and evidence. In this sense, open science is one of the practical instruments of research integrity.

Yet transparency must be responsible. The Academy's principle "as open as possible, as closed as necessary" recognises that openness has ethical, legal, and disciplinary limits (*Czech Academy of Sciences, 2024*). Personal data, sensitive health information, endangered species locations, archaeological sites, cultural heritage materials, intellectual property, security-relevant research, and confidential interviews cannot always be fully opened. Responsible transparency therefore requires judgement, not mechanical disclosure. This is important because careless openness can harm individuals, communities, heritage resources, or future research. A mature institution must be able to justify both openness and closure. Transparency becomes credible when it is governed by clear reasons rather than convenience.

Public accountability is closely linked with the Academy's financial and legal status. AV ČR is a public institution supported from the state budget and operating through institutes that conduct research across a wide range of fields. This position gives it autonomy, but also creates obligations. The Academy must report on its activities, explain its results, defend its use of public funds, and demonstrate its contribution to Czech society. Annual reports are therefore not merely administrative documents. They are instruments of public accountability.

They record research results, institutional developments, financial information, public communication, international cooperation, and strategic priorities. Through them, the Academy presents itself to the state, the scientific community, and the public.

The regular publication of annual reports has a broader historical significance. Under state socialism, institutional reporting existed, but it was embedded in a political-administrative system in which public accountability was limited and ideological self-presentation was often expected. In the democratic period, annual reports became part of a different accountability regime. They are not simply reports upwards to a party-state hierarchy; they are public documents that help society understand the work of the Academy. This does not mean that reports are neutral or complete. They still select, organise, and present information. But their public character changes the relationship between the Academy and society. The institution must make itself legible.

Evaluation reports are another form of transparency and accountability. The Academy's institute evaluations, especially the detailed assessments developed in the 2010s and 2020s, provide structured information about the quality, strategy, strengths, and weaknesses of research organisations. Their public or semi-public availability shows that the Academy does not merely ask society for trust; it submits itself to expert judgement. This is important because public accountability in science cannot be reduced to political control. The public cannot directly evaluate every scientific result. It needs credible procedures through which experts assess quality while remaining themselves accountable. Evaluation therefore mediates between scientific autonomy and public responsibility.

The reform of research assessment in the 2020s strengthened this mediation. By aligning with CoARA principles and emphasising qualitative peer review, diversity of research contributions, and responsible use of indicators, the Academy sought to make evaluation more intelligent and less mechanically metric-driven (*Coalition for Advancing Research Assessment, 2022*; *Czech Academy of Sciences, 2024*). This is directly connected with integrity. A poorly designed evaluation system can create incentives for questionable research practices, excessive publication pressure, superficial output production, and strategic metric gaming. A responsible evaluation system can support deeper quality, fairness, and long-term research. Assessment reform is therefore not only a management issue. It is part of the ethical environment of science.

The European Code of Conduct for Research Integrity, made available in Czech by the Academy, further connected AV ČR with European norms of responsible research (*Czech Academy of Sciences, 2024*). This translation and dissemination matter because research integrity depends on shared understanding. Scientists need common concepts to discuss authorship, data practices, supervision, peer review, conflicts of interest, collaborative work, and misconduct. The European Code also reflects new issues arising from open science, data-intensive research, research assessment, and changing research culture (*ALLEA, 2023*). By placing this document within the Czech academic environment, the Academy helped align national research culture with European standards while making them accessible to Czech-speaking researchers and institutions.

Research integrity is also deeply connected with authorship. Modern research is often collaborative, multi-institutional, international, and interdisciplinary. This creates possibilities for confusion or abuse: honorary authorship, ghost authorship, unjust exclusion of junior researchers, unequal credit in team science, and disputes over contribution. The Academy's

ethical culture must therefore support fair attribution and responsible authorship practices. This is especially important for early-career researchers, who may lack power in hierarchical teams. Authorship is not only a technical bibliographic question. It determines career opportunities, reputation, grant competitiveness, and professional identity. A transparent authorship culture is therefore one of the everyday foundations of integrity.

Data integrity is another major issue. Fabrication, falsification, selective reporting, poor documentation, irresponsible image manipulation, and unreliable data storage can damage entire research fields. Open data policies can reduce some risks, but only if data are well managed, documented, preserved, and ethically shared. The FAIR principles and data management plans discussed in the previous section therefore have ethical significance. They support traceability, verification, and reuse. For the Academy, which includes experimental, observational, computational, archival, and interpretive disciplines, data integrity must be understood broadly. It concerns laboratory notebooks, code, survey data, interviews, field observations, archival records, images, corpora, and digital objects.

Peer review is also part of research integrity. Reviewers must act fairly, confidentially, competently, and without conflicts of interest. This applies to journal review, grant review, institute evaluation, promotion procedures, and internal assessment. Because AV ČR relies heavily on peer review in both research evaluation and funding competition, the integrity of peer review is essential to institutional trust. A biased or careless review can affect careers, projects, and institute resources. Conversely, serious peer review strengthens quality and accountability. The Academy's modern evaluation culture therefore depends not only on methodology but on ethical conduct by reviewers and panels. Integrity enters the governance of science through the judgement of peers.

Conflicts of interest form another important area. In a relatively small national research system, personal, institutional, and disciplinary connections are often dense. Researchers may evaluate colleagues, former students, collaborators, competitors, or institutes with which they have indirect relations. Such situations are not always avoidable, but they must be disclosed and managed. Transparency about conflicts of interest protects both the evaluated party and the evaluator. It also protects the institution from suspicion. The Academy's increasing use of international reviewers and formal procedures can reduce local bias, but it cannot eliminate the need for conflict-of-interest awareness. Public accountability requires that decisions be not only fair but visibly fair.

The relationship between research integrity and international cooperation became more complex in the 2020s. European projects, global collaborations, data sharing, and mobility create cross-border ethical questions. Partners may operate under different legal systems, authorship norms, data standards, or political conditions. Cooperation with institutions in authoritarian contexts may raise questions of academic freedom, surveillance, dual-use technologies, or misuse of research. The Academy's participation in European Research Area debates therefore also involves responsibility for international partnership. Openness remains a central scientific value, but it must be combined with awareness of risk. Integrity in international cooperation requires due diligence, transparent agreements, and respect for both scientific freedom and ethical boundaries.

The Russian invasion of Ukraine in 2022 sharpened the ethical dimension of public accountability. The Academy publicly supported Ukrainian scientists and created fellowship support for researchers whose work was endangered by war or persecution (*Czech Academy*

of Sciences, 2022; *Czech Academy of Sciences, 2024*). This response showed that scientific institutions are not morally neutral service providers. They belong to a democratic public sphere and must respond when academic freedom, human life, and research infrastructure are attacked. Supporting researchers at risk is therefore part of research integrity in a broad sense. It defends the conditions under which honest and free research can exist. The Academy's public stance also strengthened its identity as a European institution committed to democratic values.

Public accountability also requires communication with society. The Academy's Strategy AV21, adopted under the motto "Top research in the public interest", represents a deliberate attempt to connect high-level research with contemporary social challenges (*Czech Academy of Sciences, 2014*; *Strategy AV21, n.d.*). This strategy matters because it prevents accountability from being understood only as financial reporting or legal compliance. The Academy must also show that its expertise contributes to health, education, energy, environment, technology, culture, public policy, and social resilience. Strategy AV21 gives institutional form to this claim by organising interdisciplinary programmes around problems relevant to society. It therefore connects research excellence with public responsibility.

Science communication is another major component of accountability. The Academy's development documents emphasise popularisation, public events, media communication, internet and social media, Science Fair, Week of the Czech Academy of Sciences, and popular science magazines as means of bringing research closer to society (*Czech Academy of Sciences, 2025*). Such activities are not decorative. In a society vulnerable to misinformation, distrust, and politicisation of expertise, science communication is part of the public mission of research institutions. It helps citizens understand why research matters, how knowledge is produced, and what uncertainty means. It can also attract young people to science. The Academy's public communication therefore supports both democratic culture and future scientific capacity.

However, public communication must itself observe integrity. Popularisation can become misleading if it exaggerates certainty, overpromises applications, hides limitations, or simplifies controversies irresponsibly. The Academy must therefore communicate in a way that is clear but not manipulative. This is particularly important in fields such as health, climate, energy, artificial intelligence, migration, history, and social conflict, where public debates can be polarised. Transparency means acknowledging uncertainty, explaining methods, and distinguishing evidence from speculation. Public accountability does not require scientists to be omniscient. It requires them to be honest about what is known, what is uncertain, and why further research matters.

The COVID-19 pandemic demonstrated the importance and difficulty of this role. Scientific institutions across Europe were expected to provide expertise, communicate uncertainty, respond to misinformation, and maintain public trust under rapidly changing conditions. For the Academy, the pandemic confirmed that public accountability cannot be activated only in moments of crisis; it must be built beforehand through credibility, communication channels, and a culture of transparency. It also showed that science is often most visible to the public when evidence is incomplete and politically contested. This places heavy responsibility on researchers and institutions. Integrity under crisis conditions means resisting both silence and overstatement.

The Academy's public accountability also includes preservation of institutional memory. Archives, annual reports, digital libraries, evaluation documents, codes of ethics, and public statements create a record through which future researchers and citizens can examine the institution's conduct. This is especially important for an academy whose history includes periods of political subordination and ideological distortion. Transparency towards the future is part of accountability in the present. The Masaryk Institute and Archives, the Library of the CAS, digital repositories, and published documents collectively ensure that the Academy's actions are not lost to institutional amnesia. A transparent institution preserves the sources through which it can later be studied critically.

The relationship between transparency and privacy must also be managed carefully. Research organisations handle personal data concerning employees, students, collaborators, participants, reviewers, applicants, and complainants. Ethical procedures, misconduct investigations, ombudsperson cases, and personnel matters often require confidentiality. Public accountability therefore cannot mean total disclosure of every institutional process. The Academy must protect individuals while maintaining trust in procedures. This is a difficult balance. Excessive secrecy can weaken confidence; excessive exposure can harm people and discourage reporting. Mature transparency distinguishes between public principles, procedural clarity, and necessary confidentiality.

The legal environment of public research also shapes accountability. As a public institution, the Academy operates within Czech laws concerning state property, public funding, access to information, employment, data protection, and research support. Its Head Office and institutes must manage resources, reporting, contracts, and governance in accordance with this legal framework. This legal accountability is different from scientific evaluation but connected with it. Research quality cannot compensate for irresponsible financial or administrative conduct, and good administration cannot replace scientific excellence. A modern academy must sustain both. Public trust depends on the integrity of research and the integrity of institutional management.

The Academy's institutes as public research institutions have their own accountability structures. Directors, boards, supervisory mechanisms, annual reports, budgets, and institute regulations create local frameworks of responsibility. This decentralised accountability is important because most research integrity issues arise at the institute or team level. Central codes and committees matter, but daily culture is shaped by laboratories, departments, seminars, archives, field teams, and project groups. Institute leadership therefore has a decisive role in creating environments where ethical behaviour is normal, complaints can be raised safely, and quality is valued over superficial performance. The Academy's integrity depends on the cumulative conduct of its institutes.

The human dimension of accountability becomes especially visible in supervision and mentoring. Doctoral students, postdoctoral researchers, and early-career scientists are vulnerable to power imbalances. They may depend on supervisors for funding, authorship, recommendations, visas, contracts, and career opportunities. A research institution committed to integrity must therefore ensure that supervision is fair, respectful, and professionally responsible. This includes clear expectations, appropriate credit, protection from exploitation, and mechanisms for resolving conflicts. The Academy's broader concern with safe and respectful working environments is therefore directly linked to the future of research quality. Poor mentoring damages both people and science.

Research integrity also requires attention to equality and inclusion. Discrimination, unequal opportunities, and hostile working environments can distort scientific careers and waste talent. The Code of Ethics includes equal opportunities among the basic values of the academic environment (*Czech Academy of Sciences, n.d.*). This principle has practical implications for recruitment, promotion, leadership, evaluation, mobility, parental leave, and access to resources. Public accountability demands that a national research institution not reproduce hidden barriers while speaking in the name of excellence. Excellence itself depends on fair access to conditions in which researchers can develop. Integrity and equality therefore belong together.

The Academy's engagement with responsible research assessment reinforces this point. If evaluation systems reward only a narrow range of outputs or career patterns, they may disadvantage researchers with non-linear careers, care responsibilities, interdisciplinary profiles, public-engagement work, or different disciplinary traditions. The Academy's CoARA Action Plan and its emphasis on diverse contributions and qualitative peer review respond to this problem (*Czech Academy of Sciences, 2024*). Responsible assessment is part of public accountability because it shapes what kind of research culture public money supports. A fair evaluation system is not only technically better; it is ethically more defensible. It helps align institutional incentives with the values the Academy publicly declares.

Public accountability also requires the Academy to defend science against misuse. Research results can be politicised, commercialised irresponsibly, taken out of context, or used to support harmful agendas. This risk is especially visible in areas such as genetics, artificial intelligence, environmental policy, migration, historical memory, and national identity. The Academy cannot control all uses of knowledge, but it can communicate carefully, maintain ethical standards, and intervene when public misrepresentation is serious. Its credibility depends on a willingness to clarify, correct, and explain. Transparency therefore includes responsiveness. A public research institution must not only publish results; it must participate responsibly in the public life of those results.

The relationship between research integrity and trust is therefore reciprocal. Society grants the Academy resources, autonomy, and authority because it trusts that researchers work honestly and responsibly. The Academy earns and renews that trust through ethical conduct, openness, evaluation, communication, and accountability. Trust cannot be demanded as an entitlement. It must be maintained through visible practice. This is one of the fundamental differences between democratic public science and politically protected institutional science. In the democratic model, autonomy survives only when institutions show that they deserve it. Research integrity is thus not a restriction on autonomy. It is one of its conditions.

By the mid-2020s, AV ČR had developed a relatively dense ecosystem of integrity and accountability: a Code of Ethics for researchers, a Code of Conduct, a Scientific Integrity Committee, an ombudsperson, open science principles, evaluation reforms, annual reports, public communication strategies, Strategy AV21, and participation in European integrity and assessment frameworks. This ecosystem is still evolving, and it does not guarantee the absence of problems. No research institution can eliminate misconduct, conflict, inequality, or public misunderstanding entirely. What matters is whether institutions possess principles, procedures, cultures, and willingness to respond. The Academy's modernisation can therefore be measured not only by research achievements but by its capacity to recognise and address ethical and public responsibilities.

The historical importance of this development becomes clearer when placed against the entire trajectory of the Academy. Earlier scientific societies sought legitimacy through learned authority and service to national culture. ČSAV under socialism combined genuine research with ideological subordination and state hierarchy. The post-1989 Academy reconstructed autonomy through reform, evaluation, and internationalisation. The contemporary Academy must now sustain autonomy through transparency, integrity, openness, and public responsibility. Each period had its own form of legitimacy. In the present, legitimacy depends increasingly on the ability to combine excellence with trust. This makes research integrity one of the defining features of the Academy's modern institutional identity.

Thus, research integrity, transparency, and public accountability represent the ethical and civic core of the Czech Academy of Sciences' modernisation. The Academy's Code of Ethics, Scientific Integrity Committee, ombudsperson, open science principles, evaluation reforms, annual reports, Strategy AV21, and public communication activities all contribute to a culture in which autonomy is inseparable from responsibility. This transformation reflects both Czech post-socialist experience and wider European developments in research integrity, responsible assessment, open science, and science-for-policy. It shows that a modern academy of sciences cannot rely on historical prestige or state support alone. It must earn public trust through honest research, fair working environments, transparent procedures, responsible communication, and willingness to submit itself to scrutiny. In this sense, integrity and accountability are not external constraints on the Academy's scientific mission. They are the conditions under which that mission can remain credible, democratic, and socially meaningful.

Career Structures and the Human Dimension of Modernisation

1. Research Careers in the Academy

Research careers in the Czech Academy of Sciences form one of the most revealing dimensions of its modernisation after 1993. Institutional reform, funding competition, European integration, open science, and research evaluation all ultimately affected the people who made the Academy function: researchers, doctoral students, postdoctoral fellows, institute directors, laboratory leaders, archivists, data specialists, and research-support professionals. The transformation of AV ČR was therefore never only a matter of laws, councils, budgets, institutes, or programmes. It was also a transformation of academic lives. A research career that had once been shaped by the relatively closed structures of a state-socialist academy became increasingly dependent on open recruitment, periodic evaluation, grant competition, international mobility, publication visibility, project networks, and institutional support for excellence. The modern Academy did not simply inherit a scientific workforce; it had to create a new career environment in which scientific autonomy, accountability, stability, and competitiveness could coexist.

The early post-transformation years created a difficult starting point for this career system. The restructuring of the Czechoslovak Academy and the birth of the Czech Academy of Sciences

involved major reductions in personnel, the abolition or transformation of institutes, and a sharp change in the relationship between research work and public funding. For many researchers, the 1990s were experienced not only as democratic liberation but also as institutional uncertainty. Some gained opportunities to travel, publish, collaborate, and lead research more freely than before. Others lost positions, saw their institutes reorganised, or had to adapt to standards and forms of competition that were unfamiliar. The career structure of the new Academy therefore emerged from a double experience: the recovery of academic freedom and the loss of the old guarantees of institutional employment. This duality continued to shape research careers for decades (*Filáček, 2023*; *Linková, 2015*).

Under the socialist model, a research career in the Academy had often been embedded in a relatively stable institutional hierarchy. This stability could protect long-term research, but it could also reproduce political dependence, bureaucratic inertia, and limited openness. After 1989, the Academy had to replace this model with a system based on scientific quality, internal evaluation, open selection, and international standards. The question was not simply how to employ scientists, but how to create a career order compatible with democratic research governance. Careers had to be regularised without becoming rigid; evaluated without becoming purely metric-driven; internationalised without producing permanent brain drain; and opened to younger researchers without destroying institutional memory. These tensions made career policy one of the most delicate areas of modernisation.

The legal and organisational form of the Academy shaped this career environment. AV ČR is not a university, although its institutes contribute significantly to doctoral training and many Academy researchers teach at universities. It is a system of public research institutes whose primary mission is research across natural, technical, social sciences, and humanities. This gives Academy careers a distinctive character. Researchers often have less regular teaching responsibility than university academics, but they may face stronger expectations of project work, publication output, laboratory or archival productivity, international cooperation, and participation in institute-level research strategy. The Academy's career model therefore differs from the classical university professorial path. It is closer to a research-institute model in which scientific performance, team development, project leadership, and infrastructure use are central.

The Career Development Rules for CAS employees with a university degree gave this model a formal structure. Approved by the Academy Assembly in 2008, the rules regulate the position of university-educated employees at research departments of CAS institutes and explicitly refer to the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (*Czech Academy of Sciences, 2008*). This reference is important because it places Academy careers within a European framework of transparent recruitment, professional development, ethical responsibility, and attractive research environments. The rules were not merely internal personnel regulations. They represented an attempt to define what a research career in the Academy should mean in the post-socialist and Europeanised period. They linked individual advancement with evaluation, qualification, salary, professional growth, teaching, and public outreach.

Recruitment by selection procedure became one of the formal foundations of this system. According to the Career Development Rules, employees are recruited on the basis of a selection procedure announced by the director of a CAS institute (*Czech Academy of Sciences, 2008*). This principle matters because open recruitment is a key difference between a modern

research institution and a closed academic corporation. It does not guarantee perfect fairness by itself, since recruitment procedures depend on advertisement, committee composition, criteria, institutional culture, and the wider labour market. Yet it creates a formal expectation that positions should not be distributed only through informal patronage or inherited internal networks. In a post-socialist context, this expectation carried special significance. It helped move the Academy away from older patterns of appointment shaped by loyalty, hierarchy, or personal dependence.

The qualification structure established by the Career Development Rules is one of the clearest expressions of the Academy's career logic. It includes research assistant, graduate student, postdoctoral fellow, associated scientist or scholar, scientist or scholar, and senior scientist or scholar (*Czech Academy of Sciences, 2008*). This sequence creates a pathway from support roles and doctoral training towards independent research and recognised leadership. The postdoctoral category is defined as temporary and limited to no more than five years after receiving the doctoral degree. The scientist or scholar grade assumes independent work and regular publication in peer-reviewed domestic or foreign journals or magazines, usually with involvement in grant or programme projects. The senior scientist or scholar grade identifies a leading scientific personality significantly involved in the development of the field at international level. Thus, the Academy's career structure combines professional progression with expectations of independence, productivity, international visibility, and scientific leadership.

The postdoctoral stage is particularly important because it is often the most fragile moment in a research career. Postdoctoral researchers are expected to demonstrate independence, publish, obtain project experience, build international networks, and prepare for more stable positions. Yet they often work under fixed-term contracts and depend on grants, supervisors, or institute resources. This is not only a Czech issue. Across OECD countries, postdoctoral careers have become associated with uncertainty, temporary employment, and competition for a limited number of permanent positions (*OECD, 2021*). The Academy's postdoctoral category therefore reflects a broader European problem: research systems need postdocs as engines of scientific productivity and renewal, but they often struggle to offer them predictable career prospects. The human dimension of modernisation is especially visible here, where opportunity and precarity coexist.

The category of associated scientist or scholar also reveals this tension. It applies to employees who have not been assigned to the higher scientist or senior scientist categories within five years of obtaining the doctorate (*Czech Academy of Sciences, 2008*). This grade recognises that not all research careers progress at the same speed or according to the same linear model. Some researchers may need more time because of field conditions, family responsibilities, interdisciplinary work, health, mobility, or the rhythm of long-term projects. At the same time, the category can also mark a career bottleneck. It shows that the Academy's career system must distinguish between temporary developmental stages and stagnation. A modern personnel policy must therefore combine standards with sensitivity to the real biographies of researchers. If evaluation is too rigid, it may damage talent; if it is too loose, it may weaken institutional quality.

Periodic evaluation is central to the Academy's career structure. The Career Development Rules state that the performance, creativity, results, and achievements of employees are regularly evaluated, that evaluation results determine qualification grade placement, and that

qualification grade affects career advancement and salary (*Czech Academy of Sciences, 2008*). Researchers are evaluated at least once every five years. The declared purposes of evaluation include improving scientific activity, creating a basis for sound human resources policy, comparing results within qualification grades, stimulating professional growth, and giving employees an opportunity for self-reflection (*Czech Academy of Sciences, 2008*). This formulation shows that evaluation is meant to be both formative and consequential. It is not only a judgement on past work, but also a mechanism for future development.

At the level of the individual researcher, evaluation creates a direct connection between research performance and career security. This connection can strengthen quality and discourage complacency. It can also generate pressure, especially when evaluation is linked to salary, qualification grade, or the duration of the employment contract. The Career Development Rules allow evaluation committees to propose whether an employment contract should be indefinite or fixed-term and to recommend its duration (*Czech Academy of Sciences, 2008*). Such procedures make research careers more accountable, but they also make them more vulnerable to institutional judgement. The crucial question is therefore whether evaluation is fair, transparent, field-sensitive, and capable of recognising different forms of contribution. A career system based on evaluation must constantly guard against reducing research lives to narrow output measures.

The Academy's individual career evaluation must also be understood in relation to institute evaluation. Researchers work within teams, laboratories, departments, and institutes that themselves undergo periodic assessment. A strong institute evaluation can create opportunities for researchers, attract funding, support new positions, and improve infrastructure. A weak institute evaluation can lead to restructuring, pressure on teams, and uncertainty for staff. Careers are therefore shaped by both individual and institutional assessment. This is one of the characteristic features of a research-institute system. A researcher's trajectory depends not only on personal achievement, but also on the strategic health of the institute, the success of the team, the quality of leadership, and the ability to secure resources. The human dimension of evaluation is therefore more complex than a simple relationship between individual merit and reward.

The Academy's career rules also insist that employees should not be discriminated against during evaluation in terms of gender, age, origin, religion, political opinion, or other similar grounds (*Czech Academy of Sciences, 2008*). This principle is essential because research careers are vulnerable to hidden inequalities. Formal excellence criteria can reproduce unequal conditions if institutions ignore care responsibilities, mobility barriers, unconscious bias, disciplinary differences, or informal networks of recognition. Non-discrimination in evaluation is therefore not a decorative phrase. It is one of the conditions under which scientific quality can be judged fairly. In the Academy's historical context, it also marks a departure from earlier political and ideological forms of exclusion. Democratic career policy requires that researchers be judged by relevant scholarly and professional criteria rather than by identity, loyalty, or personal dependence.

Teaching and public outreach occupy a special place in Academy careers. The Career Development Rules state that employees, depending on their capacities, should contribute to educational and public outreach activities, and that CAS considers teaching to be an important activity performed by employees of its research institutes (*Czech Academy of Sciences, 2008*). This is significant because the Academy is not a teaching university, yet it cannot exist outside

the educational system. Its researchers supervise doctoral students, teach at universities, participate in degree programmes, organise internships, and communicate with schools and the public. This activity strengthens the Academy's role in forming future researchers. It also connects research careers with public responsibility. A researcher in AV ČR is not only a producer of specialised knowledge; he or she is also part of a broader educational and cultural ecosystem.

The collaboration with universities is therefore a central part of career formation. Academy institutes participate in doctoral programmes through cooperation with universities, and many CAS researchers supervise doctoral students or teach in bachelor's and master's programmes. The Academy's strategic documents emphasise that CAS institutes often possess unique facilities and research infrastructures that support university collaboration, and that cooperation with universities is natural for both research and the education of future researchers (*Czech Academy of Sciences, 2025*). For research careers, this means that the Academy offers a distinctive training environment: doctoral students and early-career researchers can work in highly specialised institutes while remaining connected to university degree structures. This hybrid model is one of the strengths of the Czech research system. It allows the Academy to contribute to human capital without becoming a university in the formal sense.

The Doctor of Sciences degree, now associated with the English-language equivalent "Research Professor" or "Res. Prof.", represents another element of career recognition. The Academy's strategic documents describe the degree as expressing a particularly high scientific qualification, proven by significant, original work important for the development of a research field and characterising a leading figure (*Czech Academy of Sciences, 2025*). The degree is not limited to Academy employees, but within AV ČR it also serves as one of the criteria for achieving the highest qualification degree according to the career rules. Its existence reflects a Central European tradition of advanced scholarly recognition beyond the PhD. In the modern Academy, it functions as both symbolic distinction and career marker. It connects contemporary research careers with older forms of learned authority, but under conditions of peer evaluation and scientific achievement rather than inherited status.

Recognition and support programmes became increasingly important instruments of career development. The Otto Wichterle Award, intended for exceptionally promising young scientists at CAS who have already obtained a scientific degree and are generally under 35, encourages early excellence and gives public visibility to young researchers (*Czech Academy of Sciences, n.d.*). The Programme to Support Prospective Human Resources – Postdoctoral Fellows supports beginning postdoctoral researchers and helps them establish themselves in CAS institutes (*Czech Academy of Sciences, 2023*). Lumina Quaeruntur supports mid-career researchers, including those returning after parental leave, in establishing their own research groups, with substantial support over several years (*Czech Academy of Sciences, 2024*). Praemium Academiae provides major long-term support for outstanding senior researchers (*Czech Academy of Sciences, n.d.*). Together, these instruments create a layered ecosystem of career support from postdoc to scientific leader.

The J. E. Purkyně Fellowship was especially important for attracting outstanding researchers from abroad. It was designed to bring creative scientists to CAS institutes, including Czech scientists working abroad for long periods and top foreign researchers, usually younger than 45, with adequate financial conditions for up to five years (*Czech Academy of Sciences, n.d.*).

This fellowship addressed a central problem of post-socialist research systems: how to turn international openness into brain circulation rather than one-way brain drain. If talented Czech researchers left for better-equipped institutions abroad, the Academy needed mechanisms to bring some of them back or maintain their connection with Czech science. If foreign researchers could be attracted to CAS institutes, they could bring new methods, networks, mentoring practices, and project ambitions. The fellowship therefore linked career policy with internationalisation and institutional renewal.

The Academy's career support system increasingly had to respond to the changing European research environment. The European Charter for Researchers and the Human Resources Strategy for Researchers emphasise attractive and sustainable research careers, ethical and transparent recruitment, working conditions, mobility, assessment, career development, and talent retention (*European Commission, 2023*; *EURAXESS, n.d.*). These themes became increasingly relevant for AV ČR because the Academy competes not only within the Czech labour market, but within a European and global market for research talent. Salaries, infrastructure, mentoring, international project opportunities, family support, and career transparency all affect whether researchers choose to remain in or come to Czech institutes. Career policy therefore became part of international competitiveness. It was no longer a purely internal personnel matter.

Project-based funding deeply affected research careers. Grants from GA ČR, TA ČR, EU Framework Programmes, ERC, MSCA, and other sources created opportunities for researchers to build teams, obtain equipment, travel, publish, and gain independence. At the same time, project-based funding increased dependence on temporary contracts, short cycles, proposal success, and administrative work. This is one of the structural contradictions of modern research careers. Competition stimulates initiative and excellence, but it can also produce insecurity and fragmentation. Researchers may spend significant time preparing applications, managing budgets, reporting outputs, and ensuring continuity between grants. The Academy's career system had to operate within this project economy while preserving the long-term conditions needed for serious research.

This tension is particularly visible in early and mid-career stages. A young researcher may move from doctoral student to postdoctoral fellow, then to associated scientist or project-funded researcher, while seeking a path towards independent scientist status. Success depends on publications, grants, mobility, mentors, institute priorities, available positions, and sometimes luck. Mid-career researchers face another bottleneck: they are expected to lead projects and teams, but may not yet have the security, resources, or recognition of senior figures. Lumina Quaeruntur and related programmes respond to precisely this stage by helping promising researchers create their own groups. Such instruments are important because career systems cannot rely only on spontaneous emergence of leaders. They must actively create pathways for independence.

International mobility became a normal expectation in Academy careers. Researchers increasingly needed foreign stays, international co-authorship, European projects, conference visibility, and participation in transnational networks. Mobility brought major benefits: new methods, tacit knowledge, language competence, professional confidence, and access to global standards. Yet it also created pressures. Not all researchers can move easily; family responsibilities, health, finances, nationality, visa rules, and care obligations shape mobility opportunities. European policy recognises the value of different forms of mobility, including

transnational, intersectoral, interdisciplinary, and virtual mobility (*European Commission, 2023*). For the Academy, the challenge was to support mobility without treating it as a rigid marker of merit. A good career system recognises mobility as valuable but not identical with excellence.

Research careers in the Academy are also shaped by the relationship between autonomy and teamwork. In many disciplines, especially laboratory sciences, individual achievement is inseparable from team organisation, infrastructure, technical staff, shared equipment, and collective publication. In humanities and some social sciences, individual monographs and interpretations remain important, but even there research increasingly depends on databases, archives, projects, and networks. The Academy's career system must therefore evaluate both individual contribution and collective context. A researcher may be a brilliant independent scholar, an essential team scientist, a method specialist, a project coordinator, or an infrastructure builder. Modern career evaluation must recognise this variety. Otherwise, it risks rewarding only the most visible forms of authorship and leadership.

Technical and professional staff are often underrepresented in narratives of research careers, but they are indispensable to the Academy's functioning. Laboratories require technicians, data specialists, animal-care staff, instrument engineers, software developers, collection managers, archivists, librarians, project managers, and administrators. Some hold university degrees and fall within professional or development categories; others support research in less visible roles. The Academy's modernisation increased their importance because research became more technologically complex, administratively demanding, and data-intensive. A successful institute is not only a group of principal investigators. It is a working environment in which many kinds of expertise support knowledge production. The human dimension of the Academy therefore extends beyond the narrow figure of the senior scientist.

The emergence of research administration as a professional field changed career structures indirectly. European projects, open science, data management, intellectual property, evaluation, ethics, and public communication all require specialised support. Project managers, grant officers, legal advisers, communication specialists, and data stewards became increasingly important to scientific success. Their careers may not follow the same qualification grades as researchers, but their work shapes the possibilities available to researchers. This development reflects a broader transformation of research institutions into complex organisations. Scientific excellence now depends on administrative and infrastructural competence. The Academy's career culture must therefore value both researchers and those who make research possible.

Salary competitiveness remained a persistent issue. The Academy had to attract and retain talented researchers in a labour market where salaries in Western Europe, North America, and sometimes private industry could be much higher. Public research funding in the Czech Republic has often been below the level needed to eliminate these disparities fully. Career advancement through qualification grades and internal payroll rules can provide structure, but it cannot solve the broader funding problem alone. This is why institutional stability, grant opportunities, fellowships, good infrastructure, intellectual autonomy, and meaningful research environments are so important. Researchers may accept lower salaries if they have strong scientific conditions, but there are limits. Career modernisation therefore depends on national investment as well as internal rules.

The Academy's strategic documents recognise human resources as a core condition of institutional future. They emphasise the need to ensure an appropriate quality and age structure among researchers, maintain perspective for research teams, obtain talented students and early-career researchers, and attract high-quality researchers from abroad (*Czech Academy of Sciences, 2025*). This language shows that career policy is not simply an administrative function. It is a strategic question of institutional survival. A research institute can possess excellent infrastructure, but without talented people it cannot remain alive. It can have famous senior figures, but without generational renewal it becomes fragile. It can attract young researchers, but without career prospects it may lose them. The Academy's future therefore depends on managing careers across the entire life cycle.

The "Academy of the Future" initiative expresses this life-cycle perspective in a more programmatic form. Its aim is to create conditions for career development of CAS employees, support integration into the international scientific community, provide working conditions enabling optimal use of human and intellectual potential, and help combine research activity with personal life (*Czech Academy of Sciences, n.d.*). Its planned instruments include fellowships for researchers at the beginning of an independent scientific career, fellowships for researchers, improved conditions for obtaining and managing major projects, return after career breaks, recruitment of talented researchers from abroad, and support for excellent research groups. This is a significant evolution from older personnel policy. It recognises that research careers are not simply ladders of qualification, but complex biographies shaped by mobility, family, project work, leadership, breaks, return, and institutional culture.

The ability to combine research with personal life is particularly important. For a long time, academic careers were often imagined around a model of uninterrupted mobility, long working hours, and continuous productivity. This model disadvantages researchers with care responsibilities, health issues, or non-linear life trajectories. A modern Academy cannot afford to lose talent because career structures are too rigid. Support for return after career breaks, recognition of parental leave in age limits for awards, and gender equality plans all reflect a more realistic understanding of research lives. Career modernisation therefore requires institutions to see researchers not only as output producers but as people with biographies. The human dimension of modernisation becomes literal here.

Research careers in the Academy also involve public responsibility. Researchers are expected not only to publish and obtain grants, but also to contribute to outreach, education, expert advice, and the dissemination of knowledge. This expectation is rooted in the Academy's public mission and strengthened by Strategy AV21 and open science. It broadens the meaning of a successful career. A researcher may contribute through policy advice, public lectures, media communication, citizen science, educational materials, or service on expert bodies. These activities take time and should be recognised in career evaluation. If they are praised rhetorically but ignored in promotion and salary decisions, researchers will receive contradictory signals. Responsible career structures must align declared public mission with actual incentives.

Research integrity and workplace culture also belong to the career system. A scientist's career develops within relationships of supervision, collaboration, authorship, peer review, leadership, and institutional power. The Academy's Code of Ethics, Code of Conduct, Scientific Integrity Committee, and ombudsperson mechanisms help define the standards under which these relationships should operate (*Czech Academy of Sciences, 2024*; *Czech*

Academy of Sciences, 2025). A career system cannot be healthy if it tolerates harassment, bullying, discrimination, authorship abuse, or retaliation. Young researchers are especially vulnerable to such problems because their future depends on supervisors, team leaders, and directors. Ethical infrastructure therefore supports not only moral standards but also career development. Safe and respectful working environments are a condition of scientific excellence.

The relationship between career and evaluation remained one of the central tensions of modernisation. Evaluation can support growth, identify excellence, and create fairer advancement. It can also produce anxiety, excessive reporting, or pressure to prioritise countable outputs over meaningful research. The Academy's movement towards responsible research assessment is therefore highly relevant to careers. If institute evaluation and individual career evaluation recognise diverse contributions, qualitative peer review, open science, mentoring, public engagement, and interdisciplinary work, career paths can become broader and healthier. If evaluation remains dominated by narrow metrics, researchers will adapt to those metrics. Career culture is therefore one of the places where research assessment reform becomes real.

By the mid-2020s, research careers in AV ČR had become more structured, more competitive, more international, and more reflexive than in the early post-transformation period. The Academy had qualification grades, periodic evaluation, recruitment procedures, support programmes for postdocs, young scientists, mid-career group leaders, senior excellence, returnees, and foreign researchers. It also had growing attention to open science, integrity, international mobility, public outreach, and work-life balance. These developments marked a significant institutional achievement. Yet they also revealed continuing vulnerabilities: fixed-term contracts, funding uncertainty, salary competition, uneven mentoring, administrative burden, mobility pressures, and the risk of losing talented researchers to better-resourced systems. The modern career system was therefore not a finished solution, but an evolving compromise between stability and competition.

The career structure of the Academy should finally be seen as part of the broader history of scientific autonomy. In the early post-1989 period, autonomy meant freedom from ideological control. In the modern Academy, autonomy also means the capacity of researchers to build meaningful careers under fair, transparent, and supportive conditions. A scientist cannot be truly autonomous if he or she is trapped in permanent precarity, dependent on arbitrary supervisors, excluded from mobility, or judged by inappropriate metrics. Conversely, autonomy cannot mean exemption from evaluation, public responsibility, or professional standards. AV ČR's career system therefore embodies the same historical tension that runs through the whole chapter: freedom must be joined with accountability, and excellence must be joined with institutional care.

Thus, research careers in the Czech Academy of Sciences reveal the human substance of institutional modernisation. Since 1993, the Academy has moved from the disrupted career world of post-socialist restructuring towards a structured but demanding system based on selection procedures, qualification grades, periodic evaluation, international mobility, project competition, and support for scientific excellence. Its career instruments — from postdoctoral support and the Otto Wichterle Award to Lumina Quaeruntur, Praemium Academiae, the J. E. Purkyně Fellowship, the Research Professor degree, and newer career-development initiatives — show an effort to build pathways across different stages of scientific life. At the same time,

the Academy's career system remains marked by tensions between stability and flexibility, competition and support, autonomy and evaluation, international mobility and personal life, individual excellence and team science. These tensions are not accidental defects. They are the living form of a modern public research institution trying to sustain scientific quality while caring for the people who produce it.

2. Generational Renewal and Early-Career Researchers

Generational renewal became one of the most important human questions in the modern history of the Czech Academy of Sciences. After 1993, the Academy did not merely have to preserve institutes, budgets, international links, and research infrastructures. It also had to ensure that scientific communities would not age into institutional memory without renewal. A research institute can survive administratively for many years, but without new researchers it gradually loses methodological freshness, intellectual risk, technological competence, and contact with changing international standards. The issue of early-career researchers therefore belongs at the centre of the Academy's modernisation. It connects doctoral training, postdoctoral careers, international mobility, evaluation, mentorship, gender equality, funding, leadership succession, and the long-term reproduction of scientific excellence. Generational renewal is the point where institutional history becomes biography.

The post-socialist transformation created a difficult demographic and professional inheritance. The Academy emerged from the restructuring of ČSAV after large personnel reductions, abolished or reorganised institutes, and a sharp change in the meaning of scientific employment. Many senior researchers remained indispensable because they preserved knowledge, schools, archives, instruments, and international contacts. Yet the Academy could not be renewed only through the authority of older generations. It had to attract young researchers educated in a very different political and scientific environment. These younger researchers entered science after the opening of borders, the rise of grant competition, access to European programmes, digital communication, and new standards of evaluation. Their careers were shaped less by the old institutional ladder and more by doctoral mobility, postdoctoral experience, publications, projects, and international networks. The Academy's generational renewal therefore meant the coexistence of historical continuity and a new research habitus (*Filáček, 2023*; *Linková, 2015*).

The first level of generational renewal was doctoral training. Although the Academy is not a university, its institutes play a major role in the formation of doctoral researchers through cooperation with universities, joint supervision, laboratory training, field research, archival work, and participation in research projects. The Academy's development concept explicitly describes education and the preparation of new researchers as a significant part of its mission, stressing that the expert capacities concentrated in CAS institutes should be used to train researchers for the needs of the Academy, universities, and employment outside academia (*Czech Academy of Sciences, 2025*). This is a crucial statement because it defines the Academy not only as a workplace for already formed scientists but also as a training environment. Its laboratories, libraries, archives, observatories, and research teams become spaces where the next generation learns scientific practice. In this sense, doctoral training is one of the hidden foundations of institutional continuity.

The Academy's contribution to doctoral education also reshaped its relationship with universities. The old separation between Academy institutes as research centres and universities as teaching institutions became increasingly inadequate. Modern doctoral education requires access to active research environments, specialised equipment, international teams, and long-term projects. CAS institutes often provide precisely these conditions, while universities provide degree structures, teaching frameworks, and formal academic accreditation. The Academy's strategic documents therefore emphasise the development of cooperation with universities, including joint research projects, joint workplaces, supervision of dissertations, participation in teaching, and the possible development of joint doctoral schools (*Czech Academy of Sciences, 2025*). Generational renewal thus becomes a bridge between institutional sectors. It allows the Academy and universities to share responsibility for forming future researchers rather than competing for symbolic primacy.

Doctoral students in CAS institutes encounter research as practice rather than only as curriculum. They learn how to work with instruments, datasets, archives, field sites, software, manuscripts, specimens, models, sources, and project teams. They also learn the social norms of science: seminar discussion, authorship, peer review, grant preparation, conference presentation, and cooperation across disciplines and borders. This experiential learning is one of the Academy's strengths. A doctoral student embedded in a strong institute can see how research is actually produced, not only how it is described in lectures. Yet this model also creates responsibility. Institutes must provide proper supervision, integration, career guidance, and protection from dependence on individual supervisors. A doctoral student is not only inexpensive labour or a temporary project assistant. He or she is part of the future human capital of Czech science.

The transition from doctoral study to postdoctoral work is often the most difficult passage in a scientific career. It is the stage at which researchers are expected to demonstrate independence, build an international profile, publish significant results, secure grants, and prepare for a more stable position. At the same time, postdoctoral positions are frequently temporary, project-funded, and dependent on the strategies of senior researchers or institutes. The Academy recognised this vulnerability through the Programme to Support Prospective Human Resources – Postdoctoral Fellows, which was designed for beginning postdoctoral researchers at CAS institutes (*Czech Academy of Sciences, 2023*). Such support matters because the immediate postdoctoral period can determine whether a young researcher remains in science or leaves for other sectors. It is a moment of high potential and high risk. Generational renewal therefore depends heavily on how the Academy manages this stage.

Postdoctoral support is not only a financial instrument. It is an institutional statement that the Academy understands early independence as something that must be cultivated. A postdoctoral fellow needs salary support, but also mentorship, research space, access to equipment, integration into a team, training in grant applications, and opportunities for international mobility. Without these conditions, a postdoctoral position may become a temporary holding pattern rather than a real career stage. The Academy's career rules define the postdoctoral fellow as a temporary category normally limited to the period shortly after receiving the doctoral degree (*Czech Academy of Sciences, 2008*). This definition can encourage timely progression, but it also places pressure on researchers to produce visible

results quickly. The quality of postdoctoral policy therefore lies in the balance between demanding standards and meaningful support.

The Otto Wichterle Award is one of the Academy's most visible instruments for recognising promising young scientists. It is awarded to selected, exceptionally outstanding young researchers at CAS who have made remarkable contributions to scientific knowledge, with eligibility normally limited to candidates not older than 35 in the calendar year of nomination (*Czech Academy of Sciences, n.d.*). The award has symbolic significance beyond the individual laureate. It communicates that early-career excellence deserves public recognition within the Academy's hierarchy of prestige. It also creates role models across disciplines, including natural sciences, technical sciences, humanities, and social sciences. The name of Otto Wichterle itself connects young scientific promise with the moral memory of post-1989 academic renewal. The award therefore performs both career-support and institutional-memory functions.

Recognition, however, is not the same as structural renewal. Awards can encourage talented researchers and make them visible, but they cannot by themselves create stable career pathways. Young scientists also need positions, mentoring, predictable evaluation, fair competition, family-compatible working conditions, and opportunities to lead projects. This is why the Academy's human-resource strategy has gradually moved from isolated prizes towards a more comprehensive support ecosystem. Its development concept lists several instruments for human resources and excellence, including postdoctoral support, the Otto Wichterle Award, the Prize of the Czech Academy of Sciences for Young Researchers, Lumina Quaeruntur, Praemium Academiae, the Research Professor degree, career rules, institute evaluation, and international advisory boards (*Czech Academy of Sciences, 2025*). Such a system recognises that generational renewal is not achieved by one measure. It requires a ladder of opportunities across several career stages.

Lumina Quaeruntur occupies a particularly important position in this ladder. It is intended for mid-career researchers, including those returning after parental leave, and is designed to help laureates establish their own research groups with substantial support over several years (*Czech Academy of Sciences, 2025*). This is crucial because generational renewal is not completed when a researcher receives a postdoctoral fellowship or a young-scientist award. The next challenge is the transition from promising individual to independent group leader. Many research systems lose talented people at this stage because they lack resources to build teams, obtain equipment, hire students or postdocs, and develop a distinctive programme. Lumina Quaeruntur addresses this bottleneck by supporting researchers who are ready to define new scientific directions. It therefore transforms generational renewal from recognition of promise into institutional empowerment.

The possibility of return after parental leave is particularly significant. Academic careers have often been structured around an unrealistic model of uninterrupted productivity, continuous mobility, and linear advancement. This model disadvantages researchers with care responsibilities and especially affects women, though not only women. By explicitly including researchers returning from parental leave within a major excellence instrument, the Academy acknowledged that career breaks need not indicate lower scientific potential (*Czech Academy of Sciences, 2025*). This is a small but important cultural shift. It suggests that modern excellence policy must account for real human lives. Generational renewal cannot depend

only on those who fit the old uninterrupted career pattern. It must create conditions for talented researchers to return, rebuild momentum, and lead.

The Academy of the Future programme broadened this life-cycle logic still further. It was designed to create conditions for career development of CAS employees, support their integration into the international scientific community, provide working conditions that allow optimal use of human and intellectual potential, and help them combine research activity with personal life (*Czech Academy of Sciences, n.d.*). Its support types include fellowships for researchers at the beginning of an independent scientific career, fellowships for researchers, improved conditions for obtaining and managing major projects, return after career breaks, acquisition of talented researchers from abroad, activities of excellent research groups, and pathways from idea to innovation or commercial use (*Czech Academy of Sciences, n.d.*). This is a highly revealing programme because it treats generational renewal as a system rather than a moment. It recognises that young researchers need not only inspiration, but institutional architecture.

The emphasis on beginning independent careers is especially important. In many scientific systems, researchers spend long periods in subordinate positions before receiving real autonomy. They may publish under senior leaders, work on other people's projects, and depend on established laboratories for resources. This can be productive when mentorship is strong, but damaging when hierarchy blocks independence. Fellowships for researchers at the beginning of an independent career help create an earlier space for autonomy. They allow talented researchers to formulate their own questions, recruit collaborators, and become visible as leaders rather than only as team members. For the Academy, this is essential because leadership renewal cannot be postponed indefinitely. Institutes must identify and support emerging scientific personalities before they leave or stagnate.

International mobility is another central element of generational renewal. Early-career researchers trained after 1989 increasingly experienced mobility as an expected part of academic life. Foreign stays, conference participation, Marie Skłodowska-Curie Actions, ERC ambitions, bilateral mobility projects, and international postdoctoral positions became markers of professional development. Mobility can be intellectually transformative because it exposes researchers to new methods, different laboratory cultures, alternative theoretical traditions, and broader networks. It also creates confidence and visibility. Yet mobility is not equally accessible to all. Family responsibilities, financial limits, health, nationality, visas, discipline, language, and institutional support all affect who can move and for how long. A fair system of generational renewal must therefore support mobility while recognising its unequal social conditions.

The J. E. Purkyně Fellowship and similar instruments link mobility with attraction of talent from abroad. The fellowship was designed to bring outstanding creative scientists, including Czech researchers who had worked abroad for long periods and foreign researchers, to CAS institutes for up to five years (*Czech Academy of Sciences, n.d.*). This kind of instrument matters because generational renewal is not only internal replacement. It also involves circulation of people, methods, and intellectual cultures across borders. Researchers returning from abroad can bring new expectations of mentoring, publication, project leadership, and laboratory organisation. Foreign researchers can make institutes more cosmopolitan and internationally connected. The Academy's renewal therefore depends partly on its ability to become attractive

beyond the Czech labour market. This is especially important in a competitive European Research Area.

Brain drain is the shadow side of mobility. After 1989, talented Czech researchers could leave for universities and institutes with better salaries, equipment, and career prospects. Some departures were temporary and productive; others became permanent losses. For early-career researchers, the decision to stay, leave, or return depends on many factors: intellectual freedom, salary, contract stability, access to grants, family life, international networks, and confidence in the future of the institute. The Academy cannot prevent mobility, nor should it wish to do so. Democratic science depends on freedom of movement. The real question is whether mobility becomes circulation or extraction. Programmes that support return, recruitment from abroad, and independent group leadership are therefore essential. They help transform the openness of borders into institutional renewal rather than one-way loss.

Generational renewal also requires attention to the internal age structure of teams. The Academy's development concept explicitly names appropriate quality and age structure among researchers as one of its tasks (*Czech Academy of Sciences, 2025*). This phrase may sound administrative, but it contains a major institutional problem. A team dominated by senior figures may have strong memory but weak renewal. A team made only of short-term young researchers may have energy but little continuity. A healthy research environment needs a mix of doctoral students, postdocs, independent researchers, technical specialists, senior scientists, and mentors. It also needs transparent succession. Leadership cannot be renewed only when a director or principal investigator retires. It must be prepared over time through responsibility, mentoring, and opportunities for younger researchers to lead.

Mentorship is therefore one of the quiet foundations of generational renewal. Formal rules can create positions and evaluations, but the everyday formation of young researchers depends heavily on mentors. A good mentor teaches methods, opens networks, explains unwritten norms, shares credit, protects early-career researchers from exploitation, and gradually gives them independence. A poor mentor can damage careers through neglect, excessive control, authorship abuse, or unclear expectations. The Academy's code of ethics and its newer attention to safe working environments are therefore relevant to early-career policy (*Czech Academy of Sciences, 2024*). Mentorship is not only kindness; it is an institutional mechanism for reproducing scientific quality. The future of an institute often depends on how its senior researchers treat its youngest members.

The evaluation of institutes increasingly reflects this issue. Contemporary CAS evaluation does not consider only outputs and bibliometrics; it also looks at leadership, communication, strategy, infrastructure use, and how institutes work with early-career researchers (*Czech Academy of Sciences, 2026*). This is a significant development. It means that the treatment of young researchers becomes part of institutional quality. An institute cannot claim excellence if it produces papers while failing to train, support, or retain the next generation. Evaluation therefore shifts attention from individual achievement to research environment. It asks whether institutes are places where early-career researchers can develop into independent scientists. This is one of the most important ways in which the human dimension enters research assessment.

Early-career researchers are also affected by the project economy. Grants create opportunities for employment, mobility, equipment, and independent work, but they also produce temporary contracts and uncertainty. A young researcher may move from one project to another without

a clear long-term path. This form of precarity is widespread internationally and has been discussed by the OECD as a serious problem in academic research careers (*OECD, 2021*). The Academy is not isolated from this structural trend. Its institutes depend partly on competitive funding, and early-career researchers often carry a large share of project work. The challenge is to prevent project-based opportunity from becoming permanent insecurity. A modern Academy must use projects to launch careers, not merely to consume early-career labour.

Grant agencies can either worsen or alleviate this problem. The Czech Science Foundation's schemes, including support for early-career researchers, provide opportunities for young scientists to establish independent projects and gain recognition. European instruments such as ERC Starting Grants and MSCA Postdoctoral Fellowships play a similar role at international level. Yet success rates are competitive, and proposal preparation requires mentorship and institutional support. The Academy's ERC Incubator and related support structures respond to this reality by helping researchers prepare stronger proposals and improve competitiveness. For early-career researchers, such support is crucial. It converts institutional knowledge into individual opportunity. It also makes European excellence instruments more accessible to researchers working in Czech institutes.

The relationship between early-career researchers and open science is another new dimension of generational renewal. Younger scholars often enter science in an environment where data management plans, repositories, open access, FAIR principles, research integrity, and transparent methods are increasingly expected. This can give them new skills and make their work more visible, but it can also add administrative burdens at an early stage. Training in open science should therefore be part of career development rather than an additional demand imposed without support. The Academy's Open Science Principles and the Library's support services create an institutional framework for this learning (*Czech Academy of Sciences, 2024*). Early-career researchers are often the generation through which new standards of research culture become normalised. Their education in open science therefore has long-term institutional consequences.

Digitalisation similarly changes the skills expected of young researchers. Data analysis, programming, digital archives, text mining, modelling, visualisation, repository use, and online collaboration are increasingly important across fields. This does not mean that every researcher must become a computer scientist, but it does mean that digital literacy has become part of scientific competence. Young researchers often bring these skills into institutes, thereby contributing to methodological renewal. In humanities and social sciences, digital methods can open new forms of corpus analysis, mapping, network analysis, and archival access. In natural and technical sciences, computational tools are often inseparable from research itself. Generational renewal is therefore also technological renewal. New cohorts change not only who works in the Academy, but how research is done.

The Academy's public-outreach activities also involve young researchers. Open Days, Science Fair, Week of the Czech Academy of Sciences, internships for students, public lectures, media appearances, and educational programmes all help make science visible to younger publics. These activities are important for recruitment because interest in a research career often begins before university. The Academy's development concept explicitly mentions reaching out to secondary school students and primary school pupils, including through internships in the Open Science programme and student competitions (*Czech Academy of Sciences, 2025*). This means that generational renewal begins before doctoral study. It starts with the social

imagination of science. If young people do not see research as meaningful, accessible, and socially valued, the future talent pool narrows.

The Open Science programme for students is therefore part of a broader recruitment ecosystem. It gives talented students opportunities to encounter real research environments, meet scientists, and experience scientific work before making long-term educational choices. Such programmes can be particularly important in a society where science may appear distant or overly specialised. They can also help diversify the future research community by reaching students from different regions, schools, and social backgrounds. Early exposure does not guarantee a scientific career, but it creates possibility. The Academy's role in public education is therefore linked to its future personnel base. Outreach is not only communication; it is long-term recruitment.

Generational renewal also depends on the attractiveness of the Academy as an employer. Young researchers compare possible careers across universities, research institutes, private companies, foreign institutions, and non-academic sectors. They consider salary, stability, intellectual freedom, mentoring, infrastructure, international mobility, family life, and the prestige of the institution. The Academy's programmes can support excellence, but the everyday attractiveness of institutes depends on working conditions. This includes transparent contracts, fair leadership, administrative support, access to grants, reasonable expectations, and respectful culture. An institute that is scientifically strong but socially toxic may lose young talent. The human dimension of modernisation is therefore also a question of organisational climate.

The issue of work-life balance became increasingly visible in the 2020s. The Academy of the Future explicitly aimed to provide conditions that allow researchers to use their human and intellectual potential while combining research with personal life (*Czech Academy of Sciences, n.d.*). This language marks a change in institutional culture. Earlier academic systems often treated personal life as irrelevant to scientific merit. Modern career policy increasingly recognises that sustainable excellence requires attention to care, health, mental well-being, mobility constraints, and career breaks. Early-career researchers are especially affected because they often make major life decisions at the same time as they face the most intense career pressure. Generational renewal will fail if young researchers must choose between serious science and a viable life.

The Academy's support for researchers returning from career breaks therefore has institutional significance. Career breaks can result from parental leave, illness, care responsibilities, or other life events. If the system treats such breaks as career failure, it wastes talent and reproduces inequality. If it provides structured return support, it can preserve expertise and strengthen loyalty to the institution. This is particularly relevant for women researchers, but it is not only a women's issue. A humane and modern research institution recognises that careers are not always linear. The Academy's newer support mechanisms show movement towards this recognition. They also connect generational renewal with the themes of gender and institutional culture that will be discussed in the following section.

International crisis added another dimension to early-career support. After the Russian invasion of Ukraine, the Academy developed support for researchers at risk and for foreign researchers whose work was endangered by war or persecution (*Czech Academy of Sciences, 2025*). Some of these researchers were early-career scientists whose careers could have been destroyed by displacement. Hosting them was not only humanitarian assistance; it also

brought new people, skills, and perspectives into CAS institutes. It reminded the Academy that generational renewal can be shaped by geopolitical events. Research careers do not develop in a vacuum. War, authoritarianism, migration, and threats to academic freedom can abruptly change the lives of young researchers. A modern Academy must be capable of solidarity as well as competition.

The role of young researchers in interdisciplinary programmes is another important aspect of renewal. Strategy AV21 and European projects often require collaboration across disciplines and institutes. Early-career researchers may be more willing than senior scholars to cross disciplinary boundaries, learn new methods, and work in hybrid teams. They are therefore valuable carriers of interdisciplinarity. At the same time, interdisciplinary careers can be risky because evaluation systems and job markets are often still organised around traditional disciplines. The Academy's responsible assessment reforms are therefore important for young researchers working between fields. If their contributions are not recognised properly, interdisciplinarity becomes a rhetorical goal rather than a viable career path.

Generational renewal also affects leadership. The Academy needs future institute directors, department heads, principal investigators, advisory-board members, project coordinators, and public experts. Leadership cannot be improvised when senior figures retire. It must be developed through gradual responsibility, mentoring, management training, and opportunities to lead teams and projects. Programmes supporting independent groups, ERC applications, and international project coordination all contribute to this leadership pipeline. A young scientist who learns only how to publish may not automatically know how to lead people, manage budgets, support students, or communicate with society. Modern career development must therefore include leadership skills as part of scientific maturity. The Academy's future governance depends on this preparation.

The generational problem is also cultural. Younger researchers often bring different expectations concerning openness, hierarchy, work-life balance, gender equality, digital tools, international collaboration, and public communication. These expectations can create tension with older academic habits. Such tension is not necessarily destructive. It can help institutes change. Yet it must be managed constructively. Senior researchers provide memory, caution, and disciplinary depth; younger researchers bring new methods, networks, and expectations. A healthy institute allows these elements to interact rather than turning generational difference into conflict. The Academy's modernisation depends on intergenerational dialogue. Renewal without continuity becomes superficial, while continuity without renewal becomes decline.

The broader European context reinforces the urgency of this issue. European research policy increasingly focuses on attracting and retaining research talent, improving research careers, reducing precarity, supporting mobility, and recognising diverse contributions (*European Commission, 2023*; *OECD, 2021*). AV ČR participates in this context not as an isolated national academy but as part of the European Research Area. Its ability to recruit and retain early-career researchers depends on how it compares with European institutions. If Czech research careers appear less stable, less well paid, or less internationally connected, the Academy risks losing talent. If it offers autonomy, strong teams, excellent infrastructure, and meaningful support, it can become attractive despite resource limitations. Generational renewal is therefore also a question of European competitiveness.

By the mid-2020s, AV ČR had developed a multi-layered system for supporting generational renewal. It included doctoral collaboration with universities, student outreach, postdoctoral

support, early-career awards, mid-career fellowships, return mechanisms, recruitment from abroad, ERC-oriented support, research evaluation attentive to early-career environments, and strategic documents identifying age structure as a core concern. This system did not remove all problems. Fixed-term contracts, grant dependence, salary competition, uneven mentoring, family-care pressures, and disciplinary inequalities remained. Yet the existence of such instruments shows that the Academy understood generational renewal as an institutional priority. It was no longer enough to hope that young researchers would appear naturally. They had to be attracted, trained, supported, evaluated fairly, and given space to lead.

The deeper meaning of generational renewal is that the Academy's history is not simply transmitted through archives, laws, and institutional names. It is transmitted through people who learn, inherit, criticise, and transform research traditions. Early-career researchers are not only the future of the Academy in a sentimental sense. They are the actors through whom scientific questions change, methods evolve, international networks expand, and public responsibilities are reinterpreted. Their careers reveal whether the Academy's modernisation has created a living institution or only a well-governed structure. The treatment of young researchers therefore becomes a test of the Academy's seriousness. An institution committed to excellence must be committed to those who will define excellence in the next generation.

Thus, generational renewal and support for early-career researchers became a decisive human dimension of the Czech Academy of Sciences' modernisation. The Academy's future depended not only on preserving institutes and funding research, but on building pathways from student interest and doctoral training to postdoctoral independence, group leadership, international mobility, return after career breaks, and long-term scientific responsibility. Instruments such as postdoctoral support, the Otto Wichterle Award, Lumina Quaeruntur, the J. E. Purkyně Fellowship, the Academy of the Future, ERC support, student internships, and university cooperation all contributed to this renewal. At the same time, the process remained marked by tensions between opportunity and precarity, mobility and personal life, evaluation and support, hierarchy and independence, continuity and innovation. Generational renewal is therefore not a separate personnel topic. It is the living mechanism through which AV ČR can remain a modern academy of sciences rather than only the historical successor of earlier institutions.

3. Gender, Leadership, and Institutional Culture

Gender, leadership, and institutional culture form the final and perhaps most human layer of the Academy's modernisation between 1993 and 2025. Earlier parts of this chapter have examined reform, funding, evaluation, European integration, open science, research integrity, and career structures. Yet all these reforms acquire their real meaning only inside the everyday culture of institutes, laboratories, libraries, archives, project offices, and governing bodies. The Academy can have sophisticated evaluation procedures, ambitious European projects, open science policies, and formal career rules, but its future also depends on who is able to enter science, who can remain in it, who becomes visible, who gains authority, who leads, and whose work is recognised. Gender equality is therefore not an auxiliary social theme placed beside "real" science. It is one of the ways in which the Academy's democratic, European, and meritocratic claims are tested in practice. A modern academy of sciences cannot define excellence while ignoring the social conditions under which excellence becomes possible.

The post-1989 transformation created the political and institutional conditions for a new discussion of equality, but it did not automatically remove older inequalities. Under state socialism, women were often present in scientific work, but their representation did not necessarily translate into equal authority, leadership, or recognition. The socialist state promoted women's employment in general terms, yet it rarely dismantled deeper gendered expectations concerning care, domestic work, seniority, decision-making, and professional prestige. After 1989, the return to democracy and market transformation created new freedoms, but also new forms of competition and insecurity. Research careers became more dependent on grants, mobility, publications, evaluation, and international networks. These changes could open opportunities for some women, but they could also intensify inequalities where family responsibilities, career breaks, informal networks, or biased expectations affected career progression. Gender equality in the modern Academy therefore had to be understood not as a simple legacy problem from socialism, but as a structural issue of contemporary research life.

The Czech Republic entered the 2020s with persistent gender imbalances in research. Public discussions and policy analyses repeatedly noted that the proportion of women researchers in Czechia remained among the lowest in the European Union, with women making up less than one third of the research workforce in many statistics and significantly fewer in some fields and senior positions (*Czech Academy of Sciences, 2023*; *European Commission, 2024*; *National Contact Centre for Gender & Science, 2024*). These figures matter because they challenge the common assumption that science is naturally meritocratic once formal barriers disappear. If women are well represented among graduates but become less visible in senior research, leadership, grant success, professorial positions, or decision-making bodies, the problem cannot be explained only by individual choice. It points to institutional cultures, evaluation systems, career timing, care expectations, networks of recognition, and leadership pipelines. The Academy's gender policy therefore belongs to the broader question of how scientific merit is produced, seen, and rewarded.

The Czech Academy of Sciences occupies a distinctive position in this debate because it is both a research-performing institution and the institutional home of important expertise on gender and science. The National Contact Centre for Gender & Science at the Institute of Sociology of the CAS has played a major role in analysing gender equality in Czech research, providing policy advice, supporting institutions, and connecting Czech debates with European gender equality frameworks (*Institute of Sociology of the CAS, n.d.; *Linková, 2023*). This creates an interesting reflexive situation. The Academy is not only the object of gender equality reform; through its own social-scientific expertise, it is also one of the producers of knowledge about the problem. Such reflexivity is important for institutional modernisation. It means that the Academy can draw on internal scholarly capacity to understand and improve its own culture. At the same time, the existence of such expertise creates a responsibility to act on it.

European research policy strongly influenced the institutionalisation of gender equality in Czech research organisations. Horizon Europe made gender equality plans an eligibility criterion for public bodies, research organisations, and higher education institutions participating in the programme (*European Commission, 2021*). This requirement transformed gender equality from a voluntary moral commitment into a practical condition of participation in European research funding. For AV ČR, which had become deeply embedded in European programmes, this was especially important. Gender equality was no longer only an internal personnel question or an ethical aspiration. It became part of the European Research Area's

standards for modern research organisations. This development illustrates how European integration changed not only project funding and evaluation, but also institutional culture.

The Gender Equality Plan of the Czech Academy of Sciences for 2025–2027 represents a significant formal stage in this process. It presents equal opportunities in working conditions, career development, evaluation, and remuneration as fundamental priorities of a modern scientific institution and links gender equality with the improvement of the working environment, institutional culture, and inclusive standards (*Czech Academy of Sciences, 2025*). The plan applies primarily to the CAS Head Office, while CAS institutes, as independent public research institutions, have their own gender equality plans developed in connection with European programme participation (*Czech Academy of Sciences, 2025*). This distinction is important. The Academy is not a single workplace but a complex system of institutes, each with its own legal personality, disciplinary culture, leadership, and personnel structure. Gender equality must therefore operate through both central coordination and institute-level implementation.

The Gender Equality Plan identifies several areas that are highly relevant to the human dimension of modernisation. These include gender balance implementation, work-life balance and organisational culture, gender equality in human resources processes, leadership and decision-making, and measures against gender-based violence and sexual harassment (*Czech Academy of Sciences, 2025*). The breadth of these areas shows that gender equality is not reducible to increasing the number of women in one visible position. It concerns recruitment, promotion, salary, career breaks, leadership training, monitoring, safety, respectful behaviour, and institutional accountability. In this sense, the plan treats gender equality as a systemic cultural issue. It is about the rules and habits through which careers are made possible or difficult.

Work-life balance is one of the most important themes in this policy architecture. The Academy's Gender Equality Plan explicitly recognises organisational culture and work-life balance as key components of an environment in which employees of all genders can build fulfilling careers (*Czech Academy of Sciences, 2025*). This is crucial because research careers often coincide with periods of family formation, care responsibilities, and life decisions that may interrupt or slow linear productivity. In older academic cultures, such interruptions were often treated as individual problems. In a modern research institution, they must be understood as structural conditions that shape equality of opportunity. If the career system assumes uninterrupted mobility, continuous publication, and full-time availability, it quietly favours researchers whose lives fit that model. A humane Academy must therefore design career structures that recognise real biographies.

The Academy's policies concerning maternity and parental leave, return after career breaks, flexible working arrangements, part-time positions, and childcare support are especially relevant here. The Gender Equality Plan mentions school groups established within the Academy, adjusted working hours, part-time positions tailored to family situations, sick days, and a planned return-policy internal programme for researchers and employees coming back from maternity or parental leave (*Czech Academy of Sciences, 2025*). Such measures may appear practical rather than symbolic, but their institutional meaning is substantial. They indicate that excellence should not be defined against care. They also help retain talent that might otherwise be lost at precisely the stage when researchers are becoming experienced,

productive, and capable of leadership. Work-life balance is therefore not a concession to private life; it is a condition of institutional sustainability.

The treatment of career breaks in internal programmes is one of the most important indicators of cultural change. The Academy's Gender Equality Plan states that, in internal programmes supporting excellence or international collaboration, periods of maternity or parental leave, long-term illness, or caring responsibilities are excluded from the calculation of active research time (*Czech Academy of Sciences, 2025*). This approach is important because many excellence schemes use age limits or time-since-PhD rules. Without adjustment, such rules can penalise researchers whose careers have been interrupted for legitimate reasons. By excluding care-related breaks from active research time, the Academy recognises that equal opportunity requires contextual judgement. The researcher's trajectory must be evaluated in relation to the time actually available for research. This is a concrete example of how fairness can be built into meritocratic procedures.

Leadership and decision-making form the second major axis of gender equality. The Academy's Gender Equality Plan identifies balanced gender representation in leadership and decision-making as a priority and calls for monitoring of gender composition in management and governance positions, inclusive leadership training, and mentoring or training to support career progression into leadership roles (*Czech Academy of Sciences, 2025*). This matters because leadership is not simply the final reward for individual excellence. It shapes institutional agendas, resource allocation, recruitment, evaluation, public communication, and the culture of teams. If leadership remains socially narrow, the institution may reproduce hidden assumptions about who belongs at the centre of authority. Balanced leadership brings different experiences and perspectives into governance. It also makes the Academy's claim to equal opportunity more credible.

The history of the Academy's presidency illustrates both continuity and change. Since 1993, the Academy has been led by figures such as Rudolf Zahradník, Helena Illnerová, Václav Pačes, Jiří Drahoš, Eva Zažímalová, and, from 2025, Radomír Pánek (*Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, 2024*). The presidencies of Helena Illnerová and Eva Zažímalová are important because they made women's leadership visible at the highest level of AV ČR. Yet symbolic visibility at the top cannot by itself resolve gender imbalance throughout the institution. A woman president may represent an important breakthrough, but gender equality also depends on the composition of institute leadership, scientific councils, evaluation panels, grant committees, supervisory boards, department heads, and informal networks of influence. Leadership equality must therefore be analysed as a system, not as a list of exceptional individuals.

The election and appointment of Radomír Pánek for the 2025–2029 term also belongs to this discussion of institutional culture. His programme, as reported by CAS, included support for excellence, competitive salaries, public and political trust in science, support for the next generation of scientists, work-life balance, research ethics, equal opportunities, stronger university partnerships, and greater representation of CAS in European advisory bodies (*Czech Academy of Sciences, 2024*). These priorities show that the leadership agenda of the mid-2020s combined classic research concerns with organisational and cultural questions. Budget, excellence, international presence, ethics, equality, and work-life balance were no longer separate topics. They formed one leadership programme. This integration itself is a sign of the Academy's modernisation.

Institute directors occupy a particularly important position in the gender and leadership structure of AV ČR. The Academy's central bodies can adopt plans, codes, and strategies, but everyday institutional culture is shaped within institutes. Directors influence recruitment, promotion, mentoring, salary distribution, working conditions, conflict resolution, doctoral training, public communication, and openness to reform. They also set the tone for how seriously gender equality and safe working environments are treated. A formal plan can remain weak if institute leadership treats it as administrative compliance. Conversely, committed directors can transform gender equality into a practical tool for improving organisational culture. Leadership is therefore not only representation but implementation.

The issue of inclusive recruitment connects leadership with human resources policy. The Academy's Gender Equality Plan calls for recruitment and career progression procedures based on clear, objective criteria, diverse committees, gender-neutral language in job advertisements, monitoring of gender representation in applications, shortlists, and appointments, and training on unconscious bias for those involved in hiring and promotion (*Czech Academy of Sciences, 2025*). These measures address the fact that inequality often operates through ordinary procedures rather than open discrimination. A job advertisement may discourage some applicants through language or narrow criteria; a selection committee may rely on informal reputation; a career break may be interpreted as lower ambition; a mobility gap may be misunderstood as lack of quality. Inclusive recruitment tries to make these hidden mechanisms visible. It therefore strengthens the credibility of scientific merit.

Unconscious bias is particularly important in research careers because science often sees itself as objective. Researchers are trained to value evidence and method, and this can make academic institutions resistant to recognising bias in their own social processes. Yet hiring, mentoring, promotion, peer review, and leadership selection involve human judgement. Bias can enter through expectations about confidence, availability, mobility, leadership style, parenthood, age, discipline, nationality, or institutional prestige. Training alone cannot eliminate bias, but it can create awareness and provide common language. In an institution such as AV ČR, where peer review and expert judgement are central, awareness of bias is not anti-scientific. It protects the quality of judgement. Inclusive procedures help ensure that excellence is recognised where it actually exists.

Gender equality also intersects with evaluation. If research assessment rewards only uninterrupted productivity, international mobility, high-volume publication, grant accumulation, and visible leadership, it may reproduce inequality even without explicit bias. Researchers with care responsibilities, non-linear careers, interdisciplinary profiles, public-engagement work, or slower forms of scholarship may be disadvantaged. The Academy's movement towards responsible research assessment, including its CoARA commitments and emphasis on qualitative peer review, is therefore relevant to gender equality (*Coalition for Advancing Research Assessment, 2022*; *Czech Academy of Sciences, 2024*). A more plural evaluation culture can recognise diverse contributions and career trajectories. This does not mean lowering standards. It means judging scientific contribution in context. Gender equality and assessment reform therefore reinforce one another.

The Academy's internal excellence programmes also have gender implications. Awards and fellowships such as the Otto Wichterle Award, Lumina Quaeruntur, Praemium Academiae, postdoctoral support, and the Academy of the Future can either reproduce existing inequalities or help correct them. If eligibility rules and evaluation criteria ignore career breaks and care

responsibilities, they may privilege uninterrupted careers. If they actively account for such breaks, as CAS policy increasingly seeks to do, they can support more equitable access to recognition and resources (*Czech Academy of Sciences, 2025*). Lumina Quaeruntur is especially relevant because it supports mid-career researchers, including those returning after parental leave, in establishing their own research groups (*Czech Academy of Sciences, 2025*). This is precisely the stage at which many talented researchers risk being lost. Gender equality therefore becomes part of the Academy's strategy for scientific renewal.

The National Contact Centre for Gender & Science has contributed to this shift by producing analyses, recommendations, training, and public debate around gender equality in research. Its work shows that gender is not only a matter of headcounts but of institutional processes, knowledge production, career systems, and research content (*Institute of Sociology of the CAS, n.d.; *National Contact Centre for Gender & Science, 2024*). The Centre's position within the Institute of Sociology of the CAS is significant because it gives the Academy a strong internal source of expertise in the sociology of science. It also connects AV ČR with European projects and policy networks on gender equality. In this sense, the Academy's gender culture is shaped not only by administrative requirements but by research-based knowledge about inequality. This makes the reform intellectually grounded.

The gender dimension of research content is another important issue. Gender equality in research institutions is not only about who becomes a scientist or leader. It is also about whether research questions, methods, data, and interpretations take gender into account where relevant. In medicine, social sciences, artificial intelligence, urban studies, labour research, environmental policy, and cultural analysis, ignoring gender can produce incomplete or biased knowledge. European policy increasingly stresses the integration of the gender dimension into research and innovation content (*European Commission, 2020*; *European Commission, 2021*). For AV ČR, this issue must be handled with disciplinary sensitivity. Not every research field has the same relation to gender analysis, but where gender is relevant, ignoring it can weaken scientific quality. Gender-sensitive research can therefore be part of excellence, not a political addition to it.

Safe working environment became a major element of institutional culture in the 2020s. The CAS ombudsperson, established under a 2025 Academy Council guideline, is designed to protect CAS employees, students, and external collaborators from undesirable behaviour and to support a safe, fair, and respectful working environment (*Czech Academy of Sciences, 2025*). The ombudsperson's role includes awareness-raising, assistance and advice, examination of reports, proposals for measures, and preventive work, while maintaining independence, confidentiality, impartiality, and protection against disadvantage for those who contact the office (*Czech Academy of Sciences, 2025*). This mechanism is important because institutional culture cannot be improved only through declarations. People need safe channels to raise concerns. The ombudsperson gives the Academy a practical instrument for addressing power imbalances and harmful behaviour.

Measures against gender-based violence and sexual harassment are especially important in research organisations because academic environments often contain hierarchical dependence. Doctoral students, postdoctoral researchers, project staff, foreign researchers, and junior employees may depend on supervisors, principal investigators, or directors for contracts, recommendations, publications, visas, and future positions. This dependence can make it difficult to report misconduct. The Gender Equality Plan therefore emphasises

prevention, awareness-raising, clear reporting procedures, confidentiality, protection of parties involved, and a culture of zero tolerance (*Czech Academy of Sciences, 2025*). Such measures are not only about individual safety. They protect the integrity of research environments. Science cannot flourish where fear, humiliation, or abuse of power are normalised.

The Code of Conduct and Code of Ethics provide another layer of institutional culture. The Gender Equality Plan notes that the Code establishes principles of respect, non-discrimination, prevention of violence, harassment and bullying, including gender-based violence, as well as honesty, responsibility, fairness, transparency, avoidance of conflicts of interest, and special responsibilities for those in leadership positions (*Czech Academy of Sciences, 2025*). These principles connect gender equality with research integrity. A respectful workplace is not separate from good science; it is one of its conditions. Harassment, discrimination, and bullying damage trust, silence criticism, distort mentoring, and push talented people out of research. Ethical conduct therefore includes the social environment of knowledge production.

Institutional culture is also shaped by the distribution of informal authority. Formal leadership positions matter, but academic life is also governed by reputations, networks, invitations, editorial roles, conference panels, project leadership, authorship patterns, and access to senior mentors. Gender imbalance may persist even when formal rules are equal because informal recognition remains uneven. Women and other underrepresented researchers may be invited less often to speak, cited less frequently, nominated less often for awards, or excluded from influential networks. The Academy's policies on monitoring, mentoring, leadership training, and evaluation can help address these hidden structures. Yet such change requires sustained attention. Institutional culture is reproduced through everyday choices, not only through formal appointments.

Mentoring is one of the most important tools for changing this culture. The Gender Equality Plan calls for mentoring and training initiatives to support career progression into leadership roles (*Czech Academy of Sciences, 2025*). Mentoring can help early- and mid-career researchers understand institutional rules, apply for grants, prepare for leadership, manage teams, and navigate evaluation. It can also compensate for unequal access to informal networks. However, mentoring must be designed carefully. It should not become a substitute for structural change, nor should it place the burden of adaptation only on those disadvantaged by existing systems. Effective mentoring works together with transparent recruitment, fair evaluation, leadership accountability, and resource support. It helps individuals succeed while institutions change.

The relationship between gender equality and generational renewal is especially close. Younger researchers often bring different expectations concerning work-life balance, respectful communication, leadership style, equality, open science, and international collaboration. They may be less willing to accept old hierarchical cultures as natural. At the same time, early-career researchers are often more precarious and therefore less able to challenge problematic behaviour. This creates a tension. Generational renewal can help transform institutional culture, but only if young researchers are protected and supported. The Academy's ombudsperson, career-development programmes, gender equality plans, and responsible assessment reforms all contribute to this protection. Without them, the burden of cultural change falls unfairly on those with the least power.

Leadership style itself became part of modernisation. The older model of the powerful institute director or senior professor, whose authority was rarely questioned, is less compatible with contemporary expectations of transparent governance, team science, equality, and international accountability. Modern leadership requires scientific vision, but also communication, mentoring, conflict management, ethical awareness, administrative competence, and attention to diversity. CAS evaluation increasingly considers institute strategy, governance, leadership, and working environment, not only publications or grants (*Czech Academy of Sciences, 2026*). This broadening is important. It means that leadership is judged not only by scientific prestige but by the capacity to create conditions in which others can do good work. Institutional culture thus becomes part of institutional quality.

The Academy Assembly and other governing bodies also matter for institutional culture. The CAS is governed through a self-governing structure that includes the Academy Assembly, Academy Council, President, and Council for Sciences; members of Academy bodies are elected for four-year periods, and the Assembly includes representatives of institutes as well as universities, state administration, business circles, and public life (*Czech Academy of Sciences, n.d.*). This structure can support plural representation, but it also raises questions about who participates, whose voices are heard, and how diversity is reflected in decision-making. Gender equality in leadership is therefore not limited to the presidency or institute directors. It concerns the composition and culture of all deliberative and executive bodies. Democratic scientific governance requires attention to representation as well as procedure.

The decentralised structure of AV ČR makes implementation complex. Each institute has its own disciplinary culture, leadership history, personnel profile, and gender composition. Some fields, such as certain branches of biology, social sciences, or humanities, may have different gender patterns from physics, engineering, mathematics, or informatics. A uniform central policy may not address the specific barriers present in each field. At the same time, leaving everything to institute autonomy risks uneven standards. The Academy must therefore combine central principles with local responsibility. Institute-level gender equality plans, monitoring, training, and ombudsperson mechanisms help translate general values into concrete settings. This is one of the characteristic challenges of governing a modern academy of institutes.

The role of data collection and monitoring is essential. The Gender Equality Plan calls for collecting and regularly evaluating gender-disaggregated data on employees, positions, and organisational bodies, and for preparing periodic reports on implementation (*Czech Academy of Sciences, 2025*). Data do not solve inequality by themselves, but without data inequality remains easy to deny. Monitoring can reveal where women and men are positioned in the hierarchy, whether recruitment processes are balanced, whether promotion rates differ, whether leadership remains skewed, and whether measures are producing change. Data also support accountability. A plan without monitoring can become symbolic; a plan with monitoring can become a management tool. Transparency in gender equality therefore parallels transparency in research evaluation.

At the same time, gender data must be interpreted carefully. Numbers can show imbalance, but they cannot fully explain its causes. A low proportion of women in a field may reflect educational pipelines, hiring practices, workplace culture, care expectations, international mobility requirements, evaluation criteria, or broader social stereotypes. Leadership imbalance may result from accumulated disadvantage over decades, not only from current

discrimination. A serious institution must therefore combine quantitative monitoring with qualitative understanding. Surveys, interviews, focus groups, ombudsperson experience, and analysis of career trajectories can all deepen the picture. Gender equality policy requires the same methodological sophistication that the Academy demands in research evaluation. Counting is necessary, but interpretation is indispensable.

Gender equality also intersects with international competitiveness. Research organisations that offer safe, inclusive, family-compatible, and transparent working environments are better able to attract and retain talent. In the European Research Area, excellent researchers can choose among institutions. Salary and infrastructure matter, but so do organisational culture, leadership, fairness, and support for life-course transitions. The Academy's Gender Equality Plan therefore belongs to talent policy. It helps define CAS as a modern employer capable of competing for researchers in a European labour market. Conversely, if the Academy were perceived as hierarchical, opaque, or unsafe, it would lose talent regardless of formal scientific excellence. Institutional culture is thus a component of competitiveness.

The issue of gender equality also affects public trust. AV ČR presents itself as a leading public research institution serving Czech society and national culture while advancing knowledge at the international level (*Czech Academy of Sciences, n.d.*). A public institution that claims to serve society must reflect democratic values in its own organisation. This does not mean that every imbalance can be corrected immediately, but it does mean that the institution must recognise problems and work systematically to address them. Gender equality, safe working environments, and inclusive leadership strengthen the Academy's civic legitimacy. They show that modernisation is not only technological or administrative, but ethical and social. The Academy's public authority depends partly on whether its internal culture matches its public mission.

The broader Czech policy context also shaped the Academy's reforms. The Czech Republic adopted national strategies and action plans on gender equality in research, while European and national funding bodies increasingly required institutional gender equality plans. The Czech Science Foundation introduced the requirement to report a gender equality plan as part of grant-call participation from 2023 (*Czech Academy of Sciences, 2023*). Such funding conditions changed institutional incentives. Research organisations could no longer treat gender equality as optional public relations. It became connected with eligibility, evaluation, and competitiveness. This mirrors earlier developments in open science and research assessment: values become institutionally effective when linked to rules, funding, and accountability.

The Institute of Sociology's own Gender Equality Plan illustrates how institute-level plans can address the specific environment of a CAS workplace. It identifies work-life balance, organisational culture, leadership, decision-making, recruitment, career development, research content, and protection from harassment among key concerns (*Institute of Sociology of the CAS, 2022*). Other CAS institutes have developed their own plans in response to European requirements and internal needs. This institute-level diversity is important because gender equality cannot be implemented effectively only through central documents. Each institute must confront its own patterns of hierarchy, field-specific career expectations, leadership composition, and workplace climate. The central Academy can set standards, but the lived culture of equality is local.

The relationship between gender equality and disciplinary diversity is especially complex. In some STEM fields, the main problem may be the low share of women in the talent pipeline and senior positions. In humanities and social sciences, women may be more numerous but still underrepresented in professorial ranks, directorships, major grants, or formal authority. In technical and experimental fields, mobility, laboratory culture, long hours, and infrastructure leadership may create particular barriers. In archival or humanities fields, precarious contracts and undervalued national-language work may affect career progression. The Academy's broad structure means that gender equality must be translated into different disciplinary languages. A one-size-fits-all approach risks missing the mechanisms that operate in specific fields.

Institutional culture also includes the relationship between scientific and administrative staff. Gendered patterns of work can appear not only among researchers but also in support roles, management, communication, project administration, libraries, and technical services. Women may be overrepresented in less visible organisational labour and underrepresented in scientific leadership. A modern Academy must therefore analyse the whole institution, not only research posts. The Gender Equality Plan's attention to CAS Head Office is important here because administrative and governance structures shape the conditions of research. Equal opportunity in an academy of sciences includes researchers, managers, administrators, students, and external collaborators. The social ecology of science is broader than the laboratory.

The creation of the ombudsperson also highlights the importance of trust in institutional procedures. People will not report undesirable behaviour if they believe nothing will happen, if they fear retaliation, or if procedures are opaque. The CAS guideline states that a person who contacts the ombudsperson cannot be penalised or disadvantaged for doing so and that the ombudsperson follows principles of independence, safety, transparency, prevention, empathy, participation, confidentiality, and impartiality (*Czech Academy of Sciences, 2025*). These principles are essential because safe working environment policies succeed only when people trust them. A paper mechanism without trust is ineffective. The ombudsperson's work therefore belongs to the deeper task of rebuilding institutional confidence.

The cultural significance of these reforms becomes clearer when compared with the Academy's earlier history. The socialist Academy was marked by formal hierarchy, ideological pressure, and limited room for open criticism. Normalisation intensified the culture of caution, conformity, and dependence. The democratic Academy rebuilt autonomy, but some hierarchical habits and informal power structures could survive beyond political transformation. Gender equality, ombudsperson mechanisms, transparent recruitment, inclusive leadership, and safe workplace policies therefore represent a second-order democratisation. They do not concern the macro-political relationship between science and the state alone. They concern democracy inside the institution: voice, dignity, fairness, representation, and protection from abuse of power. This is why institutional culture belongs at the end of the chapter on modernisation.

The Academy's gender and culture reforms are still incomplete, and they should not be romanticised. Plans, committees, data collection, training, and ombudsperson offices do not automatically change deep habits. Some measures may remain formal if leadership is passive. Some researchers may perceive gender equality as bureaucracy rather than as part of scientific quality. Some institutes may progress faster than others. The broader Czech research system still faces low female representation in many research fields and senior positions. These

difficulties do not invalidate the reforms. They show that cultural modernisation is slower than legal or administrative change. It requires persistence, leadership, monitoring, and the willingness to discuss uncomfortable issues.

By 2025, however, it is clear that gender, leadership, and institutional culture had moved from the margins to the centre of Academy governance. They appeared in the Gender Equality Plan, Code of Conduct, ombudsperson guidelines, research integrity discussions, career-development policies, evaluation reforms, and presidential priorities. They also intersected with European funding requirements, responsible research assessment, open science, and early-career support. This convergence is historically important. It shows that the modern Academy no longer understands excellence as something produced independently of working conditions. Scientific quality depends on institutional culture. A respectful, inclusive, transparent, and supportive Academy is better able to produce, retain, and recognise excellent research.

Thus, gender, leadership, and institutional culture complete the picture of the Czech Academy of Sciences' modernisation between 1993 and 2025. The Academy's transformation was not only legal, financial, evaluative, European, or digital; it was also social and cultural. Gender equality policies, leadership monitoring, inclusive recruitment, work-life balance measures, support for return after career breaks, ombudsperson mechanisms, codes of conduct, and attention to safe working environments all show that AV ČR increasingly understood scientific excellence as inseparable from fair institutional conditions. The process remained uneven and unfinished, but its direction was clear. The Academy moved from a post-socialist struggle for autonomy towards a European model of research governance in which autonomy, equality, integrity, leadership responsibility, and public trust belong together. In this sense, the human dimension of modernisation is not an appendix to the institutional history of the Academy. It is the condition under which the Academy can remain a living, credible, and future-oriented scientific institution.

References

Abramo, G., & D'Angelo, C. A. (2011). Evaluating research: From informed peer review to bibliometrics. *Scientometrics, 87*(3), 499–514.

All European Academies. (2015). *The Academy of Sciences of the Czech Republic*. ALLEA.

ALLEA. (2023). *The European Code of Conduct for Research Integrity: Revised edition 2023*. All European Academies.

ALLEA. (n.d.). *About ALLEA*. All European Academies.

ALLEA. (n.d.). *Members*. All European Academies.

ALLEA. (n.d.). *Science Advice for Policy by European Academies*. All European Academies.

Arnold, E., Mahieu, B., Horvath, A., & Malkin, D. (2011). *R&D evaluation methodology and funding principles*. Technopolis Group.

Borgman, C. L. (2007). *Scholarship in the digital age: Information, infrastructure, and the Internet*. MIT Press.

Borgman, C. L. (2015). *Big data, little data, no data: Scholarship in the networked world*. MIT Press.

CEFRES. (n.d.). *Partner institutions*. French Research Centre in Humanities and Social Sciences.

Coalition for Advancing Research Assessment. (2022). *Agreement on reforming research assessment*. CoARA.

Czech Academy of Sciences. (2008). *Career Development Rules for CAS Employees with a University Degree*. CAS.

Czech Academy of Sciences. (2014). *Strategy AV21: Top research in the public interest*. CAS.

Czech Academy of Sciences. (2019). *Czech scientist became a member of a prestigious board of Horizon Europe*. CAS.

Czech Academy of Sciences. (2019). *Methodology of evaluation of research and professional activity of research-oriented institutes of the Czech Academy of Sciences for the period 2015–2019*. CAS.

Czech Academy of Sciences. (2019). *Science advice offers unique benefits to policymakers, say experts*. CAS.

Czech Academy of Sciences. (2021). *Position of the Czech Academy of Sciences on the future of the European Research Area*. CAS.

Czech Academy of Sciences. (2021). *Report on the evaluation of the research and professional activities of CAS Institutes for 2015–2019*. CAS.

Czech Academy of Sciences. (2022). *Call for Researchers at Risk Fellowship – Ukraine*. CAS.

Czech Academy of Sciences. (2022). *The Czech Academy of Sciences supports scientists in Ukraine*. CAS.

Czech Academy of Sciences. (2023). *Annual Report of the Czech Academy of Sciences 2023*. CAS.

Czech Academy of Sciences. (2023). *What's the situation of women in science in the Czech Republic today?* CAS.

Czech Academy of Sciences. (2024). *CAS researchers received the 2024 Praemium Academiae and Lumina Quaeruntur*. CAS.

Czech Academy of Sciences. (2024). *Code of Ethics for Researchers of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2024). *Czech Academy of Sciences – CoARA Action Plan 2024–2027*. Zenodo.

Czech Academy of Sciences. (2024). *European Code of Conduct for Research Integrity*. CAS.

Czech Academy of Sciences. (2024). *International research centre focused on environmental and technology ethics*. CAS.

Czech Academy of Sciences. (2024). *Open Science Principles of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2024). *Radomír Pánek nominated for the next President of the CAS*. CAS.

Czech Academy of Sciences. (2024). *The Academy presents Action Plan to reform research evaluation at the CAS*. CAS.

Czech Academy of Sciences. (2024). *The Biology Centre of the CAS will strengthen plant research*. CAS.

Czech Academy of Sciences. (2024). *The CAS will support scientists whose research is at risk in their home country*. CAS.

Czech Academy of Sciences. (2025). *Activities of the Ombudsperson of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2025). *Concept for Development of Activities of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (2025). *Gender Equality Plan of the Czech Academy of Sciences 2025–2027*. CAS.
Czech Academy of Sciences. (2025). *Guideline No. 2 of the Academy Council of the CAS dated 4 February 2025, on the CAS Ombudsman*. CAS.
Czech Academy of Sciences. (2025). *Nine CAS researchers received the 2025 Praemium Academiae and Lumina Quaeruntur*. CAS.
Czech Academy of Sciences. (2025). *What are the Open Science principles of the Czech Academy of Sciences?* CAS.
Czech Academy of Sciences. (2026). *Czech Academy of Sciences evaluation: Beyond metrics, accent on peer review*. CAS.
Czech Academy of Sciences. (2026). *The CAS introduced new programs to support excellence, careers and ERC-in*. CAS.
Czech Academy of Sciences. (2026). *The CAS launches new research programs as part of its Strategy AV21*. CAS.
Czech Academy of Sciences. (n.d.). *About us: European Research Area Section of the Division of International Cooperation*. CAS.
Czech Academy of Sciences. (n.d.). *Academic Award — Praemium Academiae*. CAS.
Czech Academy of Sciences. (n.d.). *Academy of the Future*. CAS.
Czech Academy of Sciences. (n.d.). *Annual Report*. CAS.
Czech Academy of Sciences. (n.d.). *ASEP institutional repository of the CAS*. CAS.
Czech Academy of Sciences. (n.d.). *Bilateral cooperation*. CAS.
Czech Academy of Sciences. (n.d.). *CEFRES Platform*. CAS.
Czech Academy of Sciences. (n.d.). *Code of Ethics for Researchers of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (n.d.). *ERC Incubator Programme*. CAS.
Czech Academy of Sciences. (n.d.). *Evaluations of CAS institutes*. CAS.
Czech Academy of Sciences. (n.d.). *Fellowships*. CAS.
Czech Academy of Sciences. (n.d.). *History overview*. CAS.
Czech Academy of Sciences. (n.d.). *Josef Dobrovský Fellowship*. CAS.
Czech Academy of Sciences. (n.d.). *Mission of the CAS*. CAS.
Czech Academy of Sciences. (n.d.). *Multilateral cooperation of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (n.d.). *Otto Wichterle Award*. CAS.
Czech Academy of Sciences. (n.d.). *Partner organizations*. CAS.
Czech Academy of Sciences. (n.d.). *Representatives of the CAS and its predecessors*. CAS.
Czech Academy of Sciences. (n.d.). *Researchers at Risk Fellowship*. CAS.
Czech Academy of Sciences. (n.d.). *Running projects*. CAS.
Czech Academy of Sciences. (n.d.). *Scientific Integrity Committee of the CAS*. CAS.
Czech Academy of Sciences. (n.d.). *Statutes of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (n.d.). *Strategy AV21: Top research in the public interest*. CAS.
Czech Academy of Sciences. (n.d.). *The J. E. Purkyně Fellowship*. CAS.
Czech National Council. (1992). *Act No. 283/1992 Coll., on the Czech Academy of Sciences*. Czech National Council.
Czech Science Foundation. (n.d.). *GA ČR in profile*. Czech Science Foundation.
CzechELib. (n.d.). *About CzechELib*. CzechELib.

DORA. (2013). *San Francisco Declaration on Research Assessment*. DORA.
EASAC. (n.d.). *Science advice for the benefit of Europe*. European Academies Science Advisory Council.
EOSC Association. (2025). *Czech Republic*. European Open Science Cloud Association.
EURAXESS. (n.d.). *European Charter for Researchers*. European Commission.
European Commission. (2018). *Czech Republic: Recent national developments in research evaluation 2017–2018*. European Commission, Research and Innovation Observatory.
European Commission. (2020). *A union of equality: Gender Equality Strategy 2020–2025*. European Commission.
European Commission. (2021). *Horizon Europe guidance on gender equality plans*. European Commission.
European Commission. (2021). *Horizon Europe: Open science*. European Commission.
European Commission. (2021). *Horizon Europe programme guide*. European Commission.
European Commission. (2021). *Horizon Europe: The EU research and innovation programme 2021–2027*. European Commission.
European Commission. (2023). *Council Recommendation of 18 December 2023 on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe*. Official Journal of the European Union.
European Commission. (2024). *Country participation in the EU R&I Framework Programmes*. Publications Office of the European Union.
European Commission. (2024). *She Figures 2024: Czechia country fiche*. European Commission.
European Commission. (2025). *ERA Policy Agenda 2025–2027*. European Research Area Platform.
European Commission. (2025). *European Open Science Cloud*. European Commission.
European Commission. (2025). *New ERA Policy Agenda 2025–2027 and Choose Europe for Science launched*. European Research Area Platform.
European Commission. (2025). *Open science*. European Commission.
European Commission. (n.d.). *Horizon 2020*. European Commission.
European Commission. (n.d.). *Horizon Europe*. European Commission.
European Commission. (n.d.). *Marie Skłodowska-Curie Actions*. European Commission.
European Commission. (n.d.). *Technology Centre of the Czech Academy of Sciences: Organisation details*. EU Funding & Tenders Portal.
European Commission. (n.d.). *The Czech Republic*. EUR-Lex.
European Research Council. (n.d.). *About the ERC*. European Research Council.
Filáček, A. (2023). Transformation of the Academy of Sciences: From science in society to the responsible science for society. *Teorie vědy / Theory of Science, 45*(2), 253–279.
Good, B., Vermeulen, N., Tiefenthaler, B., & Arnold, E. (2015). Counting quality? The Czech performance-based research funding system. *Research Evaluation, 24*(2), 91–105.
Government of the Czech Republic. (2017). *Národní strategie otevřeného přístupu České republiky k vědeckým informacím na léta 2017–2020* [National Strategy for Open Access of the Czech Republic to Scientific Information for 2017–2020]. Government of the Czech Republic.
Government of the Czech Republic. (2019). *Akční plán pro implementaci Národní strategie otevřeného přístupu České republiky k vědeckým informacím na léta 2017–2020* [Action Plan for the Implementation of the National Strategy for Open Access of the Czech Republic to Scientific Information for 2017–2020]. Government of the Czech Republic.

Herschberg, C., Benschop, Y., & van den Brink, M. (2018). Precarious postdocs: A comparative study on recruitment and selection of early-career researchers. *Scandinavian Journal of Management, 34*(4), 303–310.

Hicks, D. (2012). Performance-based university research funding systems. *Research Policy, 41*(2), 251–261.

Hicks, D., Wouters, P., Waltman, L., de Rijcke, S., & Rafols, I. (2015). Bibliometrics: The Leiden Manifesto for research metrics. *Nature, 520*(7548), 429–431.

Hladchenko, M. (2026). *Implications of Russia's full-scale invasion of Ukraine for the international mobility of Ukrainian scholars*. arXiv.

Institute of Sociology of the Czech Academy of Sciences. (2022). *Gender Equality Plan of the Institute of Sociology CAS for 2022–2026*. Institute of Sociology of the Czech Academy of Sciences.

Institute of Sociology of the Czech Academy of Sciences. (n.d.). *National Contact Centre for Gender & Science*. Institute of Sociology of the Czech Academy of Sciences.

Kramerius. (n.d.). *Open-source software for digital libraries*. Kramerius.

Laakso, M., Matthias, L., & Jahn, N. (2021). Open is not forever: A study of vanished open access journals. *Journal of the Association for Information Science and Technology, 72*(9), 1099–1112.

Lepori, B., Reale, E., & Slipersæter, S. (2015). National research systems and the European Research Area. In A. Bonaccorsi (Ed.), *Knowledge, diversity and performance in European higher education: A changing landscape* (pp. 265–292). Edward Elgar Publishing.

Library of the Czech Academy of Sciences. (n.d.). *AS Journals*. Library of the CAS.

Library of the Czech Academy of Sciences. (n.d.). *ASEP Data Repository*. Library of the CAS.

Library of the Czech Academy of Sciences. (n.d.). *Digital Library of the CAS*. Library of the CAS.

Library of the Czech Academy of Sciences. (n.d.). *Knihověda.cz*. Library of the CAS.

Library of the Czech Academy of Sciences. (n.d.). *Results of scientific work*. Library of the CAS.

Library of the Czech Academy of Sciences. (n.d.). *The Collection of Manuscripts, Early and Rare Printed Books*. Library of the CAS.

Linková, M. (2015). The Czech Academy of Sciences. In K. Prpić, I. van der Weijden, & N. Asheulova (Eds.), *Research careers in Europe: Landscape and horizons* (pp. 33–43). Institute for Social Research in Zagreb.

Linková, M. (2023). Co-creating gender equality in Czech academia. *Sociologica, 17*(2), 75–96.

Masaryk Institute and Archives of the Czech Academy of Sciences. (n.d.). *About the Institute*. Masaryk Institute and Archives of the CAS.

Mayntz, R., Schimank, U., & Weingart, P. (Eds.). (1998). *East European academies in transition*. Kluwer Academic Publishers.

National Contact Centre for Gender & Science. (2024). *The position of women in Czech science: Monitoring report 2022*. Institute of Sociology of the CAS.

National Library of the Czech Republic. (n.d.). *Czech Digital Library*. National Library of the Czech Republic.

OECD. (2021). *Reducing the precarity of academic research careers*. OECD Publishing.

OECD. (2023). *Gender equality in the Czech Republic: Strengthening government capacity for gender-sensitive and inclusive recovery*. OECD Publishing.

Office of the Government of the Czech Republic. (2018). *Methodology for evaluating research organisations and research, development and innovation purpose-tied aid programmes*. Office of the Government of the Czech Republic.

Parliament of the Czech Republic. (2002). *Act No. 130/2002 Coll., on the support of research and development from public funds and on the amendment to some related acts*. Parliament of the Czech Republic.

Parliament of the Czech Republic. (2005). *Act No. 341/2005 Coll., on public research institutions*. Parliament of the Czech Republic.

Parliament of the Czech Republic. (2022). *Act No. 241/2022 Coll., amending Act No. 130/2002 Coll. and related acts*. Parliament of the Czech Republic.

Provazník, S., Filáček, A., Křížová-Frýdová, E., Loudín, J., & Machleidt, P. (1998). *Transformace vědy a výzkumu v České republice* [Transformation of science and research in the Czech Republic]. Filosofia.

Research on Research Institute. (2025). *Czech Republic: Methodology 2025+*. Research on Research Institute.

SAPEA. (n.d.). *Our networks*. Science Advice for Policy by European Academies.

SAPEA. (n.d.). *Science Advice for Policy by European Academies*. SAPEA.

Science Europe. (n.d.). *EU Framework Programmes*. Science Europe.

Strategy AV21. (n.d.). *About Strategy AV21*. CAS.

Suber, P. (2012). *Open access*. MIT Press.

Technology Agency of the Czech Republic. (n.d.). *Technology Agency of the Czech Republic*. Technology Agency of the Czech Republic.

Technology Centre AS CR. (2007). *Report on the Czech Republic's participation in the Fifth EC Framework Programme and the Fifth Euratom Framework Programme*. Technology Centre AS CR.

Technology Centre Prague. (n.d.). *About us*. Technology Centre Prague.

Technopolis Group. (2015). *Reform of the research assessment and institutional funding system in the Czech Republic*. Technopolis Group.

UNESCO. (2021). *UNESCO Recommendation on Open Science*. UNESCO.

Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J. J., Appleton, G., Axton, M., Baak, A., Blomberg, N., Boiten, J. W., da Silva Santos, L. B., Bourne, P. E., Bouwman, J., Brookes, A. J., Clark, T., Crosas, M., Dillo, I., Dumon, O., Edmunds, S., Evelo, C. T., Finkers, R., … Mons, B. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data, 3*, Article 160018.

Wilsdon, J., Allen, L., Belfiore, E., Campbell, P., Curry, S., Hill, S., Jones, R., Kain, R., Kerridge, S., Thelwall, M., Tinkler, J., Viney, I., Wouters, P., Hill, J., & Johnson, B. (2015). *The metric tide: Report of the independent review of the role of metrics in research assessment and management*. HEFCE.

Part Five.

Research Achievements and Scientific Directions of the Modern Academy

Chapter Ten

Natural Sciences, Mathematics, and the Physical Sciences

Physics and the Study of Matter

1. Condensed Matter, Optics, Plasma, and High-Energy Research

Physics within the Czech Academy of Sciences occupies a special place in the modern history of Czech science because it links two very different meanings of scientific work: the investigation of nature at its most fundamental levels and the construction of institutional capacities that only a mature research system can sustain. In this sense, the study of matter was never merely one disciplinary field among others. It was a domain in which the Academy tested its ability to preserve long-term expertise, operate demanding instruments, educate generations of researchers, and remain connected to the international scientific frontier. The Academy's physical sciences developed across several layers: condensed matter and solid-state physics, optics and laser science, plasma physics and fusion research, nuclear physics, particle physics, and astroparticle physics. These layers did not form a single linear narrative, but together they created one of the most technically complex and internationally visible segments of the Czech research system. Their development also reveals the broader institutional logic of the Academy after the socialist period: continuity of expertise, reform of governance, internationalisation of infrastructure, and the gradual move from nationally enclosed research to participation in European and global "big science" (*Akademie věd České republiky, n.d.*; *Fyzikální ústav AV ČR, n.d.*).

The organisation of physics in the Academy reflected the wider structure of the institution. Within the research area of Mathematics, Physics, and Earth Sciences, physics was placed alongside mathematics, computer science, astronomy, nuclear physics, and information theory, while applied physics included institutions concerned with photonics, materials, plasma physics, scientific instruments, mechanics, and thermomechanics (*Akademie věd České republiky, n.d.*). This distribution is important because it shows that physics in the Czech Academy was never confined to one institute or one methodological culture. It extended from abstract theoretical modelling to accelerator-based experiments, from the microstructure of solids to the behaviour of plasma, and from the physics of optical systems to cosmic particles arriving from outside the Solar System. The institutional geography of Czech physics therefore mirrored the intellectual geography of modern physics itself: matter could be studied as a crystal lattice, as a quantum system, as ionised gas, as nuclear structure, as elementary particles, or as radiation detected by sophisticated instruments. The Academy's strength lay precisely in this plurality, which allowed it to combine depth in specialised fields with flexibility across disciplinary borders.

The Institute of Physics of the Czech Academy of Sciences became the principal institutional centre of this landscape. Its origins in the 1950s placed it within the first great wave of post-war and early socialist institutionalisation of science, when physics was treated as a strategic field for industrial modernisation, technological sovereignty, and ideological prestige. Yet the

Institute's later history cannot be reduced to the administrative logic of state socialism. Over time, it accumulated scientific schools, experimental traditions, technical workshops, international contacts, and disciplinary cultures that outlived the political order in which they had been assembled. Its research profile came to include elementary particle physics, condensed matter and solid-state physics, optics, plasma physics, and laser physics, making it a broad rather than narrowly specialised physical institute (*Fyzikální ústav AV ČR, n.d.*). This breadth was institutionally significant: it allowed the Institute to act both as a custodian of inherited Czechoslovak physical research and as a platform for the new international projects of the post-1989 era.

Condensed matter physics formed one of the most durable lines of this development. Its importance lay in the fact that it connected fundamental questions about the structure of matter with problems that had direct technological resonance. The behaviour of electrons in solids, the formation of magnetic and dielectric properties, the physics of surfaces and thin films, the properties of crystals, and the emergence of new functional materials were not only theoretical subjects. They were also connected to electronics, energy technologies, sensors, optoelectronics, metallurgy, and later nanotechnologies. In the Academy, condensed matter research was therefore a field in which the distinction between "basic" and "applied" science was often porous. Researchers could move from the study of fundamental mechanisms to the design or characterisation of materials without abandoning the identity of basic research. This permeability became especially important after the transformation of the 1990s, when public research institutions had to demonstrate international quality and social relevance without reducing science to short-term utility.

The Czechoslovak tradition in solid-state and condensed matter physics had been built under conditions that were often politically constrained but technically ambitious. Like many areas of scientific work in the socialist period, it benefited from stable institutional employment, long-term laboratory development, and state interest in technically useful fields. At the same time, it suffered from restrictions on mobility, limited access to some instruments, political interference in careers, and asymmetries in international exchange. This double legacy shaped the post-socialist Academy. The question after 1989 was not whether the older scientific schools should simply be rejected or preserved unchanged. The real issue was how to separate durable expertise from the administrative and ideological forms that had surrounded it. Condensed matter physics was one of the fields in which this separation could be relatively successful because its objects of study, methods, and international standards were less directly ideological than those of the social sciences. Nevertheless, its institutional renewal still required new funding patterns, competitive projects, publication strategies, and stronger integration into European scientific networks.

The intellectual appeal of condensed matter physics also came from its ability to make the ordinary extraordinary. Matter in this field was not a passive substance but an organised system whose macroscopic properties arose from microscopic interactions. A crystal, a semiconductor, a thin film, a magnetic material, or a liquid crystal could become a world of phase transitions, defects, collective excitations, quantum effects, and emergent behaviour. This gave the field a conceptual richness that helped to bridge experimental measurement and theoretical interpretation. In the Academy's environment, such research required stable laboratories, highly trained technical staff, access to characterisation instruments, and long research cycles that did not fit easily into short political or commercial timelines. The Academy's institutional form was well suited to this kind of work. It could maintain research

continuity in areas where universities alone often lacked the necessary infrastructure and where industry was interested mainly in later stages of application.

The study of materials was closely connected to this condensed matter tradition. The Academy's physical sciences included not only the Institute of Physics but also specialised institutes concerned with materials, photonics, scientific instruments, and related areas of applied physics. This institutional constellation allowed the Czech research system to treat materials not simply as industrial inputs but as complex physical systems. In this respect, the Academy's work anticipated a broader European tendency in which materials science became a meeting place for physics, chemistry, engineering, and computation. The analysis of defects, surfaces, nanostructures, magnetic systems, optical properties, and mechanical behaviour created a common scientific language across institutes. This was especially important for a country whose industrial history had long included machinery, glass, optics, electronics, metallurgy, and precision instrumentation. Physics did not stand outside this economic and technological culture; it gave it deeper analytical foundations.

Optics represented another major line of continuity and transformation. In Czech scientific culture, optics had older roots in precision instruments, glass technologies, microscopy, spectroscopy, and astronomical observation. Within the Academy, modern optics developed into a field that connected classical optical knowledge with quantum optics, nonlinear optics, laser physics, photonics, and the physics of surfaces and layers. The institutional significance of optics was that it linked local technical traditions to the most advanced experimental practices of contemporary science. Optical methods became indispensable in condensed matter research, plasma diagnostics, biological imaging, astronomical observation, and high-energy astrophysics. This meant that optics was both a discipline and an enabling technology. It gave the Academy tools with which other sciences could see, measure, control, and interpret phenomena otherwise inaccessible to ordinary observation.

The growth of laser research transformed the scale and ambition of Czech optics. Lasers altered the physical sciences because they made it possible to concentrate energy, measure ultrafast processes, generate secondary radiation, manipulate matter, and create experimental conditions that had previously been inaccessible. In the Czech Academy, laser physics became a bridge between traditional optical expertise and European-scale infrastructure. This was not simply a matter of acquiring expensive devices. It required a new culture of project management, safety, engineering, international user access, and interdisciplinary cooperation. The emergence of large laser facilities near Prague showed that the Czech research system could move from participation in external infrastructures to hosting infrastructure of European significance. In this sense, optics became one of the clearest examples of the Academy's post-socialist institutional modernisation.

The ELI Beamlines facility in Dolní Břežany symbolised this change. As part of the Extreme Light Infrastructure, it placed Czech laser science within a distributed European research infrastructure devoted to high-power, high-intensity, and ultrashort-pulse laser systems (*ELI Beamlines, n.d.*; *Extreme Light Infrastructure ERIC, n.d.*). The importance of ELI Beamlines for the Academy and for Czech science was not limited to the prestige of hosting a major facility. It changed the relationship between national research and international scientific users. A laboratory of this type is not built only for local teams; it is designed as a site where international communities can conduct experiments in physics, materials science, chemistry, life sciences, and laboratory astrophysics. For the Academy, this meant entering a regime in

which scientific reputation depended not only on publications but also on the reliability, accessibility, and originality of infrastructure. The facility thus represented a new institutional language: user operation, beamtime, international calls, engineering support, and integration with European research policy.

ELI Beamlines also shows how the study of matter has expanded beyond traditional categories. High-intensity lasers can generate X-rays, accelerated particles, and extreme states of matter; they can support ultrafast imaging, plasma acceleration, materials investigation, and experiments relevant to astrophysical and nuclear processes. This makes the laser facility a meeting point of optics, plasma physics, materials science, accelerator physics, and applied research. The very concept of "matter" becomes dynamic: matter is no longer only observed in equilibrium but driven, excited, compressed, ionised, and transformed on ultrashort timescales. Such research requires conceptual imagination as well as technical coordination. It also requires an institution capable of sustaining long-term scientific risk. The Academy's participation in this field therefore reflected not merely a successful infrastructure project but a deeper shift in the Czech scientific system towards experimental platforms that can create new research questions rather than only answer inherited ones.

Plasma physics formed a further essential component of the Academy's physical sciences. Its institutional centre was the Institute of Plasma Physics of the Czech Academy of Sciences, which became the leading Czech research institution in the field of nuclear fusion (*EUROfusion, n.d.*). Plasma research is especially revealing because it lies at the intersection of fundamental physics, energy policy, materials engineering, diagnostics, and international cooperation. The behaviour of high-temperature plasma cannot be understood without sophisticated theory, modelling, measurement, and experimental control. At the same time, the promise of fusion energy gives the field a strategic significance that goes far beyond ordinary laboratory work. In the Czech case, plasma physics therefore connected the Academy to one of the most ambitious long-term technological projects of modern science: the effort to make controlled thermonuclear fusion a practical energy source.

The COMPASS tokamak became the most visible symbol of this tradition. Its operation in Prague placed Czech researchers within the European fusion community and provided a training ground for scientists, engineers, and students. The machine was not merely a device for local experiments; it was part of a wider European effort to understand plasma confinement, magnetic field errors, plasma edge behaviour, and the problems relevant to ITER and later DEMO. During its years of operation, COMPASS produced a large number of high-temperature plasma discharges and helped to bring Czech fusion research into the European top tier (*Akademie věd České republiky, 2021*). This mattered institutionally because it showed that a comparatively small national research system could make meaningful contributions to a field dominated by large international programmes. The value of COMPASS lay not only in its scale but in its specificity, diagnostic capacities, and ability to address problems relevant to larger machines.

The transition from COMPASS to COMPASS-U further illustrates the Academy's movement from inherited infrastructure to deliberately strategic infrastructure. COMPASS-U was conceived as a high-magnetic-field tokamak with plasma geometries relevant to ITER and DEMO, designed to address key challenges of fusion research (*Institute of Plasma Physics of the CAS, n.d.*). Its projected characteristics, including high magnetic field, high plasma density, advanced plasma configurations, and a well-diagnosed divertor environment, point to a

research agenda focused on questions that remain central to the future of fusion energy. This is precisely the kind of project that reveals the Academy's distinctive role. It is not a commercial prototype, nor is it a purely educational device. It is a research infrastructure intended to occupy a specialised place in the European fusion ecosystem. Such a role requires scientific credibility, engineering capacity, political support, and long-term institutional commitment.

Plasma research in the Academy was not limited to tokamak physics. The field also included laser plasma, low-temperature plasma, plasma chemistry, plasma–material interaction, and optical diagnostics. These areas connected high-energy experimental physics with materials science, surface treatment, environmental technologies, and industrial processes. They also demonstrated that plasma is not a single object but a family of physical states and applications. High-temperature plasma research belongs to the world of fusion, magnetic confinement, and extreme energy conditions. Low-temperature plasma and plasma chemistry, by contrast, can be linked to material modification, thin films, chemical processes, and technological innovation. This diversity made plasma physics one of the most interdisciplinary parts of the Academy's physical sciences. It also allowed the Academy to maintain a balance between long-term fundamental projects and research with more immediate technological relevance.

High-energy research introduced another scale of matter: the scale of elementary particles, cosmic rays, and nuclear processes. Within the Institute of Physics, elementary particle physics and astroparticle physics connected Czech teams to large international collaborations, where national scientific identity is expressed through participation in detectors, data analysis, instrumentation, and theoretical interpretation rather than through isolated laboratories. This form of research is institutionally demanding because no single medium-sized country can reproduce the full infrastructure of particle physics. Instead, the Academy had to act through collaboration, specialisation, and credibility. Its scientists contributed to international experiments by bringing expertise in detector technologies, optics, electronics, data processing, and theoretical analysis. The resulting scientific culture differed from classical national laboratory work. It was distributed, multilingual, project-based, and dependent on long-term trust among institutions.

The Nuclear Physics Institute of the Czech Academy of Sciences added a further dimension to this high-energy and nuclear landscape. Its roots go back to the founding of a nuclear physics institute in Řež in 1955 as a basic Czechoslovak institution in nuclear fields, followed by institutional reorganisation in 1972 and later incorporation into the Czech Academy of Sciences after 1993 (*Nuclear Physics Institute of the CAS, n.d.*). This history is a compact example of continuity and rupture in Czech science. Nuclear physics was shaped by the priorities of the socialist state, by the development of nuclear energy, by Cold War science, and by the strategic value assigned to nuclear knowledge. Yet the basic-research component survived institutional separations and political transformation. In the post-socialist Academy, the Nuclear Physics Institute continued work in experimental and theoretical nuclear physics, intermediate-energy and heavy-ion physics, nuclear analytical methods, dosimetry, material research, and interdisciplinary applications.

Nuclear physics was also one of the fields where the Academy's expertise crossed the boundary between fundamental science and public responsibility. Research on nuclear reactions, ionising radiation, dosimetry, neutron methods, and material analysis had obvious relevance for energy, medicine, environmental monitoring, archaeology, and radiation

protection. This did not make the field merely applied. Rather, it placed basic nuclear knowledge within a wider social and technical framework. The Academy could provide expertise where the state, industry, health institutions, and cultural heritage organisations needed reliable scientific judgement. In this sense, nuclear physics illustrates an important feature of the Academy's institutional identity: it was not a university department, a ministry laboratory, or a company research unit, but a public research institution capable of combining independent inquiry with long-term national expertise.

Astroparticle physics extended high-energy research beyond terrestrial laboratories. Czech participation in infrastructures such as the Cherenkov Telescope Array and the Pierre Auger Observatory linked the Academy to the study of high-energy cosmic rays and gamma rays. These fields depend on global observational networks, advanced optics, atmospheric monitoring, detector systems, and large-scale data analysis. Czech researchers contributed through optical technologies, mirror development, camera systems, atmospheric monitoring, and scientific participation in international collaborations (*Research Infrastructure CTA-CZ, n.d.*). This is another example of how inherited Czech strengths in optics and instrumentation could be translated into contemporary global science. The study of the Universe at high energies thus became connected to very concrete national competencies: precision engineering, optical surfaces, calibration, and data interpretation.

The Academy's participation in high-energy and astroparticle research also changed the meaning of scientific autonomy. In the 19th-century learned society or the early national academy, autonomy often meant the ability of scholars to pursue knowledge without immediate political or ecclesiastical control. In the 20th-century Academy, especially under state socialism, autonomy was repeatedly constrained by ideology, administrative hierarchy, and state planning. In contemporary high-energy research, however, autonomy has a more complex meaning. It requires the ability to enter international collaborations on equal scientific terms, to maintain funding for long projects, to protect expert judgement within large institutional consortia, and to preserve national scientific capacity without retreating into isolation. The Academy's role in particle, nuclear, plasma, and laser physics therefore demonstrates a modern form of autonomy: not solitude, but competent participation in networks too large for any one institution to dominate.

The physical sciences also reveal the importance of instrumentation as a form of knowledge. In many historical narratives, scientific ideas are treated as primary and instruments as auxiliary. The Academy's experience suggests a more integrated picture. Instruments do not merely record nature; they define what can be observed, measured, stabilised, compared, and imagined. A tokamak, a laser beamline, a detector array, a neutron facility, an optical laboratory, or a surface-analysis instrument is part of the intellectual architecture of science. This was especially true in the Czech case, where long traditions of precision engineering, optics, materials expertise, and experimental craftsmanship supported participation in advanced physical research. The Academy's institutes were therefore not only places where theories were tested, but places where the material culture of science was produced and maintained.

The post-1989 transformation changed the institutional environment in which these fields operated. Under the Czechoslovak Academy of Sciences, physics had enjoyed a privileged status among natural sciences, but it was also embedded in a system of central planning, restricted mobility, and politically mediated institutional hierarchies. After 1989, the successor

Academy had to operate in a very different world: competitive grants, international evaluation, publication metrics, European framework programmes, public research institution status, and growing expectations of innovation and technology transfer. The physical sciences were relatively well positioned for this transition because many of their standards were already international and because experimental cooperation across borders had never been entirely absent. Yet the transition still required deep adaptation. Institutes had to modernise equipment, renew leadership cultures, attract younger researchers, publish more visibly, compete for European funding, and justify costly infrastructure to public authorities.

This transformation also altered the relationship between the Academy and universities. In physics, the Academy could not function as a closed research estate. It depended on doctoral students, joint laboratories, university teaching, shared appointments, and collaboration with faculties in Prague, Brno, Olomouc, and elsewhere. Conversely, universities benefited from access to Academy laboratories, instruments, and research groups that often exceeded ordinary teaching infrastructure. This relationship was particularly important in fields such as condensed matter, optics, plasma physics, nuclear physics, and particle physics, where training cannot be separated from participation in real experimental work. The Academy thus became a national reservoir of advanced research training. It helped to reproduce scientific elites not only by employing researchers but also by providing environments in which young scientists could learn how contemporary physics is actually practised.

The cultural meaning of physics within the Academy should not be overlooked. Physics has often carried a symbolic weight disproportionate to its institutional size because it is associated with the deepest questions about nature and with the most visible forms of scientific modernity. In the Czech context, this symbolism was intensified by the history of a small nation seeking intellectual parity with larger European cultures. Participation in modern physics demonstrated that Czech science was not provincial, derivative, or merely national in scope. It belonged to a universal language of experiment, mathematics, and theory. At the same time, the Academy's physical sciences remained embedded in local institutions, Czech technical traditions, and national educational structures. The result was a productive tension between universality and locality: Czech physics was international in its standards but national in its institutional responsibility.

Condensed matter, optics, plasma, and high-energy research therefore form more than a catalogue of disciplines. They show how the Academy learned to operate across scales: from electrons in solids to plasma in magnetic confinement, from optical surfaces to cosmic particles, from laboratory materials to European infrastructures. They also show how institutional history is written through instruments, laboratories, research schools, and collaborative networks. The Academy's physical sciences preserved important Czechoslovak continuities, but they did not remain trapped in inherited forms. They were reshaped by European integration, large infrastructures, competitive funding, and the growing importance of interdisciplinary research. Their development illustrates a broader theme of the Academy's modern history: the survival of scientific autonomy depended not on institutional immobility but on the capacity to transform inherited expertise into new forms of international relevance.

Thus, condensed matter physics, optics, plasma physics, and high-energy research demonstrate the Academy's role as a long-term custodian of advanced scientific capacity in the Czech lands. These fields connected the material, conceptual, and institutional dimensions of science: they required theoretical imagination, experimental discipline,

technical infrastructure, public funding, and international trust. They also reveal why the history of the Academy cannot be written only as a history of administrative reforms or political regimes. It must also be written through the laboratories where matter was studied, through the instruments that made invisible phenomena measurable, and through the research communities that carried Czech science from the enclosed structures of state socialism into the open but demanding networks of European and global science. In this sense, the physical sciences were not a specialised appendix to the Academy's history; they were one of the central arenas in which the modern Czech Academy of Sciences defined its intellectual authority, institutional autonomy, and international standing.

2. Research Infrastructures and International Collaborations

The development of physics in the Czech Academy of Sciences cannot be understood without the history of research infrastructures. In the modern physical sciences, laboratories are not merely places where individual scholars conduct experiments; they are organised environments in which machines, technical staff, data systems, international users, safety regimes, funding bodies, and long-term scientific agendas come together. This is especially true for fields such as laser physics, plasma research, particle physics, nuclear physics, materials science, and astroparticle physics, where the central instruments are too complex and too costly to be treated as ordinary institutional equipment. The Academy's role in this domain was therefore not simply to host institutes, but to maintain capacities that allowed Czech science to participate in the contemporary infrastructure-based form of knowledge production. In this respect, the post-socialist transformation of the Academy was not only administrative or financial. It was also infrastructural. The ability to build, operate, upgrade, and open large research facilities became one of the main indicators of whether the Academy could remain a serious actor in European science.

Research infrastructure changed the scale at which Czech physics operated. Earlier traditions of laboratory physics depended on individual groups, specialised instruments, and relatively stable institutional schools. These elements remained important, but they increasingly became embedded in larger systems of cooperation. A condensed matter physicist might require nanofabrication tools, cryogenic measurements, electron microscopy, synchrotron access, or high-field magnetic measurements. A nuclear physicist might depend on accelerators, neutron sources, detectors, radiochemical laboratories, and dosimetry facilities. A plasma physicist might need tokamak operation, heating systems, diagnostics, high-performance computing, and access to European machines. A particle physicist might work through CERN experiments, distributed data processing, detector development, and long-term international consortia. The Academy's physical sciences therefore moved from a model of institutes with laboratories to a model of institutes embedded in infrastructure ecosystems.

This shift was closely connected with the emergence of national and European infrastructure policy. The Czech Republic gradually developed a system of large research infrastructures, coordinated through national roadmaps and linked to European frameworks such as ESFRI, ERICs, and European framework programmes. The Roadmap of Large Research Infrastructures of the Czech Republic for the years 2023–2026 placed physical sciences and engineering among the central domains of national infrastructure strategy, including Czech participation in ELI, CERN, CTAO, ESS, FAIR, EuPRAXIA, and other major European or global facilities (*Ministry*

of Education, Youth and Sports, 2024). This framework matters historically because it shows that advanced physics was no longer financed only as the internal work of one institute. It became part of national science policy, European integration, and international competition for scientific visibility. The Academy's institutes had to act not only as research bodies, but also as infrastructure operators, national nodes, coordinators, and partners in transnational systems.

The Institute of Physics of the Czech Academy of Sciences became one of the main institutional platforms for this infrastructure turn. Its position was strengthened by the breadth of its research profile, which included particle physics, condensed matter physics, solid-state physics, optics, plasma physics, and laser physics (*Fyzikální ústav AV ČR, n.d.*). This breadth allowed the Institute to participate in several infrastructure regimes at once. It could host or co-develop laser facilities, contribute to materials and nanotechnology platforms, coordinate Czech participation in high-energy experiments, and support astroparticle research. Such an institution could not function as a narrow disciplinary institute. It had to become a mediator between national scientific priorities, European projects, industrial partners, universities, and international user communities. Its history therefore illustrates a broader change in the Academy: the strongest institutes increasingly became nodes in networks rather than isolated centres of excellence.

The laser infrastructures around Prague and Dolní Břežany demonstrate this transformation most clearly. ELI Beamlines became one of the most visible Czech scientific infrastructures of the post-1989 period. As part of the Extreme Light Infrastructure, it connected Czech laser science with a European user facility devoted to high-power, high-intensity, and ultrashort-pulse laser systems (*ELI ERIC, n.d.*; *ELI Beamlines, n.d.*). Its significance was not limited to the possession of powerful lasers. It represented a new institutional form in which the Czech research system hosted an infrastructure designed for international scientific users. This required governance, technical reliability, safety protocols, user access rules, beamtime allocation, data management, engineering support, and international evaluation. The Academy's participation in this process marked a transition from national laboratory culture to the culture of European big science.

ELI Beamlines also transformed the relationship between Czech physics and international scientific agendas. High-intensity laser systems allow researchers to explore plasma acceleration, high-field physics, secondary sources of radiation, ultrafast processes, laboratory astrophysics, materials under extreme conditions, and applications extending into chemistry, biology, medicine, and materials science. This range of possible research made the facility interdisciplinary by design. It also meant that physics at ELI could not be separated from engineering, safety, optics, vacuum technology, control systems, computational modelling, and user support. The facility therefore became a place where scientific knowledge and organisational knowledge were inseparable. Czech science gained not only a laser centre but also practical experience in operating an international research infrastructure under European conditions.

The importance of ELI was further reinforced by the European Research Infrastructure Consortium model. The establishment of ELI ERIC placed ELI Beamlines within a formal European governance structure, turning the Czech facility into a pillar of a distributed European infrastructure rather than a purely national project (*ELI ERIC, n.d.*). This was institutionally significant because ERIC status changes the meaning of ownership and participation. A facility

may be located in one country, but its scientific community, evaluation mechanisms, and strategic development are European. For the Academy, this meant that national prestige had to be balanced with transnational responsibility. The Academy could claim an important role in the facility's development, yet the logic of operation required openness to users and partners beyond the Czech Republic. In this way, ELI became a concrete expression of the Academy's modern internationalisation.

The HiLASE Centre formed another important element of the Czech laser landscape. As a scientific research centre of the Institute of Physics, it focused on high average power pulsed lasers and on the development of laser technologies with potential applications in industry, space technologies, materials processing, and other advanced technological domains (*HiLASE Centre, n.d.*). Its role differed from that of ELI Beamlines, although the two centres belonged to the same broader ecosystem of advanced laser research. HiLASE was more visibly connected to application-oriented laser technologies, high-power diode-pumped solid-state lasers, surface processing, micromachining, laser shock peening, and cooperation with users beyond academic physics. In institutional terms, it showed how the Academy could connect fundamental physical competence with technological development without abandoning its scientific mission. It also illustrated how research infrastructures could become bridges between the Academy, industry, and European technological sovereignty.

The Prague Asterix Laser System, usually known as PALS, represented an earlier but still important infrastructure tradition. Established as a joint research laboratory of the Institute of Physics and the Institute of Plasma Physics in 1998, PALS provided a high-power laser facility for experiments in laser–matter interaction, laser plasma, laboratory astrophysics, fusion-related research, and plasma chemistry (*PALS Research Centre, n.d.*). Its history is important because it shows that the infrastructure turn did not begin only with the large European projects of the 2010s. The Czech Academy had already experimented with user-type laser facilities and international access before the full institutionalisation of ELI. PALS also created a bridge between optical physics and plasma physics, between older Czechoslovak expertise and newer European networks such as Laserlab-Europe. In this respect, it served as a transitional infrastructure, preparing scientific and organisational habits later required by larger projects.

Plasma physics and fusion research formed another major infrastructure domain. The Institute of Plasma Physics of the Czech Academy of Sciences became the main Czech academic centre for fusion research and maintained links with the European fusion programme through EUROfusion and other international frameworks (*Institute of Plasma Physics of the CAS, n.d.*; *EUROfusion, n.d.*). The operation of the COMPASS tokamak in Prague placed Czech researchers within a highly specialised European community concerned with magnetic confinement, plasma edge physics, diagnostics, and scenarios relevant to ITER and DEMO. The importance of COMPASS lay not only in the scientific results produced by the machine, but also in the training of people, the development of diagnostics, and the integration of Czech teams into European fusion planning. A tokamak is not simply an instrument; it is an institutional school. It teaches researchers how to think in terms of coordinated experiments, machine campaigns, shared databases, operational safety, and long-term technological goals.

The move towards COMPASS-U further deepened this infrastructural logic. The COMPASS-U project was conceived as a strategic upgrade designed to address key problems in

contemporary fusion research, including high-field operation, advanced plasma configurations, and issues relevant to European and ITER-related priorities (*Institute of Plasma Physics of the CAS, n.d.*). This shows a characteristic feature of modern infrastructure policy: smaller or medium-sized countries can contribute to global science not by duplicating the largest facilities, but by constructing specialised machines that answer well-defined problems within a larger research ecosystem. COMPASS-U was therefore not intended to compete with ITER or the largest European tokamaks. Its role was to provide a distinctive experimental capacity within a distributed structure of fusion research. For the Academy, such a project confirmed that institutional relevance could be achieved through specialisation, not only through size.

Fusion research also reveals the political dimension of scientific infrastructure. The promise of thermonuclear fusion links physics to energy security, climate policy, industrial capacity, and long-term public investment. Yet fusion remains a field in which the horizon of practical application is distant and uncertain. This creates a particular institutional challenge. Research must be justified not by immediate return, but by participation in a long civilisational project of energy transformation. The Academy's role here is to preserve the scientific and technical continuity necessary for such long projects. It provides expertise, trains researchers, operates specialised equipment, and participates in European networks that no private company or short-term grant scheme could maintain alone. In fusion, the Academy's public character becomes especially visible.

Nuclear physics infrastructures created another field in which the Academy combined national responsibility with international cooperation. The Nuclear Physics Institute of the Czech Academy of Sciences in Řež operated the CANAM infrastructure, which provided experimental facilities for accelerated ion beams, neutron research, nuclear analytical methods, and related applications (*Nuclear Physics Institute of the CAS, n.d.*). CANAM's open access mode made it part of the broader European movement towards shared research facilities. Its users could come from academic institutions, industry, and interdisciplinary fields requiring nuclear analytical expertise. This infrastructure linked basic nuclear physics with materials research, environmental studies, cultural heritage analysis, dosimetry, radiopharmaceutical research, and neutron methods. The Academy therefore maintained a type of expertise that was both highly specialised and socially relevant.

The CANAM infrastructure is historically significant because nuclear physics in the Czech lands had long been associated with state priorities, energy, and Cold War scientific modernity. After 1989, this legacy had to be reinterpreted. The Academy did not simply abandon nuclear expertise because it had once belonged to a politically charged technological field. Instead, it re-situated nuclear physics within open scientific collaboration, interdisciplinary services, and European standards of access and evaluation. This transformation is typical of the post-socialist Academy. It did not erase inherited capacities; it changed their institutional meaning. Facilities once embedded in a centrally planned scientific order became parts of a plural, internationally connected, publicly accountable research system.

Materials and nanotechnology infrastructures extended the Academy's physical sciences into another strategic domain. CzechNanoLab provided open access to advanced tools and expertise in nanoscience, nanotechnology, and materials research, with distributed sites including Prague and Brno and participation of Academy institutes and university partners (*CzechNanoLab, n.d.*). Its importance lies in the fact that nanoscience cannot be developed

through theory alone. It requires cleanrooms, lithography, deposition systems, electron microscopy, scanning probe methods, cryogenic measurements, and specialised technical knowledge. By participating in CzechNanoLab, Academy institutes helped to create a national platform through which researchers from different institutions could access expensive and delicate instrumentation. This strengthened the connection between physics, materials science, chemistry, electronics, and biomedical research.

The Materials Growth and Measurement Laboratory, or MGML, added a complementary dimension to this infrastructure landscape. It provided access to advanced equipment and expertise for the synthesis, characterisation, structural analysis, and measurement of materials, with a strong orientation towards condensed matter physics and materials science (*Materials Growth and Measurement Laboratory, n.d.*). MGML's cooperation between Charles University and the Institute of Physics of the Czech Academy of Sciences is especially revealing because it shows how the boundaries between Academy and university research became increasingly porous. The Academy supplied long-term research expertise and instrumentation culture, while the university environment supported teaching, doctoral training, and disciplinary continuity. Such shared infrastructures were not merely administrative partnerships. They embodied a practical division of labour within the national research system.

The connection between infrastructure and international collaboration was especially strong in particle physics. The Czech participation in CERN experiments depended on the CERN-CZ research infrastructure, coordinated through the Institute of Physics and involving several Czech institutions, including universities and the Nuclear Physics Institute (*CERN-CZ, n.d.*). The purpose of this infrastructure was to support Czech contributions to the development, construction, maintenance, operation, and data processing of CERN experiments. This is a very different model from classical laboratory ownership. Czech physicists do not "own" CERN, yet they participate in its experiments through detector work, electronics, software, computing, physics analysis, and long-term collaboration. The Academy's role was to secure a national institutional platform through which Czech teams could contribute credibly to one of the world's central sites of high-energy physics.

CERN-CZ also shows how infrastructure can exist partly outside national territory. In such cases, the national infrastructure is not a single building but a coordinated system of expertise, funding, equipment, computing, and institutional agreements. Czech detector components may be developed at home, installed abroad, and used by international collaborations. Data may be produced at CERN, processed through distributed computing, and analysed by teams in Prague, Řež, or university departments. This distributed character changes the meaning of scientific participation. A national research system must be able to maintain domestic competence while operating in a global experimental environment. The Academy's institutes became crucial because they provided continuity, technical reliability, and institutional memory across projects lasting decades.

Astroparticle physics followed a similar but distinct pattern. The Czech participation in the Cherenkov Telescope Array through CTA-CZ linked the Institute of Physics with Charles University and Palacký University in a European and international infrastructure for very-high-energy gamma-ray astronomy (*CTA-CZ, n.d.*; *Ministry of Education, Youth and Sports, 2024*). Czech researchers contributed notably to the preparation of telescope mirrors, optical systems, site evaluation, and related technological tasks. This is an important example of how national strengths in optics, precision engineering, and instrumentation could be translated

into global science. The study of cosmic gamma rays is a highly abstract field, concerned with extreme astrophysical sources and fundamental processes. Yet Czech participation depended on very concrete material competences: mirrors, coatings, alignment, optical quality, calibration, and data interpretation.

The Academy's involvement in astroparticle infrastructures also broadened the cultural meaning of physics. The same institutional world that studied solid surfaces, lasers, plasma, and nuclear reactions could also participate in the investigation of cosmic accelerators, black holes, supernova remnants, and high-energy phenomena beyond the Earth. This extension from matter in the laboratory to matter and radiation in the Universe shows the breadth of the Academy's physical sciences. It also shows that infrastructure is not only a technical device but a way of expanding the imagination of a research community. A telescope array, a laser facility, a tokamak, and an accelerator all enlarge the range of possible questions. They allow scientists to ask what could not be asked, or at least could not be answered, within smaller laboratory traditions.

International collaboration changed not only the scale of research but also the everyday culture of Czech physics. Researchers had to publish in international journals, participate in working groups, attend collaboration meetings, prepare joint proposals, respond to external evaluation, share data, follow common technical standards, and communicate across institutional and linguistic borders. Younger scientists were socialised into an environment where a Czech affiliation was compatible with a strongly international scientific identity. This differed sharply from the more enclosed conditions of the socialist period, even though some international contacts had existed earlier. After 1989, internationalisation became systemic rather than exceptional. It was built into the very operation of infrastructures, not added as a diplomatic supplement to national research.

The infrastructure regime also affected governance inside the Academy. Large facilities required project management, legal agreements, procurement procedures, user offices, safety structures, technical maintenance, strategic planning, and professional communication. This placed new demands on institutes traditionally organised around scientific departments and research groups. Directors and scientific councils had to deal not only with academic evaluation but also with infrastructure sustainability, investment cycles, user access, and international accountability. In this sense, the physical sciences contributed to the modernisation of Academy governance. They forced the institution to develop capacities that were administrative in form but scientific in purpose. Managing a large research infrastructure became part of doing science.

Funding was a central element of this change. Large infrastructures could not be sustained by ordinary institutional budgets alone. They required national investment, European structural funds, competitive projects, international membership fees, and long-term operational support. This created both opportunities and vulnerabilities. On the one hand, Czech physics gained access to resources that would have been unimaginable in a purely national laboratory system. On the other hand, dependence on large funding cycles exposed institutes to political decisions, budgetary negotiations, and shifting priorities in research policy. The Academy therefore had to learn how to defend the public value of expensive science. It had to explain why lasers, tokamaks, accelerators, detectors, and nanotechnology cleanrooms were not luxuries, but conditions for participation in advanced knowledge economies.

The relationship between infrastructure and autonomy was therefore complex. At first glance, dependence on large national and European funding programmes might seem to reduce institutional autonomy. Yet without such programmes, the Academy would be unable to sustain the scientific capacities necessary for modern physics. Autonomy in this context did not mean financial isolation. It meant the ability to participate in infrastructure governance, define scientific priorities within international frameworks, protect expert judgement, and maintain long-term competence despite political and economic changes. The Academy's autonomy was thus reconstructed through networks. It became less a matter of withdrawal from the state or Europe and more a matter of negotiating scientific authority within them.

Research infrastructures also strengthened the Academy's relations with universities. In physics, doctoral education and advanced training increasingly depended on access to facilities that no single faculty could easily maintain. Academy institutes offered laboratories, instruments, supervisors, technical staff, and participation in international collaborations. Universities offered students, curricula, degree frameworks, and broader disciplinary communities. Shared infrastructures such as CzechNanoLab and MGML made this interdependence concrete. The Academy's laboratories were no longer merely workplaces for professional researchers; they were training environments for future physicists, engineers, materials scientists, and data specialists. This educational role was indirect but essential. It helped to reproduce national scientific capacity at the level required by contemporary physics.

Infrastructure also created new forms of collaboration with industry. In some areas, especially lasers, materials, nanotechnologies, detector technologies, and nuclear analytical methods, industrial partners could use Academy expertise for testing, development, measurement, and innovation. This did not mean that the Academy became an industrial research office. Rather, it occupied a position between fundamental science and technological capability. It could support industrial innovation precisely because it possessed deep knowledge and instruments that were not designed for immediate commercial routine. This is an important distinction. The Academy's contribution to innovation was strongest when it remained rooted in serious scientific competence, not when it imitated short-term product development.

The international infrastructure orientation also helped Czech science overcome some of the disadvantages of national scale. The Czech Republic could not independently build the full range of global physics facilities. It could not duplicate CERN, ITER, the European Spallation Source, or all next-generation observatories. But it could host selected specialised facilities, participate in distributed infrastructures, contribute technical components, train researchers, and maintain recognised expert groups. The Academy's role was to make this strategy possible. It provided institutional continuity across political cycles and enabled Czech teams to remain visible in fields where scientific authority depends on long-term presence. This was a realistic and effective model for a medium-sized European country with strong scientific traditions but limited resources.

At the same time, infrastructure-based science introduced tensions into the Academy. Large facilities can concentrate resources, prestige, and administrative attention. Smaller research groups may fear marginalisation when policy favours visible infrastructures. The Academy therefore had to balance big science with investigator-driven research, long-term expertise with competitive funding, and national priorities with international obligations. This balance was not always easy. Yet the physical sciences show that large infrastructures and smaller research schools need not be enemies. In the best cases, infrastructures provide tools,

visibility, and training opportunities that strengthen smaller groups. Conversely, infrastructures remain scientifically alive only when they are used by creative researchers capable of asking original questions.

The Academy's research infrastructures also had a public dimension. Facilities such as ELI Beamlines, HiLASE, COMPASS-U, CANAM, CzechNanoLab, MGML, CERN-CZ, and CTA-CZ offered visible evidence that Czech science belonged to the front rank of European research. They served as symbols of national modernity after the post-socialist transition. Their buildings, instruments, and international collaborations became part of a broader public narrative about innovation, European integration, and scientific competence. This symbolic function should not be dismissed as superficial. Public research institutions need legitimacy. Large infrastructures helped show society that the Academy was not a relic of the Czechoslovak Academy of Sciences, but a transformed institution capable of operating in the most demanding areas of contemporary science.

The long-term effect of these infrastructures was to redefine the Academy's place in the Czech research and innovation system. It became not only a producer of publications but also an operator of platforms on which others could produce knowledge. This platform role is crucial. A research infrastructure multiplies scientific capacity beyond the staff of the institute that hosts it. It supports external users, doctoral students, international teams, industrial partners, and interdisciplinary projects. The Academy thus acted as a national custodian of scientific possibility. It maintained conditions under which future discoveries could occur, even when their exact direction could not be predicted in advance.

Thus, research infrastructures and international collaborations became one of the central mechanisms through which the Czech Academy of Sciences entered the contemporary European research order. In physics, this transformation was especially visible because the study of matter increasingly depended on lasers, tokamaks, accelerators, detectors, nanotechnology platforms, nuclear analytical facilities, and global observatories. The Academy's role was not simply to preserve inherited Czechoslovak scientific traditions, although it did that as well. Its deeper achievement was to convert those traditions into open, networked, internationally evaluated, and technologically demanding forms of research. Through ELI Beamlines, HiLASE, PALS, COMPASS-U, CANAM, CzechNanoLab, MGML, CERN-CZ, CTA-CZ, and related collaborations, the Academy helped ensure that Czech physics remained present where the most advanced questions of matter, energy, radiation, and the Universe were being asked.

3. The Academy's Role in Advanced Physical Research

The role of the Czech Academy of Sciences in advanced physical research cannot be reduced to the existence of several strong institutes or to the operation of expensive laboratories. Its deeper significance lies in the capacity to hold together a complex chain of scientific functions that are difficult for any other type of institution to sustain in full. The Academy preserves long-term expertise in fundamental physics; it operates infrastructures that require decades of continuity; it provides an institutional home for research fields whose practical value may be enormous but whose results cannot be scheduled according to short political or commercial cycles. It also gives Czech science access to the intellectual and experimental frontier of contemporary physics, where matter is studied through extreme light, high magnetic fields,

particle collisions, nuclear reactions, nanostructures, detectors, plasma, and cosmic radiation. In this sense, the Academy is not simply one participant in the national research system. It is one of the institutions that makes advanced research possible at the national level. Its role is especially visible in physics because modern physics depends on a rare combination of conceptual abstraction, technological precision, engineering competence, data capacity, international trust, and long-term public support (*Akademie věd České republiky, n.d.*; *Fyzikální ústav AV ČR, n.d.*).

This role has a historical depth. The Academy inherited parts of the Czechoslovak scientific system that had been formed under different political regimes, from the early post-war institutionalisation of science to the centralised structures of the Czechoslovak Academy of Sciences and then to the reformulated public research institutions of the Czech Republic. Physics was one of the domains in which this inheritance proved particularly important. Laboratories, technical workshops, scientific schools, instrument-building traditions, and international contacts could survive political discontinuities more easily than ideologically exposed fields, although they were by no means unaffected by politics. After 1989, the Academy's task was not merely to "continue" Czechoslovak physics, but to translate its accumulated capacities into a new environment of evaluation, European integration, grant competition, institutional autonomy, and public accountability. Advanced physical research therefore became one of the arenas in which the post-socialist Academy demonstrated that inherited expertise could be reoriented without being destroyed. The transformation of physics in the Academy was thus both a scientific process and an institutional act of historical conversion.

The Academy's first major role was to provide continuity where scientific time is longer than political time. Research in condensed matter physics, optics, plasma physics, nuclear physics, and particle physics often unfolds across decades. A scientific group may need many years to build a method, master an instrument, train students, join an international collaboration, or develop a specific line of interpretation. Such research cannot be rebuilt quickly if institutional memory is lost. The Academy's organisational form gave Czech physics a protective environment in which knowledge could be accumulated, revised, transmitted, and expanded. This did not mean isolation from evaluation or from external expectations. On the contrary, the modern Academy increasingly had to prove the quality of its research through international comparison. Yet it retained a distinctive ability to sustain long-term fields that would be vulnerable if judged only by immediate application or short project cycles.

The second major role of the Academy was to connect fundamental science with technological capacity without dissolving one into the other. Advanced physics often produces knowledge whose application is uncertain at the moment of discovery, but it also demands technologies that later become socially and economically important. Lasers, detectors, vacuum systems, cryogenics, accelerators, nanofabrication, optical coatings, plasma diagnostics, ion-beam methods, and numerical modelling are not merely tools for physicists. They form a reservoir of technical competence that can influence medicine, energy, electronics, materials engineering, cultural heritage research, environmental monitoring, security, and industrial innovation. The Academy's strength lay in preserving the autonomy of basic research while allowing such competences to circulate beyond narrow disciplinary boundaries. This balance was essential. If physics were reduced to technological service, its creative depth would decline; if it were isolated from public and technological needs, its institutional legitimacy

would become fragile. The Academy's role was to keep these two dimensions in productive tension.

This tension can be seen most clearly in the Institute of Physics of the Czech Academy of Sciences. As the largest and most visible centre of Academy physics, it concentrated several strategic fields: elementary particle physics, condensed matter and solid-state physics, optics, plasma physics, and laser physics (*Fyzikální ústav AV ČR, n.d.*). The importance of this profile lies not only in disciplinary breadth. It allowed the Institute to connect different scales of matter and different scientific cultures. A single institutional environment could include researchers working on subatomic particles, magnetic and electronic properties of solids, optical systems, high-power lasers, detector technologies, and astroparticle phenomena. Such breadth is institutionally rare because it requires not only scientific diversity but also administrative flexibility, technical infrastructure, and a shared commitment to international standards. In the Academy's history, the Institute of Physics therefore functioned as both a centre of specialisation and a mechanism of integration.

The Academy's role in advanced physical research also includes the maintenance of experimental cultures that are not easily visible in general accounts of science policy. Physics is often described through great discoveries, theoretical ideas, or large projects, but the daily life of advanced research depends on many less spectacular forms of competence. Instruments must be designed, calibrated, repaired, upgraded, and adapted to new questions. Experimental conditions must be stabilised and reproduced. Data must be cleaned, interpreted, archived, and compared with models. Technical staff, engineers, doctoral students, postdoctoral researchers, and senior scientists must cooperate across hierarchies of expertise. The Academy provides an institutional environment in which these practical cultures of precision can be sustained. This is especially important in a medium-sized country, where the loss of one specialised laboratory or technical team may mean the loss of a national capacity.

In condensed matter and materials research, this institutional function is especially important. The study of solids, surfaces, nanostructures, magnetic materials, crystals, semiconductors, and functional materials requires specialised instruments and accumulated interpretative experience. It also requires patience, because the path from a physical mechanism to a useful material may be indirect and non-linear. The Academy's institutes have been able to preserve this kind of research because their mission is not limited to teaching cycles or commercial product development. They can support long investigations into the structure and behaviour of matter, while still creating possibilities for innovation in electronics, photonics, energy materials, sensors, and nanotechnologies. The value of this role becomes clearer when one considers how many modern technological revolutions have emerged from research that was originally concerned with fundamental properties of matter. In this sense, the Academy's condensed matter research was not a passive continuation of older solid-state physics, but a living field in which scientific curiosity and technological potential remained closely connected.

Optics and laser physics reveal another aspect of the Academy's role: the ability to transform older national strengths into new international platforms. Czech scientific and technical culture had long been associated with precision instruments, glass, microscopy, optical design, and engineering craftsmanship. The Academy did not abandon these traditions in the post-socialist period; instead, it helped recast them in the language of photonics, laser

physics, nonlinear optics, ultrafast science, and high-power laser technology. Facilities such as ELI Beamlines and HiLASE show that this transformation could reach European significance (*ELI Beamlines, n.d.*; *ELI ERIC, n.d.*; *HiLASE Centre, n.d.*). The Academy's role here was not merely to participate in the global laser community, but to host facilities that could attract international users and position Czech science within frontier research. This transformed the cultural meaning of Czech optics: it became not only a heritage of skilled instrumentation, but also a contemporary instrument of scientific visibility.

ELI Beamlines is particularly important because it shows how the Academy moved from national expertise to European-scale responsibility. A high-intensity laser facility of this kind changes the institutional conditions of science. It requires not only excellent physicists, but also project managers, safety specialists, engineers, user support systems, international governance, and a reliable framework for access by external researchers. The Academy's participation in ELI therefore demonstrated that it could operate within the culture of European big science. It also made Czech physics visible in fields such as laser-plasma interaction, ultrafast processes, secondary radiation sources, materials under extreme conditions, and laboratory astrophysics. Such visibility matters historically because it alters the relationship between a national research system and the international scientific centre. Czech physics was no longer only sending researchers to large facilities abroad; it was also helping to provide infrastructure for others. This was a substantial shift in scientific status.

HiLASE expressed a complementary role. While ELI Beamlines was associated with extreme light and user-oriented frontier experiments, HiLASE focused on high average power pulsed laser technologies with strong relevance for research and advanced applications (*HiLASE Centre, n.d.*). Its significance for the Academy lies in the way it connected scientific depth with technological development. High average power lasers are not merely scientific curiosities; they have potential uses in materials processing, surface treatment, micromachining, space technologies, industrial metrology, and other high-technology domains. Yet the competence needed to develop such systems is rooted in demanding basic physics and engineering. The Academy's role was to provide the environment where such competence could mature without being reduced to routine industrial service. HiLASE therefore illustrates the Academy's ability to occupy a middle space between fundamental optical physics and innovation policy.

Plasma physics and fusion research demonstrate the Academy's role in even longer historical horizons. The Institute of Plasma Physics has placed Czech science within one of the most ambitious international research projects of the modern age: the search for controlled thermonuclear fusion. Fusion research requires an unusual kind of institutional patience. Its promise is enormous, but its practical realisation depends on solving problems that involve plasma confinement, turbulence, edge physics, materials under extreme loads, diagnostics, heating, magnetic control, and reactor-relevant engineering. No short-term institution can carry such a field alone. The Academy's role has been to sustain national expertise in this area, to operate specialised devices, to train researchers, and to connect Czech teams with the European fusion programme (*Institute of Plasma Physics of the CAS, n.d.*; *EUROfusion, n.d.*). In this field, the Academy is not merely producing knowledge; it is preserving the possibility that Czech science will remain part of a future energy transformation.

The COMPASS and COMPASS-U projects illustrate this responsibility. COMPASS allowed Czech researchers to participate actively in tokamak research relevant to European fusion priorities, while COMPASS-U was conceived as a high-field facility with plasma geometries and

operational flexibility relevant to ITER and DEMO challenges (*Institute of Plasma Physics of the CAS, n.d.*). The point is not that the Czech Republic would build a fusion reactor independently. Rather, the Academy created and maintained a specialised research niche within a much larger European ecosystem. This is exactly how a medium-sized scientific country can participate meaningfully in global advanced research: by contributing distinctive expertise, well-defined experimental capacity, and reliable institutional continuity. The Academy's role is therefore strategic, not merely supportive. It gives Czech science a voice in a field where future technological and energy systems may be shaped.

Nuclear physics reveals a similar but historically distinct role. The Nuclear Physics Institute in Řež carries the legacy of Czechoslovak nuclear research while operating in a transformed democratic and European research environment. Its work spans theoretical nuclear and particle physics, heavy-ion physics, nuclear reactions, neutron and ion methods, accelerator operation, radiation dosimetry, radiopharmaceuticals, and related applications (*Nuclear Physics Institute of the CAS, n.d.*). This diversity is important because nuclear physics is not one field in a narrow sense. It touches fundamental questions about nuclear matter, astrophysical processes, weak interactions, and particle properties, but it also supports medicine, radiation protection, materials analysis, environmental studies, archaeology, and public safety. The Academy's role is to keep these dimensions connected under conditions of scientific responsibility. In a society where nuclear technologies carry both promise and anxiety, independent and competent public research expertise is indispensable.

The Centre of Accelerators and Nuclear Analytical Methods, or CANAM, shows how this expertise becomes a national resource. By grouping major experimental facilities and providing open access for research with accelerated ion and neutron beams, CANAM extends the Institute's capacities beyond its own internal staff (*Nuclear Physics Institute of the CAS, n.d.*). This is an important institutional model. The Academy does not only conduct research; it creates conditions under which other researchers, including those from universities and interdisciplinary fields, can conduct research. Through nuclear analytical methods, accelerator beams, neutron laboratories, and dosimetry expertise, the Academy provides forms of knowledge that may be needed by physicists, chemists, materials scientists, archaeologists, medical researchers, and environmental specialists. The role of advanced physical research is therefore not confined to physics itself. It becomes part of the shared infrastructure of national knowledge.

High-energy and astroparticle physics further expand the Academy's function as an interface between national science and global collaborations. Czech researchers cannot reproduce CERN, the Pierre Auger Observatory, or the Cherenkov Telescope Array within national borders. Yet through Academy institutes, they can participate in detector development, optics, data analysis, computing, instrumentation, and interpretation. Such participation requires long-term institutional commitment because international collaborations often last for decades and depend on accumulated credibility. The Academy's contribution is therefore not measured only by the number of domestic facilities. It is also measured by the ability to keep Czech teams present in international experiments where the fundamental structure of matter and the high-energy Universe are investigated. This form of participation is a modern expression of scientific sovereignty: the country does not own the global infrastructure, but it possesses the expertise necessary to help create and use it.

The Academy's role in advanced physical research is also educational, even though the Academy is not a university in the classical sense. Its institutes supervise doctoral students, host young researchers, provide access to laboratories, and create research environments that universities alone could not easily reproduce. Advanced physics cannot be learned fully from lectures or textbooks. It must be learned through participation in experiments, modelling, instrument operation, data analysis, international meetings, and the tacit discipline of laboratory work. The Academy therefore acts as an extended training system for the Czech research community. It helps form future physicists, engineers, data scientists, materials researchers, and technical specialists. This role is vital because the continuity of advanced science depends on human transmission as much as on buildings and machines.

The relationship with universities is therefore one of interdependence rather than rivalry. Universities provide degree structures, broad teaching, student recruitment, and disciplinary education. The Academy provides concentrated research environments, large instruments, specialised teams, and access to international collaborations. In fields such as condensed matter physics, laser science, plasma physics, nuclear physics, and particle physics, neither side can fully replace the other. The strongest model is cooperation: joint supervision, shared laboratories, mobility of researchers, common infrastructure use, and participation in national and European projects. This cooperation helps to integrate the Czech research system and prevents the separation of teaching from frontier research. It also reflects a wider European pattern in which academies, universities, and research infrastructures form interconnected rather than isolated parts of scientific life.

The Academy's public research mission is also expressed through the Strategy AV21 framework. Strategy AV21 emphasises research in the public interest and the formulation of coordinated programmes responding to contemporary social challenges (*Strategy AV21, n.d.*). For the physical sciences, this framework is significant because it situates advanced physics within broader public concerns without reducing it to immediate utility. Programmes connected with light, energy, diagnostic methods, materials, nuclear systems, environmental challenges, and technological futures can draw on the expertise of physicists while also involving chemists, biologists, engineers, medical researchers, and social scientists. This approach reflects a mature understanding of public value. Physics serves society not only when it produces a ready-made technology, but also when it creates knowledge, instruments, methods, and expert communities capable of addressing future problems.

At the same time, the Academy must protect the internal logic of basic research. The history of physics shows that many of the most transformative applications emerged from investigations that were not initially application-driven. Quantum mechanics, nuclear magnetic resonance, lasers, semiconductors, particle detectors, and synchrotron methods all demonstrate the unpredictability of scientific utility. If the Academy were forced to justify advanced physics only through short-term usefulness, it would weaken the very source of future innovation. Its institutional role is therefore partly defensive: it defends the legitimacy of curiosity-driven research in a public environment that often demands immediate returns. This defence is not a retreat from society. It is a responsible reminder that advanced societies need institutions capable of thinking beyond the next budget cycle.

Evaluation and accountability changed this role after the post-socialist reforms. The Academy could no longer rely on inherited prestige or administrative protection. Its institutes had to demonstrate international quality through publication performance, external assessment,

competitive projects, and participation in recognised networks. For physical research, this was both a challenge and an opportunity. The standards of physics are strongly international, and successful groups could show their value through journals, collaborations, citations, invited talks, infrastructure roles, patents, instruments, and European projects. However, evaluation also risked simplifying the diversity of scientific contribution. The Academy had to argue that high-quality science includes not only papers but also the maintenance of infrastructure, training, technical development, open access facilities, and expert services. Advanced physical research thus helped broaden the meaning of research performance.

Internationalisation is central to this story. The Academy's role in physics increasingly depends on its ability to act across borders. Participation in ELI ERIC, EUROfusion, CERN-related activities, CTAO, European laser networks, nuclear infrastructures, and materials platforms situates Czech physics within international systems of trust and responsibility (*ELI ERIC, n.d.*; *EUROfusion, n.d.*; *Ministry of Education, Youth and Sports, 2024*). This is not merely a matter of prestige. It changes how research is planned, funded, evaluated, and performed. International collaboration forces institutes to meet common standards, share data, coordinate schedules, manage intellectual property, and contribute to long-term strategic agendas. The Academy thereby becomes a diplomatic as well as scientific actor, although its diplomacy is conducted through instruments, expertise, and reliability rather than political language.

This international role also reshapes national identity. Czech physics is not less national because it is international. On the contrary, its international presence gives national science substance. A small or medium-sized country demonstrates scientific maturity not by isolating its researchers, but by enabling them to contribute to global knowledge on equal terms. The Academy's role is to ensure that Czech participation is not episodic or dependent only on individual careers abroad. It provides institutional continuity, laboratories, administrative support, and strategic direction. Through this support, Czech scientists can enter global collaborations as members of a national scientific community with its own capacities and traditions. The result is a form of national scientific identity that is open, networked, and internationally validated.

The Academy also has a role in preserving technical professions that are often undervalued in public discussions of science. Advanced physical research depends on engineers, technicians, instrument specialists, software developers, safety officers, workshop staff, vacuum experts, electronics specialists, mechanical designers, and data infrastructure professionals. These people do not always appear as first authors of major scientific papers, but without them large parts of physics would be impossible. The Academy's institute-based structure can provide more stable careers for such expertise than short-term project environments alone. This is not a secondary issue. The continuity of advanced research often depends less on brilliant isolated individuals than on the existence of teams in which scientific and technical knowledge are intertwined. The Academy's role is therefore also to maintain the social ecology of research.

Advanced physical research has a strong regional dimension as well. Facilities in Prague, Dolní Břežany, Řež, Brno, and other locations create scientific geographies that link the Academy to cities, universities, innovation zones, and local economies. Dolní Břežany, for example, became associated with high-power laser research through ELI and HiLASE, while Řež remained a key site for nuclear physics and accelerator-based research. These places are not merely addresses. They are nodes where infrastructure, labour markets, education,

international visitors, and technological development intersect. The Academy thus contributes to the spatial organisation of Czech science. It helps create research environments whose influence extends beyond individual institute walls.

The Academy's physical sciences also contribute to public understanding of science. Physics often deals with phenomena that are difficult for the general public to imagine: quantum states, plasma confinement, cosmic particles, nuclear reactions, ultrafast laser pulses, nanostructures, and elementary particles. By communicating these fields, Academy institutes help society understand why public investment in science matters. Science communication in this context is not only popularisation; it is part of democratic accountability. Citizens are asked to support research whose results may be long-term, abstract, or technically complex. The Academy must therefore explain not only what it does but why it matters. In advanced physics, this communicative role is particularly important because the distance between everyday experience and scientific practice can be very large.

The Academy's role in advanced physical research also has an ethical dimension. Powerful physical knowledge may be connected to energy systems, radiation, surveillance technologies, military possibilities, industrial transformation, environmental risks, and health applications. The Academy's public character places responsibilities on its institutes to maintain research integrity, transparency, safety, and public trust. This is especially relevant in nuclear physics, high-power lasers, plasma technologies, and large-scale infrastructures. Ethical responsibility here does not mean avoiding difficult science. It means conducting it within frameworks of safety, openness, peer review, expert accountability, and public benefit. The Academy's institutional culture must therefore combine scientific ambition with civic responsibility.

The institutional role of the Academy becomes clearer when compared with other actors in the research system. Universities are indispensable for education and broad disciplinary reproduction. Private companies are important for commercialisation and technological deployment. Ministries and agencies shape policy and funding. International organisations create frameworks for cooperation. The Academy, however, occupies a distinct position: it is a non-university public research institution with a long-term mandate across fundamental, strategic, and interdisciplinary science. In advanced physics, this position is especially valuable because the field requires continuity, autonomy, infrastructure, and expertise that cannot be supplied by market demand alone. The Academy's role is therefore not a duplication of university or industrial research, but a necessary institutional complement to both.

The political history of the Czech lands gives this role additional weight. The Academy and its predecessors operated through periods of national revival, imperial structures, democratic independence, Nazi occupation, state socialism, normalisation, revolution, and post-socialist reform. In each period, science was connected to questions of sovereignty, legitimacy, modernity, and European belonging. Advanced physical research after 1989 became one of the clearest signs that the Czech Republic could participate in the highest levels of international knowledge production. The Academy helped make this participation institutionally durable. Its laboratories and collaborations showed that Czech science was not merely recovering from the past, but actively shaping its future. In this sense, physics became part of the broader historical narrative of democratic scientific reintegration.

Yet this role is not without tension. Advanced physical research is expensive, and its social benefits are not always immediately visible. Large infrastructures can attract criticism if they

are perceived as elite projects disconnected from public needs. Competitive funding can create pressure on researchers and distort long-term planning. International collaboration can sometimes make national priorities appear secondary. The Academy must constantly navigate these tensions. Its legitimacy depends on showing that advanced physics is not a luxury but a foundation of intellectual, technological, and civic capacity. This requires careful governance, transparent evaluation, open communication, and continued attention to the balance between excellence and public value.

The Academy's contribution to advanced physical research is therefore best understood as a layered institutional function. It preserves historical continuity, but it also reforms inherited structures. It supports basic science, but it also enables innovation. It operates national laboratories, but it also participates in European and global infrastructures. It trains young researchers, but it also maintains expert technical teams. It serves the state and society, but it must retain enough autonomy to pursue questions whose importance may not yet be publicly obvious. These layers make the Academy more than an administrative umbrella for institutes. They make it an institutional form through which a national scientific community can remain present in the most demanding domains of contemporary knowledge.

Thus, the Academy's role in advanced physical research is one of the central expressions of its modern identity. Through the Institute of Physics, the Institute of Plasma Physics, the Nuclear Physics Institute, and related institutes in photonics, materials, instrumentation, mechanics, thermomechanics, astronomy, and information sciences, it sustains a national capacity to study matter, energy, radiation, and the Universe at the highest levels of complexity. It links Czechoslovak traditions with European infrastructures, fundamental curiosity with technological competence, national responsibility with international collaboration, and scientific autonomy with public accountability. This role cannot be captured by a simple list of discoveries or laboratories. It lies in the Academy's ability to create the institutional conditions under which advanced physical research can continue, adapt, and matter for society. In that sense, Czech physics within the Academy is not only a scientific field; it is a historical measure of the country's capacity to belong to the most demanding forms of modern European knowledge.

Chemistry and Materials Science

1. Continuities from Czechoslovak Chemical Schools

Chemistry within the Czech Academy of Sciences developed as one of the clearest examples of institutional continuity between the Czechoslovak Academy of Sciences and the post-1993 Czech Academy. Unlike some fields in the humanities and social sciences, where political regime changes directly reshaped research agendas, language, personnel, and legitimacy, chemistry possessed a different kind of historical resilience. Its objects of study were not free from politics, for laboratories, appointments, industrial priorities, travel, and international exchange were all conditioned by the political order. Yet the intellectual core of chemical research could maintain a significant continuity through changing regimes because it was

anchored in methods, instruments, schools, substances, and experimental practices. Organic synthesis, electrochemistry, macromolecular chemistry, chemical engineering, analytical chemistry, physical chemistry, catalysis, and materials research formed a set of traditions that survived institutional ruptures because they were transmitted through laboratories and research groups rather than only through formal statutes. The Czech Academy inherited these traditions not as static monuments but as living scientific cultures. Their continuity was therefore not passive preservation, but the repeated adaptation of Czechoslovak chemical schools to new political, institutional, and international conditions (*Akademie věd České republiky, n.d.*; *Institute of Organic Chemistry and Biochemistry, n.d.*).

The importance of chemistry in the Academy also reflected the wider social and economic history of the Czech lands. Bohemia and Moravia had long possessed strong traditions of technical education, chemical industry, glassmaking, pharmaceuticals, sugar production, brewing, petrochemistry, and later polymer and materials technologies. Chemistry therefore occupied a special position between academic science and industrial civilisation. It was intellectually close to physics and biology, but institutionally close to technology, medicine, agriculture, and production. This position made chemical research attractive to the state, to industry, and to scientific elites. It also gave chemists a particular kind of authority: they could speak both the language of fundamental transformations of matter and the language of practical usefulness. In the Academy, this dual position became one of the foundations of its strength in the life and chemical sciences.

The Czechoslovak Academy of Sciences, founded in 1952, provided chemistry with a centralised institutional framework at a moment when the socialist state sought to reorganise research according to the model of academies, institutes, and planned scientific priorities. The creation of Academy chemical institutes did not mean that Czech chemistry began in the 1950s. On the contrary, the Academy absorbed older university, industrial, and technical traditions and reorganised them into research institutes with long-term programmes. The significance of this process lies in the combination of rupture and continuity. The Academy was politically new and administratively centralised, but the scientific personnel, laboratory habits, and disciplinary cultures often came from pre-war and wartime experiences, technical universities, industrial laboratories, and earlier research schools. The socialist state created the institutional shell, but much of the scientific substance came from deeper Czech and Czechoslovak traditions.

The experience of the Second World War played an unexpected role in this continuity. After the closure of Czech universities by the Nazi regime in 1939, many teachers, students, and researchers were forced to seek work outside ordinary academic structures. Some moved into industrial laboratories or other technical environments, where they developed habits of practical problem-solving, experimental discipline, and cooperation with production. After the war, these experiences did not simply disappear. They influenced the way post-war Czech chemistry approached synthesis, instrumentation, technology, and institutional organisation. The later Academy institutes were therefore shaped not only by socialist planning but also by the memory of forced displacement from universities and by the laboratory cultures formed under emergency conditions. This made Czechoslovak chemistry less purely academic in the narrow sense and more attentive to the connection between research and material practice (*Institute of Organic Chemistry and Biochemistry, n.d.*; *Franc, 2024*).

The Institute of Organic Chemistry and Biochemistry became the most emblematic example of this continuity. Its official history traces its origins to a group of chemistry enthusiasts formed after the war at the Czech Technical University under the leadership of František Šorm, who played a decisive role in the founding of the institute. The institute was formally established in 1953 as the Institute of Organic Chemistry, later renamed the Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences, and after 1993 became part of the Czech Academy of Sciences (*Institute of Organic Chemistry and Biochemistry, n.d.*). This institutional genealogy is important because it shows the transformation of a post-war chemical group into one of the central scientific institutes of the Academy. It also shows how the Academy was built through personalities capable of combining laboratory authority, organisational ambition, and political navigation. In the case of Šorm, these roles were particularly intertwined.

František Šorm embodied one of the central paradoxes of Czechoslovak chemical science. He was a major organic chemist, a powerful institution-builder, and a central figure in the early Czechoslovak Academy. His scientific work in natural products, biologically active compounds, and organic synthesis helped establish a strong school of chemical research. At the same time, he occupied high positions within the Academy's leadership, including the presidency of the Czechoslovak Academy of Sciences in the 1960s, which placed him within the political structures of socialist science. This dual position should not be simplified either into scientific heroism or into institutional compromise. It reveals the actual complexity of academic elites under state socialism. A scientific school could be strengthened through access to institutional power, while institutional power itself required negotiation with the political order.

The organic chemistry school associated with IOCB was significant because it developed at the boundary of synthesis, natural products chemistry, biochemistry, and later biomedical research. Organic synthesis in this tradition was not merely the production of molecules; it was a way of organising scientific imagination around structure, function, biological activity, and possible application. The institute's later strength in medicinal chemistry and molecular biology cannot be separated from this older culture of exact synthetic work. Chemical structures were treated as intellectually meaningful objects, but also as possible agents in biological systems. This gave the school a natural bridge to biochemistry, pharmacology, virology, and drug development. The Academy's institutional environment made it possible to cultivate this bridge over long periods, even when political and economic conditions changed.

The continuity of IOCB also demonstrates the importance of institute identity. A strong scientific institute is not only a workplace; it is a memory-bearing institution. It preserves styles of training, standards of publication, tacit techniques, expectations of originality, and stories about predecessors. The post-1993 Czech Academy did not create IOCB from nothing. It inherited a scientific culture that had already passed through wartime disruption, Stalinist centralisation, the reform atmosphere of the 1960s, normalisation, and the democratic transformation after 1989. Each period changed the institute, but none erased the importance of its chemical school. This continuity helps explain why IOCB became one of the most internationally visible institutes of the modern Academy. Its success rested on the accumulation of scientific capital across regimes rather than on the sudden invention of excellence after 1989.

Another central chemical school was electrochemistry and polarography, associated above all with Jaroslav Heyrovský. Heyrovský's discovery and development of polarography gave Czech and Czechoslovak chemistry one of its most internationally recognised achievements. His 1959 Nobel Prize in Chemistry for polarography represented not only an individual scientific honour but also a symbolic confirmation that Czech chemistry could contribute to the universal language of modern science (*Nobel Prize, n.d.*; *J. Heyrovský Institute of Physical Chemistry, n.d.*). Polarography was important because it combined physical chemistry, analytical chemistry, instrumentation, and methodology. It was a scientific technique, but also a school of thinking about electrochemical processes, measurement, and the relation between theory and application. Its institutionalisation within the Czechoslovak Academy gave it continuity beyond the lifetime of one discovery.

The Institute of Polarography was founded in 1950 under Heyrovský's directorship and became part of the newly constituted Czechoslovak Academy two years later. Its research focused on the theory of polarography, physico-chemical processes at mercury electrodes, methodology, instrumentation, and analytical applications (*J. Heyrovský Institute of Physical Chemistry, n.d.*). This institutional path is historically revealing. The institute preceded the full formation of the Academy but was then absorbed into it, showing how post-war scientific initiatives were reorganised within the new Academy system. The polarographic school therefore combined pre-Academy initiative, Academy institutionalisation, and international recognition. It became one of the most important sources of prestige for Czechoslovak chemical science.

The later J. Heyrovský Institute of Physical Chemistry was created in 1972 by merging the Institute of Polarography with the Institute of Physical Chemistry, both of which belonged to the Czechoslovak Academy of Sciences (*J. Heyrovský Institute of Physical Chemistry, n.d.*). This merger was more than an administrative event. It brought together electrochemistry, physical chemistry, theoretical chemistry, molecular spectroscopy, catalysis, adsorption, mass spectrometry, thermodynamics, kinetics, polymer science, organometallic chemistry, and other fields. The new institute became a broad centre of physical chemistry rather than only a memorial to polarography. Its history also carried the shock of the 1968 Warsaw Pact invasion, after which many scientists, including leading figures, emigrated to the West. The survival and later reform of the institute therefore illustrate how a scientific school could be wounded by political history and still retain enough intellectual continuity to renew itself.

Rudolf Brdička and later Rudolf Zahradník represented other layers of this physical-chemical continuity. Brdička was associated with the Institute of Physical Chemistry and with electrochemical and biochemical approaches that helped broaden the field beyond classical polarography. Zahradník, a theoretical and quantum chemist, became one of the founders of Czech and Central European quantum chemistry and later the first president of the Czech Academy of Sciences after the dissolution of Czechoslovakia (*J. Heyrovský Institute of Physical Chemistry, n.d.*; *Schwarz & Friedrich, 2021*). This trajectory is historically important because it links chemical science to the highest level of institutional leadership. The presidency of a chemist in the formative years of the Czech Academy symbolised the authority of the natural sciences within the post-socialist reconstruction of the institution. It also showed that chemical schools were not only laboratory traditions but sources of academic statesmanship.

The macromolecular school associated with Otto Wichterle formed another major line of continuity. The Institute of Macromolecular Chemistry was founded in 1959 by Wichterle, who also served as its first director and is internationally known for the invention of the soft contact

lens technology based on polymer materials (*Institute of Macromolecular Chemistry, 2019*). This school connected organic chemistry, polymer science, materials research, medical applications, and technological innovation. Wichterle's career demonstrates the unusual capacity of chemistry to move from molecular design to everyday human use. The soft contact lens became one of the most famous Czech scientific-technological achievements because it changed the lives of millions of people while remaining rooted in serious polymer chemistry. The Academy's history of chemistry cannot therefore be written only as a history of laboratories; it must include the transformation of chemical knowledge into social artefacts.

Wichterle's case also reveals the tension between scientific creativity and political constraint. He was an outstanding chemist and inventor, but his work unfolded under a regime that could both support scientific infrastructure and restrict independent personalities. The story of soft contact lenses is often remembered as a triumph of inventive persistence, especially because some of the decisive experimental steps were carried out outside the ideal conditions of official institutional planning. This should not be reduced to a romantic anecdote. It shows a structural feature of socialist science: institutional resources could be substantial, but creativity often had to move around bureaucratic rigidity and political mistrust. The macromolecular school survived because it was rooted not only in official plans but in personal ingenuity, experimental skill, and a community capable of recognising the importance of materials before their full application was obvious.

The Institute of Macromolecular Chemistry gave polymer science a stable Academy home. This mattered because macromolecular chemistry requires long-term integration of synthesis, physical characterisation, theory, processing, and application. Polymers are neither simple small molecules nor classical bulk materials; they require their own conceptual language of chains, networks, morphology, elasticity, swelling, biocompatibility, degradation, and phase behaviour. The institute's existence allowed the Academy to cultivate this language across generations. It also linked Czech chemistry to international developments in polymer science, materials chemistry, and biomedical materials. The continuity from Wichterle to later polymer research therefore expresses a broader Academy pattern: the transformation of a charismatic founder's school into an enduring institutional field.

Chemical engineering and process chemistry formed a different but equally important Czechoslovak school. The Institute of Chemical Process Fundamentals was formally established in the Czechoslovak Academy of Sciences in 1960 from two existing teams with older traditions: the Department of Chemical Technology headed by Vladimír Bažant and the Department of Chemical Engineering headed by George Standart (*Institute of Chemical Process Fundamentals, n.d.*). Bažant worked on organosilicon compounds and heterogeneous catalysis, while Standart developed research on distillation and extraction processes. Later, a group dealing with thermodynamics and phase equilibria under Eduard Hála joined the institute. This genealogy shows that the institute was founded not by abstract administrative division but by the convergence of technological chemistry, chemical engineering, catalysis, separation science, and physical chemistry. It represented the Academy's attempt to give fundamental depth to chemical processes relevant to industry and modern technology.

This chemical engineering tradition is important for understanding the Academy's place between science and production. Under socialism, chemical industry was treated as a strategic sector, and chemical technology had clear economic significance. Yet the best Academy research in this field was not simply factory troubleshooting. It sought theoretical and

experimental foundations for processes such as catalysis, thermodynamics, phase equilibria, separations, reaction engineering, and later environmental and energy-related processes. This gave the field a distinctive identity: it was close to industrial need but not reducible to it. The Academy's role was to make chemical technology intellectually deeper, more systematic, and more internationally comparable. In the post-socialist period, this tradition could be redirected towards environmental engineering, advanced materials, energy conversion, and sustainable process science.

Analytical chemistry developed another continuity, especially in Brno. The history of the Institute of Analytical Chemistry began in 1956, when a Laboratory for Gas Analysis was established by transferring a small research group from the Institute for Petroleum Research in Brno to the Czechoslovak Academy of Sciences; the initiative was made possible largely through the foresight of František Šorm, then Scientific Secretary of the Academy (*Institute of Analytical Chemistry, n.d.*). This origin is revealing because it again shows the movement from applied or industrially connected research into the Academy framework. Gas analysis, chromatography, separation methods, trace-element analysis, and later bioanalytical and environmental methods all required high precision and strong instrumentation. Analytical chemistry became a discipline of visibility: it made hidden substances, traces, contaminants, metabolites, and molecular signals measurable. In that sense, it contributed not only to chemistry but to medicine, biology, environmental protection, and cultural heritage.

The analytical school also illustrates how scientific continuity may be built around methods rather than around substances. Organic chemistry often follows classes of compounds; polymer chemistry follows macromolecular systems; physical chemistry follows processes and theories; analytical chemistry follows ways of detecting, separating, quantifying, and interpreting. This methodological identity gave the field adaptability. As biological sciences expanded into genomics, proteomics, medicine, and environmental research, analytical chemistry could move into new areas without losing its core. The Institute of Analytical Chemistry later emphasised research and development of analytical methods linked to biological sciences, human health, environmental protection, and education (*Institute of Analytical Chemistry, n.d.*). The continuity from gas analysis to modern analytical chemistry therefore shows the transformation of a relatively specialised post-war laboratory culture into a broadly enabling scientific field.

Inorganic chemistry and catalysis formed another layer of the Academy's chemical landscape, even when its institutional history is less commonly narrated through one internationally famous founder. Inorganic chemistry connects coordination compounds, solid-state materials, photochemistry, zeolites, organometallic systems, catalysis, nanomaterials, and environmental chemistry. Within the Academy's Section of Chemical Sciences, the Institute of Inorganic Chemistry belongs alongside the institutes of analytical chemistry, physical chemistry, chemical process fundamentals, macromolecular chemistry, and organic chemistry and biochemistry (*Akademie věd České republiky, n.d.*). This placement is important because inorganic chemistry serves as a bridge between molecular design, materials research, catalysis, and environmental applications. Its continuity from Czechoslovak chemical schools lies not only in named personalities but in a persistent competence in compounds, structures, reactivity, and materials relevant to modern chemical science.

The structure of the Academy's chemical section itself reveals the inherited plurality of Czechoslovak chemistry. The contemporary Czech Academy lists six institutes in the Section

of Chemical Sciences: the Institute of Analytical Chemistry, the Institute of Inorganic Chemistry, the J. Heyrovský Institute of Physical Chemistry, the Institute of Chemical Process Fundamentals, the Institute of Macromolecular Chemistry, and the Institute of Organic Chemistry and Biochemistry (*Akademie věd České republiky, n.d.*). This is not an arbitrary administrative arrangement. It represents the sedimentation of several major schools: analytical methods, inorganic and materials chemistry, electrochemistry and physical chemistry, chemical engineering and process fundamentals, polymer science, and organic-biochemical synthesis. The Academy therefore preserved the institutional memory of Czechoslovak chemical science by maintaining a differentiated ecology of institutes. This ecology allowed specialisation without fragmentation because the fields remained intellectually connected through materials, molecular structure, reaction mechanisms, instrumentation, and applications.

The political history of these schools was uneven. Some fields benefited from socialist state interest in chemical industry, pharmaceuticals, materials, and technological modernisation. Others suffered from ideological suspicion towards individual scientists, limits on international exchange, bureaucratic interference, shortages of equipment, and the political consequences of 1968 and normalisation. The J. Heyrovský Institute's own historical account notes the emigration of many members after the Warsaw Pact invasion and the extensive reforms after 1989, including greater autonomy, restructuring, a grant-based funding system, renewed international cooperation, and modernisation of experimental and computer facilities (*J. Heyrovský Institute of Physical Chemistry, n.d.*). This pattern was not unique to one institute. It reflected the broader experience of Academy science after the fall of the communist regime. Continuity did not mean that nothing changed; it meant that enough scientific capital survived to make reform meaningful.

The post-1989 transformation was therefore a decisive test for Czechoslovak chemical schools. The institutes had to adapt to international publication standards, competitive grants, external evaluation, new leadership cultures, legal transformation, and closer cooperation with universities and foreign partners. The dissolution of Czechoslovakia in 1993 created the Czech Academy of Sciences, but the chemical institutes did not begin anew. They carried forward the accumulated traditions of ČSAV while changing their institutional identity, funding environment, and scientific orientation. In this sense, the Czech Academy's chemistry was post-Czechoslovak but not post-historical. It remained deeply marked by Czechoslovak scientific schools, even as it entered the European research area and increasingly worked according to international standards.

The continuity of chemical schools also depended on people who acted as carriers of institutional memory. Professors, senior researchers, laboratory heads, technicians, instrument specialists, and doctoral supervisors transmitted practices that were rarely recorded fully in official documents. They taught younger researchers how to purify compounds, interpret spectra, run chromatographic systems, maintain electrodes, design polymerisation experiments, build apparatus, analyse reaction mechanisms, and write articles for international journals. This tacit continuity was as important as formal institutional succession. A scientific school lives when its methods are reproduced by new people who also learn how to change them. The Academy's institutes provided the social spaces where this transmission could occur across generations.

At the same time, the Academy's chemical schools were not closed dynasties. Their survival required openness to international science. Czech organic chemists, electrochemists, polymer scientists, process chemists, analytical chemists, and physical chemists had to participate in international journals, conferences, collaborations, and later European projects. Internationalisation after 1989 did not erase national traditions; it tested them. Schools that had been strong internally had to prove themselves externally. This process could be difficult, but it also gave the inherited traditions new vitality. The most successful institutes were those that converted Czechoslovak continuity into international credibility rather than treating continuity as sufficient in itself.

The relationship between Academy chemistry and universities was also central to continuity. Many of the chemical schools had roots in the Czech Technical University, the University of Chemistry and Technology in Prague, Charles University, Masaryk University, and other educational institutions. Academy institutes did not replace universities; they extended the research capacity of the national system. They offered laboratories, specialised instrumentation, long-term research programmes, and doctoral supervision, while universities provided broad education and degree frameworks. This relationship was especially important in chemistry because the training of a chemist requires both conceptual education and laboratory apprenticeship. The Academy's institutes helped preserve advanced laboratory cultures that could not be maintained by teaching institutions alone.

The connection with industry was another persistent feature. Czechoslovak chemical schools were often formed in dialogue with pharmaceuticals, petrochemistry, polymers, materials, analytical control, environmental monitoring, and chemical technology. This connection was shaped differently under socialism and after 1989. Under socialism, industry and Academy research were often linked through state planning and sectoral priorities. After 1989, cooperation increasingly depended on contracts, patents, licences, technology transfer, start-ups, and international innovation programmes. Yet the underlying fact remained: chemistry was one of the Academy fields most naturally positioned between fundamental knowledge and practical transformation. Its continuity was therefore strengthened by the fact that it could repeatedly demonstrate public and technological relevance without abandoning scientific depth.

The intellectual continuity of Czechoslovak chemical schools can also be seen in the recurring importance of structure. Organic chemistry studied molecular structure and synthesis; physical chemistry related structure to properties and processes; quantum chemistry explored electronic structure; polymer chemistry examined macromolecular architecture; analytical chemistry revealed structure through measurement; inorganic chemistry designed and characterised coordination and solid-state structures; chemical engineering translated molecular and phase behaviour into processes. This shared concern with structure gave Czech chemistry an internal coherence across institutes. It also allowed the field to move towards modern materials science, molecular biology, nanoscience, catalysis, and environmental chemistry. Continuity was therefore conceptual as well as institutional.

The symbolic significance of chemistry within the Academy was reinforced by its major personalities. Heyrovský represented international recognition and methodological originality. Šorm represented institution-building, organic synthesis, and the power of chemical leadership in the early Academy. Wichterle represented invention, polymer science, and the movement from laboratory discovery to global social use. Zahradník represented quantum

chemistry, theoretical sophistication, and post-socialist academic leadership. These figures should not be treated as isolated heroes detached from institutions. Their importance lies precisely in the way they crystallised broader schools and institutional possibilities. Through them, Czechoslovak chemistry became visible as a tradition capable of producing both scientific authority and public meaning.

The Academy's chemical continuity was therefore not a simple line from past to present. It was a layered process in which pre-war university traditions, wartime displacement, post-war reconstruction, socialist institutionalisation, reform hopes of the 1960s, normalisation, Velvet Revolution, Czech statehood, and European integration all left traces. The chemical institutes carried these traces in their names, buildings, research programmes, and memories of founders. Their development shows that institutional history is not only written through statutes and reforms. It is also written through compounds synthesised, instruments maintained, methods improved, students trained, patents filed, collaborations sustained, and scientific languages transmitted. Chemistry gives this history a particularly concrete materiality because its continuity is embedded in substances and experimental practices.

Thus, the continuities from Czechoslovak chemical schools into the Czech Academy of Sciences formed one of the strongest pillars of the Academy's modern identity. Organic chemistry and biochemistry, polarography and physical chemistry, macromolecular chemistry, chemical engineering, analytical chemistry, inorganic chemistry, catalysis, and materials research all carried forward traditions created under earlier institutional and political conditions. These traditions survived not because they were untouched by history, but because they were capable of being reworked after each rupture. The Czech Academy inherited them, reformed them, internationalised them, and placed them within a new framework of public research, European cooperation, and innovation. In this sense, chemistry demonstrates one of the central themes of the Academy's entire history: scientific continuity is not the absence of change, but the capacity of a research culture to preserve its deepest competencies while learning to operate in a transformed world.

2. Organic Chemistry, Polymers, Catalysis, and Materials

The chemical sciences of the Czech Academy of Sciences acquired their modern institutional form through a set of fields that were both intellectually deep and unusually close to practical transformation: organic chemistry, polymer science, catalysis, and materials research. These fields were not marginal applications of chemistry but central arenas in which the Academy demonstrated what a public research institution could do with matter at the molecular and supramolecular level. Organic chemistry gave Czech science the capacity to design, synthesise, and interpret complex molecules, including compounds with biological activity. Polymer science extended chemistry into macromolecular systems, soft matter, biomedical materials, and technological artefacts. Catalysis connected molecular understanding with energy, environmental protection, industrial processes, and sustainability. Materials research joined chemistry with physics, biology, engineering, and nanoscience, turning the study of substances into the deliberate creation of functional systems. Together, these fields made the Academy's chemistry one of its most visible bridges between fundamental science and the changing needs of society (*Akademie věd České republiky, n.d.*).

The institutional ecology of Academy chemistry is especially important here. Organic chemistry and biochemistry were concentrated most visibly in the Institute of Organic Chemistry and Biochemistry, macromolecular chemistry in the Institute of Macromolecular Chemistry, physical chemistry and catalytic research in the J. Heyrovský Institute of Physical Chemistry, chemical engineering and catalytic process science in the Institute of Chemical Process Fundamentals, and inorganic and materials chemistry in the Institute of Inorganic Chemistry. This distribution did not divide chemistry into isolated compartments. On the contrary, it created a network of neighbouring specialisations that could interact around shared questions: how molecules are built, how they react, how they assemble, how they transport charge or energy, how they bind other substances, how they behave in biological environments, and how they may be converted into useful materials. The Academy's strength in this area came from precisely this combination of specialisation and permeability. Each institute had its own tradition, but the strongest research questions often crossed institutional boundaries.

Organic chemistry occupied a privileged place in this constellation because it deals with the architecture of molecules. In the Academy context, organic chemistry was never merely a catalogue of reactions or a service discipline for other sciences. It was a mode of thinking about structure, transformation, stereochemistry, function, and biological relevance. The Institute of Organic Chemistry and Biochemistry developed its research profile at the interface of organic chemistry, biochemistry, medicinal chemistry, natural products chemistry, material-oriented chemistry, theoretical chemistry, analytical chemistry, molecular biology, and chemical biology (*Institute of Organic Chemistry and Biochemistry, n.d.*). Such breadth was not accidental. It reflected the fact that modern organic chemistry increasingly lives between the molecule and the living system, between synthetic design and biological function, between laboratory creativity and potential therapeutic use.

The tradition associated with František Šorm gave this organic-chemical culture a strong institutional foundation. Šorm's school had already linked organic synthesis with natural products and biologically active compounds, and this orientation helped the Institute of Organic Chemistry and Biochemistry move naturally towards biochemical and medicinal questions. In the post-war and socialist periods, this gave Czech chemistry a distinctive identity: it was rigorous in synthesis, attentive to structure, and open to biology. After 1989, this identity proved especially valuable because international chemistry increasingly rewarded research that could move across the boundaries of chemistry, biology, and medicine. The Academy's organic chemistry therefore did not have to reinvent itself completely. It had to modernise, internationalise, and reframe capacities that had already been cultivated over several generations.

The work of Antonín Holý became the most powerful modern example of this tradition. His research on modified nucleosides and nucleotides, particularly acyclic nucleoside phosphonates, showed how basic synthetic and medicinal chemistry could produce compounds of global medical significance. The story of tenofovir is especially revealing. Tenofovir was first synthesised by Holý, and its anti-HIV activity was later recognised through collaboration with Erik De Clercq and further development by Gilead Sciences and other partners (*Institute of Organic Chemistry and Biochemistry, n.d.*; *Gilead Sciences, 2011*). The institutional lesson is not simply that an Academy scientist contributed to important antiviral drugs. It is that a long-term research environment in organic chemistry made possible

discoveries whose practical significance could not be fully predicted at the moment of synthesis. This is one of the strongest arguments for the Academy's public research model.

Holý's work also changed the economic and symbolic position of chemistry within the Czech Academy. Successful compounds related to antiviral treatment created international visibility, technology-transfer experience, and resources that helped strengthen the Institute of Organic Chemistry and Biochemistry. The partnership with Gilead Sciences, including the establishment of the Gilead Sciences Research Centre at IOCB Prague, became a landmark in the relationship between Czech public research and global pharmaceutical development (*Gilead Sciences, 2006*; *Institute of Organic Chemistry and Biochemistry, n.d.*). This relationship should not be understood as the simple commercialisation of academic chemistry. Rather, it showed how a research institute could retain its identity as a basic-science institution while also participating in the long chain through which molecules become medicines. The Academy's chemistry thus entered a new phase in which discovery, licensing, international partnership, and institutional reinvestment became part of its history.

The organic chemistry of the Academy also extended beyond medicinal chemistry narrowly understood. Material-oriented organic chemistry, supramolecular chemistry, chemical biology, molecular recognition, fluorescence probes, bioactive molecules, and synthetic methodology all belonged to the broader landscape. Organic chemists became builders of molecular tools: compounds that could report on biological processes, alter cellular pathways, bind selectively to targets, organise into functional assemblies, or serve as precursors for new materials. This development reflected a global shift in chemistry from the preparation of substances as isolated products to the design of molecules as active participants in complex systems. In the Academy, this shift strengthened the links between organic chemistry and biochemistry, between chemical synthesis and imaging, between molecular design and materials science. It also helped move Czech chemistry from a nationally respected tradition to a more visibly international research culture.

The Institute of Organic Chemistry and Biochemistry became an especially clear example of how post-socialist scientific renewal could build on inherited strengths while changing institutional scale. Its contemporary identity as a leading research institution under the Czech Academy rests on research at the interface of chemical and biological sciences, but also on an organisational culture that supports group leaders, doctoral training, technology transfer, and international recruitment. The opening of IOCB Boston in 2024, the first overseas branch of a Czech Academy institute, symbolised this outward movement of Czech chemical science towards one of the world's central biomedical hubs (*Akademie věd České republiky, 2024*). Although this belongs partly to the later story of innovation and globalisation, it also reveals something about organic chemistry itself. A field once rooted in Czechoslovak laboratory schools had become capable of institutional presence in the global geography of drug discovery.

Polymer science formed a second major pillar of Academy chemistry. The Institute of Macromolecular Chemistry, founded by Otto Wichterle, gave Czech macromolecular research a durable institutional home and linked it to one of the country's most famous scientific-technological achievements: the soft contact lens. Yet the importance of polymers in the Academy cannot be reduced to this single invention, however significant it was. Polymer science opened a vast field between small-molecule chemistry and materials engineering. It asked how long chains, networks, gels, membranes, elastomers, conducting systems, and

biomacromolecular assemblies acquire properties that cannot be predicted simply by knowing the monomer. This made macromolecular chemistry both chemically specific and physically rich. It required synthesis, characterisation, theory, processing, morphology, rheology, and application to be considered together.

The Institute of Macromolecular Chemistry's contemporary profile shows this breadth. It focuses on synthetic polymers and benefits from the concentration of diverse polymer research under one institutional roof, with projects ranging from biomacromolecular systems for medical purposes to procedures for recycling and eliminating plastic waste (*Institute of Macromolecular Chemistry, n.d.*). This range is historically significant because it connects the older prestige of Wichterle's biomedical polymer work with contemporary problems of sustainability, circular economy, and polymer waste. The same field that once helped produce soft biomedical materials now confronts the environmental consequences of polymer civilisation. The Academy's polymer research therefore moves between promise and responsibility. It designs new materials, but it also studies how existing materials can be recycled, degraded, reused, or made safer.

Polymer chemistry also altered the relationship between chemistry and the human body. Hydrogels, biocompatible polymers, drug-delivery systems, tissue-contact materials, and responsive macromolecular structures showed that materials could be designed not only for mechanical or industrial purposes but for intimate biological environments. This was a profound change in the cultural meaning of chemistry. Matter was no longer only something manufactured outside the body; it could become a carefully designed interface with living tissue. The Academy's macromolecular chemistry was well suited to such work because it combined synthetic competence with physical characterisation and biomedical awareness. This helped place Czech polymer research within international debates on biomaterials, nanomedicine, soft matter, and molecular therapeutics.

At the same time, polymer science remained deeply connected to technological materials. Conducting polymers, polymer blends, membranes, coatings, self-organised block copolymers, electrolytes, and materials for energy storage placed macromolecular chemistry in contact with electronics, energy, photonics, and environmental technology. Research on conducting polymer materials for supercapacitor applications, for example, illustrates how polymer morphology, surface area, mechanical properties, and electrochemical behaviour may be brought together in one research problem (*Institute of Macromolecular Chemistry, n.d.*). Such work shows that polymers are not passive plastics in the everyday sense. They can be active materials, capable of transporting charge, storing energy, responding to stimuli, or forming structured environments for other chemical processes. In this sense, macromolecular chemistry became a central route through which the Academy entered advanced materials science.

Catalysis represented a third pillar and perhaps the most conceptually strategic link between chemistry and the modern world. A catalyst changes the path of a chemical reaction without being consumed in the ordinary stoichiometric sense. This simple definition hides enormous complexity. Catalysis involves surfaces, active sites, intermediates, reaction mechanisms, kinetics, thermodynamics, diffusion, electronic structure, reactor design, and often uncertain relations between laboratory performance and industrial operation. In the Academy, catalytic research developed in both physical chemistry and chemical process fundamentals. The J. Heyrovský Institute of Physical Chemistry approached catalysis through molecular-level

understanding, electrochemistry, nanocatalysis, photocatalysis, surface science, and materials. The Institute of Chemical Process Fundamentals linked catalysis to reaction engineering, catalyst development, catalytic reactors, microstructure characterisation, and chemical production (*J. Heyrovský Institute of Physical Chemistry, n.d.*; *Institute of Chemical Process Fundamentals, n.d.*).

This dual location of catalysis was a strength. At the level of physical chemistry, the central question is often why a catalyst works: which surface sites are active, how charge is transferred, how intermediates form, how light or electric potential changes reactivity, and how nanoscale structure influences performance. At the level of chemical engineering, the question becomes how catalytic reactions can be made reliable, selective, scalable, and environmentally acceptable. The Academy's institutional structure allowed both questions to be asked. Catalysis could remain intellectually fundamental while also being connected to responsible chemical production, environmental protection, and industrial relevance. This is precisely the kind of balance that public research institutions are meant to sustain.

The J. Heyrovský Institute's contemporary orientation towards molecules, materials, and processes reflects this catalytic role. Its research includes areas such as electrochemistry at the nanoscale, nanocatalysis, low-dimensional systems, computational chemistry, and materials related to energy conversion and storage (*J. Heyrovský Institute of Physical Chemistry, n.d.*). Catalytic and electrocatalytic research became especially important in the context of energy transition. Processes such as water splitting, hydrogen production, carbon dioxide conversion, oxygen reduction, fuel synthesis, pollutant degradation, and energy storage all depend on advances in catalytic materials and mechanistic understanding. Academy chemists therefore entered debates that were not only scientific but also civilisational. The question of catalysis became linked to how societies might move beyond fossil carbon while maintaining chemical production, mobility, agriculture, and energy security.

The importance of catalysis for environmental protection is equally clear. Heterogeneous photocatalysis, catalytic degradation of pollutants, catalytic conversion of waste streams, and nanostructured materials for remediation connect chemical research to the public interest. NanoEnviCz and related research infrastructures and projects illustrate how nanomaterials, heterogeneous catalysis, photocatalysis, sensing, pollutant monitoring, and environmental technologies could be integrated within Academy-related research (*J. Heyrovský Institute of Physical Chemistry, n.d.*). This development shows how catalysis shifted from a classical industrial topic to a broader field of sustainable chemistry. It also demonstrates that environmental science in the Academy cannot be separated from chemistry. The protection of air, water, soil, and energy systems often begins with molecular transformation.

The Institute of Chemical Process Fundamentals contributed a complementary process perspective. Its Department of Catalysis and Reaction Engineering traditionally undertakes research in heterogeneous catalysis engineering, including catalyst development, catalytic reactor design, phenomenological kinetics, and catalyst microstructure characterisation (*Institute of Chemical Process Fundamentals, n.d.*). This field is vital because many catalytic discoveries fail when they move from elegant laboratory conditions to realistic process environments. Reactors impose constraints: heat transfer, mass transfer, deactivation, pressure, residence time, selectivity, safety, and scale. The Academy's process chemistry therefore served as a bridge between molecular insight and technological realism. It helped

ensure that catalysis remained connected not only to what is chemically possible, but also to what can be performed, controlled, measured, and potentially scaled.

Materials research was the 4th major pillar and the field in which all the previous domains converged. Modern materials science is not simply chemistry, physics, or engineering, but a structured conversation among them. Organic molecules can become functional materials; polymers can become biomedical interfaces or electronic systems; catalysts are often materials with controlled surfaces; inorganic compounds can become porous frameworks, nanostructures, membranes, or sensors; analytical methods make materials visible and comparable. The Czech Academy's Section of Chemical Sciences explicitly places inorganic chemistry, physical chemistry, organic chemistry, macromolecular chemistry, analytical chemistry, and chemical process fundamentals within one institutional landscape (*Akademie věd České republiky, n.d.*). This arrangement made materials research a natural cross-cutting field.

Inorganic chemistry contributed especially through the preparation and characterisation of new compounds and materials. Areas such as coordination compounds, boranes, zeolites, metal oxides, layered materials, porous materials, and metal-organic frameworks linked molecular design to solid-state function. Metal-organic frameworks are a good example because they combine organic linkers with metal centres to create porous crystalline structures with possible applications in gas storage, separation, heterogeneous catalysis, sensing, and drug delivery (*Demel, n.d.*). Such materials blur older boundaries. They are inorganic and organic, molecular and solid, structural and functional. Their development reflects the broader movement of chemistry towards designable architectures, where the aim is not only to discover substances but to build matter with targeted behaviour.

The AMULET project, led by the J. Heyrovský Institute of Physical Chemistry, offers a useful example of how materials research has become a multi-institutional Academy concern. It focuses on advanced multiscale materials for key enabling technologies, connecting nanomaterials, biological interactions, electrochemical and optical sensors, electro-photochemical catalysis, pollutant removal, and energy conversion and storage (*J. Heyrovský Institute of Physical Chemistry, 2023*). The project involves several Academy institutes and universities, including the Institute of Organic Chemistry and Biochemistry, the Institute of Photonics and Electronics, the Institute of Physics, the Nuclear Physics Institute, Charles University, and the University of Chemistry and Technology in Prague. This is important because it shows that materials science is no longer a single-institute speciality. It has become an organising framework through which chemistry, physics, nanoscience, instrumentation, and biomedical research can collaborate.

Analytical chemistry gave these fields the methods needed to know what had actually been made. The Institute of Analytical Chemistry developed theoretical background, applications, and instrumentation of separation and spectroscopic methods; its technologies include microfluidics and nanomaterials, while its separation research uses electric fields, sorption, fluid flow, force fields, chemical reactions, and combinations of these driving forces (*Institute of Analytical Chemistry, n.d.*). In the context of organic chemistry, polymers, catalysis, and materials, analytical chemistry is not auxiliary. It is epistemologically central. A new molecule, polymer, catalyst, or material becomes scientifically meaningful only when its composition, structure, purity, morphology, dynamics, and behaviour can be measured. The Academy's analytical capacities therefore helped turn chemical imagination into reliable knowledge.

The growth of materials research also increased the importance of computation and modelling. Catalytic mechanisms, polymer dynamics, molecular recognition, electronic structure, adsorption, energy barriers, and materials stability often require theoretical interpretation alongside experiment. The Academy's chemical institutes, especially the J. Heyrovský Institute, maintained strong traditions in theoretical and computational chemistry, which helped connect chemical intuition with quantitative models. This is historically significant because it shows that modern chemistry is no longer divided neatly between the "wet laboratory" and abstract theory. It is increasingly a field of integrated workflows: synthesis, measurement, modelling, prediction, and redesign. The Academy's institutional scale allowed these workflows to be cultivated over long periods.

The post-socialist transformation of Czech chemistry gave these fields new institutional conditions. Under the Czechoslovak Academy, chemistry had been supported by state interest in industry, medicine, and technology, but it was also shaped by central planning, limited access to Western equipment, political constraints on travel, and uneven contact with global research. After 1989 and especially after the creation of the Czech Academy in 1993, chemical institutes had to adapt to grant competition, international evaluation, European projects, new intellectual property regimes, and more open cooperation with universities and industry. Organic chemistry, polymers, catalysis, and materials were particularly well suited to this transformation because their international languages were already strong and their practical relevance was visible. They could demonstrate excellence through publications, patents, licences, collaborations, and technological partnerships.

The relation between fundamental research and application remained delicate. In organic chemistry, a molecule synthesised for conceptual reasons may later become a therapeutic candidate. In polymer science, a material designed to test a physical principle may later become useful in medicine or energy storage. In catalysis, mechanistic insight may eventually produce cleaner industrial processes. In materials research, a new structure may first be valuable because it reveals a principle of assembly, not because it immediately enters a product. The Academy's role was to preserve this uncertainty as a productive space. It did not have to force every project into immediate commercial usefulness, but it also did not isolate chemistry from practical consequences. This balance became one of the defining features of the Academy's chemical sciences.

These fields also shaped the Academy's relations with industry. Chemistry naturally produces substances, methods, materials, processes, and intellectual property that may attract industrial partners. The IOCB–Gilead relationship is the most famous case, but it belongs to a broader pattern in which Academy chemistry interacts with pharmaceuticals, biotechnology, polymers, environmental technologies, analytical instrumentation, catalysis, and materials processing. Such cooperation is valuable only when the Academy retains strong internal science. Companies need public research institutions not because they duplicate industrial laboratories, but because they sustain deep expertise and exploratory work that the market alone may underfund. The Academy's chemistry therefore contributed to innovation precisely by remaining scientifically ambitious.

The educational role of these chemical fields was also substantial. Academy institutes trained doctoral students, hosted postdoctoral researchers, cooperated with universities, and offered laboratory environments that complemented formal teaching. Organic synthesis, polymer characterisation, catalytic testing, spectroscopic measurement, microfluidic analysis, and

materials preparation cannot be learned adequately through theory alone. They require apprenticeship in laboratories, exposure to failures, familiarity with instruments, and participation in research groups. Through this training function, the Academy helped reproduce the national chemical community. Its institutes were not only repositories of knowledge but also schools of scientific practice.

The cultural significance of Academy chemistry lies in its ability to make the transformation of matter visible as a public achievement. Heyrovský's polarography, Wichterle's contact lenses, Holý's antivirals, polymer biomaterials, catalytic energy systems, and nanostructured materials all show chemistry as a field where invisible molecular arrangements can enter public life. This gave chemistry a particular narrative power within the history of the Academy. It could demonstrate that fundamental research matters not only through abstract prestige but through medicines, materials, instruments, cleaner processes, and technological possibilities. At the same time, its most important achievements depended on long-term basic science. The public success of chemistry therefore reinforced, rather than weakened, the argument for autonomous research.

Organic chemistry, polymers, catalysis, and materials also show how the Academy's chemical institutes moved from national traditions to global scientific conversations. Their work touched antiviral therapy, sustainable energy, circular polymer economy, green catalysis, nanomaterials, biomedical interfaces, environmental monitoring, and advanced analytical methods. These are not narrowly Czech problems, but the Academy approached them through Czech institutional traditions and research capacities. This combination gave the fields their historical specificity. Czech Academy chemistry became international not by abandoning its past, but by translating inherited schools into contemporary research questions. The result was a modern chemical science that remained institutionally rooted while scientifically open.

Thus, organic chemistry, polymer science, catalysis, and materials research formed the dynamic core of the Academy's chemical sciences. They connected molecular design with biological function, macromolecular structure with biomedical and environmental responsibility, catalytic mechanisms with energy and industrial transformation, and materials architecture with the technological challenges of the 21st century. Their history shows that Academy chemistry was never only a continuation of Czechoslovak laboratory schools, nor merely an instrument of innovation policy. It was a living research culture in which fundamental curiosity, experimental discipline, institutional continuity, and practical consequence repeatedly met. Through these fields, the Czech Academy of Sciences became a national custodian of chemical expertise and an international participant in the effort to understand, design, and responsibly use matter.

3. Chemistry between Fundamental Science and Innovation

Chemistry within the Czech Academy of Sciences has always occupied a position between two intellectual worlds. On the one hand, it belongs to the sphere of fundamental knowledge, where the aim is to understand molecular structure, reactivity, bonding, phase behaviour, catalysis, macromolecular organisation, and the physical principles of chemical change. On the other hand, chemistry is one of the sciences most naturally drawn towards application because its objects are substances, materials, processes, drugs, surfaces, analytical methods, and technologies that can enter public life directly. This dual position makes

chemistry especially important for understanding the modern Academy's institutional identity. It shows that basic research and innovation are not two separate stages arranged in a mechanical sequence. They are often intertwined from the beginning, although their rhythms, risks, and languages differ. The Czech Academy's chemical institutes demonstrate this interdependence with unusual clarity: the same research culture that investigates molecules for their own scientific interest may later produce antivirals, biomaterials, catalysts, separation methods, environmental technologies, or intellectual property of global value (*Akademie věd České republiky, n.d.*; *Strategy AV21, n.d.*).

This position between fundamental science and innovation was not created only after 1989. It has deeper roots in the history of Czechoslovak chemistry, where university traditions, industrial chemistry, pharmaceutical research, polymer science, electrochemistry, and chemical engineering were never fully isolated from one another. Under the Czechoslovak Academy of Sciences, chemistry was supported partly because it could serve industrial modernisation, agriculture, energy, medicine, and strategic technologies. Yet the best Academy chemistry did not simply become an auxiliary of production. It retained a strong commitment to mechanisms, molecular design, structure–property relations, and methodological originality. The post-socialist Academy inherited precisely this ambivalent but productive tradition. Its task was to protect the autonomy of chemical research while creating new, more transparent, internationally oriented, and legally sophisticated pathways from laboratory discovery to social use.

The contemporary structure of the Academy's chemical sciences reflects this dual mission. The Section of Chemical Sciences includes the Institute of Analytical Chemistry, the Institute of Inorganic Chemistry, the Institute of Chemical Process Fundamentals, the J. Heyrovský Institute of Physical Chemistry, the Institute of Macromolecular Chemistry, and the Institute of Organic Chemistry and Biochemistry. The Academy's own description of this section links theoretical and quantum chemistry with electrochemistry and catalysis, inorganic compounds and materials, organic chemistry and biochemistry, anti-viral medicaments, new polymers for biomedicine, separation techniques, spectral methods, thermodynamics, phase behaviour, reacting systems, and modern separation methods (*Akademie věd České republiky, n.d.*). This list is more than an administrative catalogue. It reveals a research landscape in which fundamental explanation and practical orientation are present within the same institutional vocabulary. Chemistry in the Academy is therefore not divided into "pure" and "applied" camps; rather, it is organised around fields in which the pure and the applied continually reshape one another.

The relation between chemistry and innovation is particularly visible in medicinal chemistry. The Institute of Organic Chemistry and Biochemistry represents the Academy's most internationally recognised example of how fundamental organic and biochemical research can become part of global therapeutic development. Its mission is rooted in basic research at the interface of chemistry and biology, including chemical biology, medicinal chemistry, organic and materials chemistry, natural substances, biochemistry, molecular biology, physical chemistry, theoretical chemistry, and analytical chemistry (*Institute of Organic Chemistry and Biochemistry, n.d.*). This breadth is important because drug discovery rarely emerges from one discipline alone. It requires molecular synthesis, biological testing, mechanistic understanding, pharmacological imagination, intellectual property protection, and collaboration with partners capable of development. The Academy's role is not to replace the

pharmaceutical industry, but to create the conditions in which original molecular ideas can arise before commercial logic fully knows what to ask for.

Antonín Holý's work remains the most powerful example of this logic. His research on nucleotide analogues was fundamentally chemical, rooted in synthetic design and the exploration of biologically active compounds. Yet compounds developed from this line of research, including cidofovir, tenofovir, and adefovir, later became part of medicines used against serious viral diseases, especially HIV/AIDS and hepatitis B (*Akademie věd České republiky, 2023*; *Institute of Organic Chemistry and Biochemistry, n.d.*). The importance of this case is not simply that it produced successful drugs. It shows the long and uncertain path by which basic molecular research may acquire human meaning. A molecule synthesised within an academic research programme becomes medically useful only through testing, development, modification, regulatory processes, production, and international partnership. The Academy's contribution lies at the beginning of this chain, where scientific creativity is most necessary and commercial certainty is weakest.

The partnership between IOCB Prague and Gilead Sciences transformed this scientific achievement into a durable institutional model. The collaboration began in the 1990s, when Gilead licensed several nucleotide analogue compounds discovered by Holý and his colleagues. In 2006, the Gilead Sciences Research Centre was established at IOCB Prague, and the partnership was later renewed, including a further extension announced in 2023 to support projects in virology, inflammation, and oncology (*Akademie věd České republiky, 2023*; *Gilead Sciences, 2006*; *Gilead Sciences, 2011*). This model is historically important because it created a bridge between Czech public research and global biopharmaceutical development without turning the Academy institute into a company laboratory. IOCB remained an academic institute, but it acquired a sophisticated innovation culture: licensing, translational collaboration, reinvestment, postdoctoral support, and strategic partnership. In this way, chemistry became one of the fields through which the Academy learned how to transform scientific success into institutional capacity.

Technology transfer at IOCB was professionalised through IOCB Tech. The institute decided in 2007 to establish its own technology transfer office; IOCB TTO was founded in 2009, began operations in 2010, and was renamed IOCB Tech in 2017 (*Institute of Organic Chemistry and Biochemistry, n.d.*). Its tasks include identifying commercially promising projects, analysing market potential and patentability, protecting intellectual property, supporting project development, finding commercial partners, and negotiating licensing agreements. This institutional development matters because it shows that innovation cannot be left to accidental contacts between individual scientists and companies. It requires professional expertise in law, business, patent strategy, market assessment, and project management. The creation of IOCB Tech therefore marked a new stage in the Academy's chemical history: the emergence of specialised structures designed to translate research results while preserving the institute's basic-science mission.

The significance of IOCB Tech also lies in its broader ecosystem. The development of i&i Prague, early-stage funding initiatives, and later translational facilities such as PharmTheon indicated that the institute's innovation model expanded beyond individual licensing cases (*Institute of Organic Chemistry and Biochemistry, n.d.*). This ecosystem is not merely administrative decoration around science. It changes how researchers imagine the possible future of their discoveries. A chemist can remain focused on molecules and mechanisms while

knowing that a professional structure exists to evaluate patentability, identify partners, and support early translation. Such an arrangement reduces the danger that promising academic discoveries will remain unused because scientists lack commercial experience. It also reduces the opposite danger: that researchers will prematurely commercialise weak ideas without proper scientific grounding.

At the level of the whole Academy, technology transfer is supported by CeTTAV, the Technology Transfer Centre of the Czech Academy of Sciences. CeTTAV provides guidance to Academy institutes on patents, inventions, prototypes, testing, commercialisation staff, investors, and spin-off companies (*Akademie věd České republiky, 2022*). The existence of such a centre shows that the Academy has recognised knowledge and technology transfer as a strategic task. Yet its role also reveals a delicate institutional balance. The Academy must help researchers apply their work, but it must not convert every research question into a business proposal. Technology transfer is most valuable when it follows strong science and helps it reach society; it becomes harmful when it pressures scientists to overpromise utility. In chemistry, this distinction is especially important because the path from molecular discovery to product is long, expensive, and uncertain.

Strategy AV21 gives this balance a broader public framework. Its motto, "Top research in the public interest", places the Academy's research within social challenges while preserving the importance of excellence (*Strategy AV21, n.d.*). For chemistry, this is a particularly suitable formulation. Public interest does not mean that every chemical project must immediately solve a visible social problem. Rather, it means that chemical knowledge, methods, and infrastructures should be available for problems that society cannot solve without science: disease, energy transition, food security, environmental pollution, materials scarcity, waste, climate adaptation, and technological resilience. Strategy AV21 therefore helps articulate why fundamental chemistry belongs in a public academy. It is not justified only by historical prestige or internal disciplinary curiosity, but by its capacity to generate knowledge that may become socially decisive.

The connection between chemistry and public interest appears strongly in antiviral and medicinal research. The IOCB–Gilead case demonstrated how basic chemical research could affect global health, but it also revealed the limits of academic control over later stages of drug development. Once a compound enters industrial and clinical pathways, questions of access, price, regulation, production, and global distribution become central. These questions do not cancel the scientific achievement, but they remind us that innovation is not identical with public benefit unless institutional and social systems carry it further. The Academy's responsibility lies in the scientific and early translational stages, where it can create molecules, methods, and knowledge. The broader public impact depends on partners, states, health systems, and international policies. This makes chemistry an especially clear example of how science enters society through complex chains rather than direct linear transfer.

Polymer science offers another model of chemistry between fundamental research and innovation. The Institute of Macromolecular Chemistry, founded by Otto Wichterle, inherited one of the most famous examples of Czech chemical innovation: soft contact lenses. Yet its contemporary importance extends far beyond that achievement. Modern polymer research deals with synthetic polymers, biomacromolecular systems, biomedical materials, responsive systems, membranes, conducting polymers, drug-delivery carriers, recycling, and plastic-waste problems (*Institute of Macromolecular Chemistry, n.d.*). These topics show how the

same field can serve human health, materials technology, environmental responsibility, and fundamental macromolecular understanding. Polymer science is therefore innovation-oriented by nature, but its innovations depend on deep knowledge of chain structure, morphology, phase behaviour, mechanics, swelling, degradation, and molecular architecture.

The Academy's polymer research also demonstrates that innovation can take the form of responsibility, not only invention. The 20th century celebrated polymers as symbols of modernity: flexible, cheap, durable, manufacturable, and adaptable. The 21st century has had to confront the environmental consequences of that same durability. Research on polymer recycling, degradability, separation, and waste reduction belongs to a different innovation culture from the heroic invention of a single successful product. It is slower, more systemic, and often less visible to the public. Yet it may be equally important. The Academy's role is to study polymers not only as materials to be created, but also as materials to be managed across their life cycle. In this sense, chemistry becomes part of environmental governance.

Catalysis provides another powerful example of the relation between fundamental science and innovation. A catalyst is not merely a convenient technical tool; it is a molecular or material system that reshapes chemical possibility. Understanding catalysis requires physical chemistry, surface science, electronic structure, reaction kinetics, thermodynamics, spectroscopy, modelling, and often engineering. At the J. Heyrovský Institute of Physical Chemistry, catalytic and electrocatalytic research connects electrochemistry, nanomaterials, energy conversion, and chemical physics. At the Institute of Chemical Process Fundamentals, catalysis is linked with reaction engineering, reactor design, catalyst microstructure, kinetics, and chemical process science (*Institute of Chemical Process Fundamentals, n.d.*; *J. Heyrovský Institute of Physical Chemistry, n.d.*). This dual institutional location reflects the nature of catalysis itself: it is both a fundamental mechanism and a practical pathway to cleaner and more efficient chemical transformation.

The innovation potential of catalysis is especially clear in the context of energy and sustainability. Hydrogen production, carbon dioxide conversion, pollutant degradation, fuel cells, batteries, ammonia synthesis, selective oxidation, biomass conversion, and chemical recycling all depend on catalytic understanding. However, the route from catalytic discovery to usable technology is rarely direct. A catalyst that works in a small laboratory test may fail under realistic operating conditions because of deactivation, poisoning, mass-transfer limitations, thermal instability, or cost. The Academy's role is to study these problems without reducing them to engineering routine. It can investigate mechanism and performance together, thereby creating knowledge that is both intellectually robust and technologically meaningful. Catalysis thus shows why fundamental chemistry is indispensable for credible innovation in energy and environmental technologies.

Chemical engineering within the Academy adds another dimension to this picture. The Institute of Chemical Process Fundamentals deals with thermodynamics, phase behaviour, multiphase reacting systems, separation methods, catalysis, aerosol processes, environmental engineering, and process intensification (*Akademie věd České republiky, n.d.*; *Institute of Chemical Process Fundamentals, n.d.*). Such research is close to practical needs, but it remains scientifically demanding because real chemical processes involve complexity: mixtures, phases, interfaces, turbulent flows, heat transfer, mass transfer, competing reactions, and scale effects. Innovation here does not usually appear as a single molecule or patent. It appears as a better process, a cleaner separation, a more efficient reactor, a more

accurate model, or a safer technological route. The Academy's contribution is to provide the fundamental understanding that makes such improvements possible.

Analytical chemistry shows how innovation may also be methodological. The Institute of Analytical Chemistry develops methods and instrumentation for separation, spectral analysis, microfluidics, nanomaterials, bioanalysis, environmental monitoring, and health-related research (*Institute of Analytical Chemistry, n.d.*). Analytical methods are often invisible to the wider public because they do not always appear as final products. Yet they are indispensable to modern science and society. Without analytical chemistry, one cannot reliably detect pollutants, identify metabolites, characterise materials, monitor industrial processes, verify drug purity, study biological samples, or compare environmental conditions. Innovation in analysis therefore expands the capacity of other fields to know and act. In this sense, analytical chemistry is one of the quiet infrastructures of modern public knowledge.

The Academy's inorganic and materials chemistry further broadens the meaning of innovation. New inorganic compounds, boranes, coordination systems, porous materials, zeolites, metal oxides, nanomaterials, and hybrid organic–inorganic structures can be important for catalysis, sensing, separation, energy storage, drug delivery, photochemistry, and environmental applications. Such materials often emerge from fundamental questions about bonding, structure, reactivity, and stability. Their practical value may become clear only later, when a material's porosity, surface chemistry, optical properties, or electrochemical behaviour is linked to a specific use. This illustrates again the non-linear relationship between discovery and application. Chemistry's innovation capacity is often strongest when researchers are free to explore structures whose future utility is not yet obvious.

Materials research also forces chemistry to collaborate with physics, biology, engineering, and computation. The Academy's work on nanomaterials, electrochemical sensors, catalysts, biomedical materials, and energy-related systems cannot be contained within a single discipline. The AMULET project on advanced multiscale materials, led by the J. Heyrovský Institute of Physical Chemistry and involving several Academy and university partners, is a good example of this interdisciplinary direction (*J. Heyrovský Institute of Physical Chemistry, 2023*). Such projects show that innovation increasingly occurs at interfaces: between molecule and material, material and device, device and biological system, system and environment. The Academy's multi-institute structure is well suited to this type of work because it can bring together specialised expertise without forcing all research into one administrative unit.

The innovation role of chemistry also depends on infrastructures. Laboratories for synthesis, spectroscopy, microscopy, chromatography, mass spectrometry, catalysis testing, polymer characterisation, clean preparation, computational modelling, and biological screening are not simple background conditions. They shape the questions that can be asked and the reliability of the answers. Modern chemistry is increasingly instrument-intensive, and therefore institutional capacity matters. A small research group may have an original idea, but without access to suitable instruments and technical staff, that idea may remain untested. The Academy's chemical institutes provide precisely these conditions of possibility. They maintain laboratories whose value extends beyond individual projects and across generations of researchers.

This infrastructural dimension also explains why public research remains important even in fields attractive to industry. Companies may invest heavily in late-stage development, optimisation, production, and marketable technologies, but they often depend on public

research for exploratory science, risky hypotheses, early-stage methods, and specialised expertise. The Academy's chemical institutes create knowledge before it is obvious where the market lies. They also train people who later move into companies, hospitals, regulatory institutions, and universities. Their contribution to innovation is therefore broader than patents or licences alone. It includes human capital, methods, standards, instruments, interpretative frameworks, and expert communities.

Nevertheless, patents and licences are part of the modern Academy's chemical history. The IOCB case showed how intellectual property can become a mechanism for reinvesting scientific success into research. Licensing income, when governed responsibly, can support new laboratories, fellowships, technology transfer, and risk-taking in early-stage research. This creates a virtuous circle: basic research produces valuable knowledge; successful transfer generates resources; those resources strengthen the conditions for further basic research. The danger, however, is that exceptional success may create unrealistic expectations. Not every field can or should produce a tenofovir-like story. A mature Academy must value both spectacular transfer and slow, less visible research whose impact may be methodological, educational, environmental, or long-term.

The post-1989 period changed the language through which these issues were discussed. Under state socialism, "application" was often framed through planned economy priorities, industrial ministries, and state research tasks. After 1989, innovation came to be discussed through grants, patents, licences, spin-offs, European projects, private partners, intellectual property, and technology transfer offices. This change was not merely terminological. It altered incentives, institutional structures, and professional roles. Chemists now had to navigate a world in which publication, patenting, collaboration, and commercialisation could interact in complicated ways. The Academy's challenge was to create rules and support systems that allowed research to remain open and excellent while also protecting discoveries capable of application.

This challenge also has an ethical dimension. Chemistry can create medicines, diagnostic methods, clean processes, and sustainable materials, but it can also produce substances and technologies with environmental, health, or security risks. The Academy's public mission requires that innovation be judged not only by commercial value but also by safety, responsibility, transparency, and public benefit. In medicinal chemistry, this includes responsible collaboration and attention to health needs. In polymer science, it includes waste, toxicity, and life-cycle consequences. In catalysis and process chemistry, it includes emissions, energy use, and environmental impact. In analytical chemistry, it includes reliable evidence for public decision-making. The Academy's chemical innovation is therefore inseparable from scientific integrity and civic responsibility.

The connection between chemistry and innovation also affects career structures. Young chemists increasingly need to understand not only synthesis, analysis, modelling, and publication, but also collaboration with biologists, physicists, clinicians, engineers, patent specialists, and industrial partners. This does not mean that every chemist must become an entrepreneur. It means that the research environment has become more complex. Academy institutes provide training in this complexity through doctoral supervision, interdisciplinary projects, infrastructure access, and exposure to international networks. The Academy's educational role therefore includes not only the transmission of chemical knowledge but also

the formation of researchers capable of moving between fundamental questions and possible applications.

Internationalisation is central to this movement. The Academy's chemical institutes publish in international journals, participate in European projects, recruit foreign researchers, collaborate with companies and universities abroad, and increasingly situate their work within global challenges. IOCB's branch in Boston symbolises this outward movement in the field of chemical biology and drug discovery (*Akademie věd České republiky, 2024*). The point is not simply national prestige. It shows that Czech Academy chemistry can operate in international innovation ecosystems while remaining institutionally rooted in Prague and in the Czech public research tradition. This is an important form of post-socialist scientific maturity: not emigration of talent alone, but international presence through institutional agency.

At the same time, the Academy must avoid reducing innovation to global competitiveness only. Chemistry matters also for national and regional needs: environmental monitoring in Czech landscapes, materials expertise for domestic industry, analytical support for public institutions, collaboration with hospitals, and education of Czech students. The Academy's innovation role is therefore both global and local. It contributes to international medicine and materials science, but it also strengthens the scientific capacity of Czech society. This double orientation is historically important. Since the 19th century, Czech scientific institutions have carried a national cultural mission. In the 21st century, that mission is no longer defined only by national language or intellectual emancipation, but also by the capacity to provide knowledge for a complex society.

The relationship between fundamental science and innovation in Academy chemistry is therefore best understood as a continuum rather than a pipeline. The pipeline metaphor suggests that basic science enters at one end and products leave at the other. Real chemical innovation is less linear. A practical problem may inspire fundamental research; a fundamental discovery may remain unused for decades; a failed application may produce new theory; a method developed for one field may transform another. The Academy's institutional role is to sustain this non-linearity. It must allow chemists to ask questions without knowing their final use, while also ensuring that usable discoveries are not lost through institutional inertia.

The chemical sciences also demonstrate how innovation can reinforce scientific autonomy rather than threaten it. Successful transfer can provide resources, visibility, confidence, and societal trust. It can show that public investment in basic research produces value that cannot be planned in advance. However, autonomy is reinforced only when transfer supports research rather than dictating it. The Academy's strongest chemical examples show this distinction clearly. Holý's antiviral compounds arose from serious academic chemistry; polymer and catalytic innovations arise from deep structural and mechanistic work; analytical technologies arise from methodological expertise. The lesson is not that chemistry should chase application, but that excellent chemistry creates the possibility of application precisely because it is intellectually serious.

The public narrative of Academy chemistry therefore needs to be carefully balanced. It should celebrate successful drugs, materials, patents, and technologies, but it should also explain the invisible decades of research that made them possible. It should value innovation, but not turn innovation into a narrow market slogan. It should show that chemistry serves society not only when it produces a product, but also when it produces methods, standards, trained people, safety knowledge, environmental evidence, and conceptual understanding. In this respect,

chemistry is one of the best fields through which to explain the Academy's public mission. It makes the benefits of basic research tangible without reducing science to utility.

The modern Academy's chemical institutes thus stand at a historically meaningful crossroads. They carry Czechoslovak scientific traditions, but they operate in a European and global research environment. They pursue fundamental questions, but they also build technology-transfer systems. They create molecules and materials, but they also address health, sustainability, energy, environment, and industrial transformation. They cooperate with companies, but they must preserve public scientific responsibility. This crossroads is not a temporary difficulty. It is the normal condition of advanced chemistry in the 21st century. The Academy's achievement is not that it has escaped this condition, but that it has learned to work within it creatively.

Thus, chemistry in the Czech Academy of Sciences became one of the clearest arenas in which the relation between fundamental science and innovation was negotiated. Organic chemistry, polymer science, catalysis, analytical methods, inorganic materials, and chemical engineering all show that innovation is not external to academic chemistry but grows from its deepest forms of knowledge. At the same time, the Academy's experience demonstrates that useful outcomes depend on institutions: laboratories, research schools, technology-transfer offices, international partnerships, public strategies, intellectual property systems, and ethical responsibility. The chemical sciences therefore reveal a central truth about the modern Academy. Its public value does not lie in choosing between curiosity and usefulness, but in sustaining the research cultures through which curiosity may eventually become medicine, material, method, process, evidence, or public good.

Mathematics, Informatics, and Theoretical Research

1. Mathematical Institutes and Traditions

Mathematics occupies a distinctive position in the history of the Czech Academy of Sciences because it belongs at once to the most abstract sphere of knowledge and to the deepest infrastructure of modern science. It does not require the same visible apparatus as high-energy physics or plasma research, yet its institutional importance is no less profound. Mathematics gives form to physical theory, numerical modelling, computer science, statistics, optimisation, information theory, control, cryptography, data analysis, and many of the analytical languages through which contemporary science understands complex systems. Within the Academy, mathematics therefore developed not merely as a discipline among others, but as a foundational culture of exact reasoning. Its traditions reached back before the Czechoslovak Academy of Sciences, passed through the institutional construction of the socialist period, and were then reworked within the Czech Academy after 1993. The history of mathematical institutes in the Academy is thus a history of continuity, abstraction, institutional restraint, and expanding relevance (*Rákosník & Rozložník, 2021*; *Akademie věd České republiky, n.d.*).

The Academy's contemporary structure places mathematics, physics, and computer science within the same broad research area. This arrangement is not accidental. The Academy

describes this domain as covering not only fundamental physical research but also logic, topology, differential equations and their numerical solutions, statistical methods, neural networks, optimisation, and numerical modelling (*Akademie věd České republiky, n.d.*). Such a description captures the essential institutional character of mathematics in the Czech Academy: it is simultaneously autonomous and relational. It has its own internal problems, styles of proof, schools, and journals, yet it also supplies conceptual and computational instruments to neighbouring fields. Mathematics in the Academy therefore cannot be treated as a purely service discipline, but neither can it be separated from the wider scientific system. It is both a realm of pure thought and a condition of advanced empirical research.

The central institution of this tradition is the Institute of Mathematics of the Czech Academy of Sciences. Its history reaches back to 1947, when it was established as the Institute for Mathematics of the Czech Academy of Sciences and Arts, with Eduard Čech as initiator and first director (*Rákosník & Rozložník, 2021*). This date is important because it places the origins of the Academy's mathematical institute before the formal creation of the Czechoslovak Academy of Sciences in 1952. Mathematics therefore entered the socialist Academy with an already developing institutional identity. The institute was reorganised and incorporated into the Czechoslovak Academy in 1953, became part of the Czech Academy after the dissolution of Czechoslovakia in 1993, and was transformed into a public research institution in 2007 together with other Academy institutes (*Rákosník & Rozložník, 2021*). This genealogy reveals a central feature of Czech mathematical history: the discipline was repeatedly reorganised by political and administrative change, but its intellectual continuity was carried by schools, seminars, publications, and individual authority.

Eduard Čech was the decisive founding figure in this institutional story. He was not only a mathematician of international standing, associated with topology, projective differential geometry, Čech cohomology, and the Stone–Čech compactification, but also an organiser of Czech mathematical life. His pre-war topological seminar created a new form of collective mathematical work in Czechoslovakia, where research ceased to be merely the isolated activity of individual scholars and became the shared labour of a school. The disruption caused by the Nazi closure of Czech universities in 1939 interrupted this development, but did not erase it. After the war, Čech moved to Prague, became professor at Charles University, and played a decisive role in establishing the Mathematical Institute within the Czech Academy of Sciences and Arts and then in the early institutionalisation of mathematics under the Czechoslovak Academy (*Koutník, n.d.*; *Rákosník & Rozložník, 2021*). Through Čech, mathematical tradition and institutional construction became inseparable.

The significance of Čech's role lies not only in the fact that he founded an institute. It lies in the type of institute he helped imagine. Mathematics needed an institutional space different from both a university classroom and an applied technical laboratory. It required seminars, research time, graduate students, a library, journals, international exchange, and a culture of sustained abstraction. Čech understood that mathematical research could not flourish if it was reduced to teaching obligations or scattered among individuals without a common intellectual environment. The creation of the Mathematical Institute therefore represented a specific form of academic modernisation. It gave Czech mathematics a research institution capable of cultivating areas whose value might not be immediately visible to the state or to industry, but whose long-term importance for scientific culture was immense.

The early history of the Institute also shows how Czech mathematics was shaped by the broader European mathematical world. Čech's own work had international connections, including contacts with the Moscow school of topology and the Institute for Advanced Study in Princeton. This international dimension matters because it prevents a narrow national reading of mathematical tradition. Czech mathematics was national in its institutional mission, but international in its intellectual language. The Academy's mathematical institutes inherited this dual character. They helped create a Czech research environment while measuring themselves against universal standards of proof, originality, and communication. Mathematics was therefore one of the clearest fields in which national scientific ambition could be expressed without intellectual provincialism.

The institutionalisation of mathematics under the Czechoslovak Academy after 1953 brought both opportunities and constraints. On the one hand, the Academy offered stable positions, concentrated research capacity, graduate training, journals, and a clear place for mathematics within a state-supported research system. On the other hand, the socialist research order could impose ideological, administrative, and travel restrictions, and it shaped careers through political structures not always aligned with scientific merit. Mathematics was less ideologically exposed than history, sociology, law, or philosophy, but it was not outside politics. International contacts, appointments, access to literature, and participation in conferences could all be affected by the political climate. The discipline's relative abstraction protected it in some ways, but its institutional life still depended on the regime in which it was embedded.

The mathematical tradition of the Academy was shaped by several powerful figures whose work connected pure mathematics, applied analysis, numerical methods, and modern computation. The Institute of Mathematics itself identifies Eduard Čech, Jaroslav Kurzweil, Ivo Babuška, Jindřich Nečas, Miroslav Fiedler, and Vlastimil Pták among the distinguished personalities connected with its strongest traditions (*Rákosník & Rozložník, 2021*). This list is revealing because it includes not only pure topologists and analysts but also mathematicians whose work became foundational for numerical analysis, finite element methods, partial differential equations, graph theory, linear algebra, functional analysis, and computational science. Czech Academy mathematics therefore cannot be stereotyped as isolated pure abstraction. Its historical strength lay precisely in the movement between structural theory and mathematically rigorous approaches to problems arising from mechanics, physics, engineering, and computation.

Jaroslav Kurzweil represents one such line of continuity. His name is attached to the Henstock–Kurzweil integral and to important work in differential equations and stability theory. His career illustrates how Czech mathematical analysis could contribute to foundational questions while remaining close to problems of dynamical systems and mathematical modelling. The significance of the Kurzweil tradition lies in its refusal to divide mathematics too sharply into "pure" and "applied" domains. A new concept of integration may appear at first to belong to the inner logic of analysis, yet it can also influence differential equations, generalised solutions, and the mathematical treatment of systems not easily handled by classical frameworks. In this respect, Kurzweil's work exemplifies the Academy's broader mathematical culture: abstraction was valued not as escape from reality, but as a way of enlarging what could be treated rigorously (*Rákosník & Rozložník, 2021*).

Ivo Babuška represents another essential line: the emergence of computational and applied mathematics as a mathematically exact discipline. His work on the finite element method,

stability, error estimates, and the mathematical foundations of numerical computation placed Czech mathematics within one of the central developments of 20th-century applied analysis. The finite element method became indispensable for engineering, mechanics, physics, materials research, and simulation-based science. Babuška's importance therefore lies not only in his individual achievements but in the transformation of numerical methods into a rigorous mathematical field. The Academy tradition associated with Babuška shows that computation did not weaken mathematical standards; it created new demands for proof, convergence, stability, and reliability (*Rákosník & Rozložník, 2021*).

Jindřich Nečas gave the Academy another major tradition in partial differential equations, variational methods, and the mathematical theory of continuum mechanics. His work on elliptic equations, regularity of generalised solutions, and problems connected with elasticity and fluid mechanics helped shape Czech mathematical analysis in a direction where physical models were treated with great conceptual precision. This was institutionally significant because it linked the Institute of Mathematics with mechanics, thermodynamics, materials, and later numerical modelling. Nečas's legacy also helped create a bridge between the Academy and university mathematics, especially through seminars, students, and mathematical schools associated with Charles University and the broader Prague mathematical environment (*Rákosník & Rozložník, 2021*). Through this tradition, the Academy became a place where the mathematical foundations of physical processes could be explored without reducing them to engineering routine.

Miroslav Fiedler illustrates the Academy's contribution to linear algebra and graph theory. His name became associated with algebraic connectivity, the Fiedler vector, and spectral approaches to graphs. These concepts later acquired importance far beyond their original mathematical context, entering network theory, clustering, image segmentation, distributed systems, and computational analysis. The historical lesson is again non-linear. A result in matrix theory and graph theory may appear at the time as part of internal mathematical development, but later becomes indispensable in computational and data-oriented fields. Fiedler's career therefore shows how Academy mathematics could produce conceptual tools whose broader relevance became clearer only when new technological and scientific environments emerged (*Rákosník & Rozložník, 2021*).

Vlastimil Pták and the functional-analytic tradition added a further dimension. Functional analysis provided a language for operators, topological vector spaces, iterative methods, stability, and abstract structures underlying analysis and computation. Such work is often difficult to explain outside mathematics because its objects are highly abstract. Yet these abstractions may later become crucial for numerical algorithms, optimisation, quantum theory, control, and the theory of equations. Pták's tradition is therefore an example of the Academy's ability to maintain research that may not immediately present itself as publicly useful but forms part of the deep architecture of modern mathematical knowledge. This is one of the reasons why a public research institution is necessary: it can support intellectual work whose value unfolds across long timescales.

The Institute of Mathematics did not preserve these traditions by remaining unchanged. Its contemporary research profile includes mathematical analysis, differential equations, numerical analysis, functional analysis, theory of function spaces, mathematical logic, logical foundations of computer science, complexity theory, combinatorics, set theory, numerical linear algebra, topology, category theory, optimisation and control theory, algebraic and

differential geometry, and mathematical physics (*Rákosník & Rozložník, 2021*). This diversity shows that the institute is both historically rooted and dynamically adaptive. It contains older Czech strengths in topology, analysis, and numerical mathematics, but it also works in fields that have grown with theoretical computer science, mathematical physics, and data-oriented science. The continuity of the institute is therefore not the repetition of old topics, but the maintenance of a research culture capable of absorbing new questions.

The departmental structure described by the Institute reflects this combination of continuity and renewal. Abstract analysis continues older strengths in topology and functional analysis while moving towards descriptive set theory, algebraic topology, category theory, and C*-algebras. Algebra, geometry, and mathematical physics connect representation theory, algebraic geometry, homological algebra, string field theory, gravitation, and the Einstein equations. Evolution differential equations study multi-field processes in continuum mechanics, thermodynamics, fluids, solids, porous media, magnetohydrodynamics, liquid crystals, hysteresis, thermal effects, and phase transitions. Mathematical logic and theoretical computer science address proof complexity, bounded arithmetic, computational complexity, graph theory, set theory, and foundations. Numerical analysis continues traditions in finite element methods, numerical linear algebra, parallel computing, and computational fluid dynamics (*Rákosník & Rozložník, 2021*). This is not a small disciplinary remnant, but a broad mathematical ecosystem.

The Institute's role in mathematical publishing is another key element of institutional tradition. It publishes or supports journals that connect the present Academy to older Czech mathematical culture. The Czechoslovak Mathematical Journal and Mathematica Bohemica continue the tradition of Časopis pro pěstování mathematiky a fysiky, founded in 1872, while Applications of Mathematics specialises in work directed towards applications in science and technology (*Rákosník & Rozložník, 2021*). This publishing function is historically important because mathematical journals are not merely outlets for articles. They are institutions of memory, standards, and international communication. Through them, the Academy participates in the preservation and circulation of Czech mathematical production across generations.

The Institute's library and digital work further strengthen this memory-bearing role. The mathematical library has been described as the largest public mathematical library in the country, and the Czech Digital Mathematics Library was developed to digitise, organise, archive, and provide access to mathematical literature published in the Czech lands (*Rákosník & Rozložník, 2021*). This archival function is especially meaningful in mathematics because older results often remain alive longer than in many experimental sciences. A theorem from the 19th or early 20th century may still matter if it enters a new proof, model, or interpretation. By preserving mathematical literature, the Academy preserves not only historical documents but usable intellectual resources. The digital library also represents a modernisation of tradition: national mathematical memory becomes part of a wider digital and European knowledge environment.

The Institute of Mathematics is not the only Academy institution relevant to mathematical traditions. The Institute of Information Theory and Automation, established in 1959 by merging the Laboratory for Automation and Telemechanics with the Information Theory Department of the Institute of Radio Engineering and Electronics, became a major centre at the interface of mathematics, cybernetics, systems theory, control, information theory, signal processing, and

later artificial intelligence (*Institute of Information Theory and Automation, n.d.*). Its history shows how mathematics entered the Academy not only through pure analysis and topology but also through the language of information, control, and automation. This was especially important in the socialist period, when cybernetics and automation were linked to planning, industry, communications, defence, and the modernisation of technical systems. Yet UTIA's strongest work was not reducible to state planning. It produced internationally recognised results in information channels with memory, algebraic control theory, self-adjusting controllers, and modelling of large-scale gas distribution networks (*Institute of Information Theory and Automation, n.d.*).

UTIA's institutional identity also reveals the durable importance of interdisciplinary mathematics. The institute describes itself as conducting basic and applied research in artificial intelligence, signal and image processing, systems science, and selected parts of applied mathematics and computer science (*Institute of Information Theory and Automation, n.d.*). Its research areas include machine learning, natural language processing, knowledge representation, econometrics, computer vision, texture analysis, image restoration, blind deconvolution, superresolution, video tracking, complex adaptive systems, probability theory, applied statistics, data analysis, calculus of variations, optimisation theory, continuum mechanics, and econometrics (*Institute of Information Theory and Automation, n.d.*). Such a profile shows how the mathematical tradition of the Academy expanded into the computational and data-rich sciences without losing its theoretical core. In UTIA, mathematics is present as probability, optimisation, inference, modelling, control, and algorithmic structure.

The Institute of Computer Science of the Czech Academy of Sciences adds another layer to this institutional landscape. Its official history identifies its origins in 1975 as the main computing centre of the Czechoslovak Academy of Sciences, especially for scientists and numerical mathematicians, and notes its transformation into a scientific institute of the Czechoslovak Academy in 1980 (*Institute of Computer Science, n.d.*). This development is historically significant because it shows how computing first entered the Academy partly as infrastructure and then became a research field in its own right. The path from computing centre to research institute mirrors a broader global transformation: computers ceased to be merely calculating machines for other sciences and became objects of theoretical, methodological, and institutional inquiry. In the Czech Academy, this transformation connected numerical mathematics, algorithms, artificial intelligence, and the practical needs of research institutes.

The relationship between the Institute of Mathematics, UTIA, and the Institute of Computer Science demonstrates that mathematical tradition in the Academy is plural. It includes pure mathematics, applied mathematics, information theory, automation, numerical methods, theoretical computer science, artificial intelligence, and data-oriented modelling. These fields do not share a single method, but they share a concern with structure, inference, proof, optimisation, abstraction, and formalisation. The Academy's institutional arrangement allowed these traditions to develop in neighbouring but distinct spaces. This was important because mathematics and computation require both disciplinary depth and cross-disciplinary mobility. A theorem in logic may influence complexity theory; a numerical method may affect fluid mechanics; an optimisation principle may shape control; a probabilistic model may become central to machine learning.

The post-1989 transformation altered the conditions under which these mathematical institutes operated. They had to adapt to competitive funding, international evaluation, open recruitment, European collaboration, and new expectations of interdisciplinarity and public relevance. For the Institute of Mathematics, the 2007 transformation into a public research institution brought broader autonomy in research and personnel policy under public control (*Rákosník & Rozložník, 2021*). For UTIA, the same legal transformation brought greater autonomy in deciding research priorities and economic behaviour, together with greater responsibility for financial operations (*Institute of Information Theory and Automation, n.d.*). These reforms changed the administrative language of mathematical research, but they did not eliminate its long-term character. The challenge was to modernise governance without forcing mathematics into short-term utility.

The Academy's mathematical institutes also became important training environments. Although Academy institutes are not universities, they cooperate with universities in doctoral education, supervision, lectures, seminars, and research training. The Institute of Mathematics carries out doctoral study programmes in cooperation with universities and provides training for young scientists (*Rákosník & Rozložník, 2021*). UTIA similarly emphasises collaboration with universities at bachelor's, master's, and especially doctoral levels, where students remain affiliated with universities but receive supervision, dissertation topics, research support, and often financial support from the institute (*Institute of Information Theory and Automation, n.d.*). This model is essential for mathematical sciences because advanced research training cannot be separated from seminars, proof cultures, computational projects, and participation in research groups. The Academy thus helps reproduce mathematical elites while remaining distinct from the university system.

Internationalisation was another crucial dimension. The Institute of Mathematics reports a substantial presence of foreign researchers, postdoctoral fellows, international visitors, workshops, conferences, and the Eduard Čech Distinguished Visitor Programme, established in 2016 to attract distinguished mathematicians for extended collaboration (*Rákosník & Rozložník, 2021*). This international openness is especially important in mathematics, where the discipline is universal in language but often fragile in institutional scale. A strong institute in a medium-sized country must avoid isolation by maintaining seminars, visiting programmes, joint projects, and participation in European and global networks. Through such practices, the Academy's mathematical institutes remain connected to the international frontier while preserving Czech institutional continuity.

The Academy's mathematical traditions also have a public and cultural dimension. Mathematics is often less visible to the public than chemistry, astronomy, or medicine because its achievements are abstract and rarely appear as immediate products. Yet mathematical culture contributes to society by forming habits of precision, argument, modelling, and intellectual discipline. Public lectures, open days, digital libraries, popularisation projects, and cooperation with schools help make this culture visible. Čech's own interest in high-school mathematics and mathematical terminology already suggested that mathematical culture was not confined to research specialists alone (*Koutník, n.d.*). The modern Academy continues this wider educational responsibility through outreach and public communication. Such efforts are important because they defend the social legitimacy of abstract science.

The tradition of mathematics in the Czech Academy is therefore best understood as a form of intellectual infrastructure. It is less visible than a laser facility or a tokamak, but it underlies many of the same scientific capacities. Without mathematical analysis, numerical methods, optimisation, probability, logic, and computational theory, advanced physical modelling, data science, artificial intelligence, engineering simulation, systems control, and many areas of environmental and biological research would be much weaker. The Academy's mathematical institutes preserve this infrastructure not only by producing theorems but by maintaining seminars, journals, libraries, software competence, doctoral training, and international communities. They show that an academy's strength cannot be measured only by laboratories and instruments. It must also be measured by the depth of its abstract disciplines.

Thus, the mathematical institutes and traditions of the Czech Academy of Sciences reveal a long continuity from the post-war institutional work of Eduard Čech through the Czechoslovak Academy's schools of topology, analysis, numerical mathematics, control, and information theory to the contemporary world of theoretical computer science, artificial intelligence, data analysis, and mathematical modelling. This continuity was never static. It passed through Nazi occupation, socialist centralisation, normalisation, the Velvet Revolution, Czech statehood, public research reform, and European integration. The Academy preserved mathematics as an autonomous discipline while also enabling it to serve physics, engineering, informatics, biology, economics, and public knowledge. In this sense, mathematics within the Academy is not only a discipline of proofs; it is one of the quiet structures through which Czech science learned to think, model, compute, and remain intellectually connected to the world.

2. Theoretical Modelling, Computation, and Data Science

Theoretical modelling, computation, and data science changed the position of mathematics within the Czech Academy of Sciences by turning abstract reasoning into one of the central working instruments of contemporary research. Mathematics had always provided languages for physics, mechanics, astronomy, economics, and engineering, but the second half of the 20th century and the beginning of the 21st transformed this relationship. Models became more complex, computation became indispensable, and data became one of the primary materials of scientific work. The Academy's mathematical and computational institutes were therefore drawn into a new intellectual regime in which proof, algorithm, simulation, statistical inference, and empirical data increasingly had to work together. This did not abolish older mathematical traditions. On the contrary, it gave them new fields of application and new methodological urgency. Differential equations, optimisation, probability, numerical analysis, logic, control theory, machine learning, and statistical modelling became part of a common infrastructure through which the Academy studied natural, technical, biological, economic, and social systems (*Akademie věd České republiky, n.d.*; *Institute of Mathematics, n.d.*).

The development of theoretical modelling within the Academy cannot be separated from the older Czech traditions of analysis, partial differential equations, numerical mathematics, and mathematical physics. The Institute of Mathematics had long cultivated areas such as differential equations, numerical analysis, functional analysis, mathematical logic, numerical linear algebra, optimisation, control theory, and mathematical physics (*Institute of Mathematics, n.d.*). These fields formed the conceptual foundation for modelling long before "data science" became a common term. A model is not merely a simplified picture of reality; it is a disciplined mathematical construction that identifies variables, relations, constraints,

uncertainties, and possible dynamics. The Academy's modelling culture therefore emerged from a tradition in which mathematical abstraction was combined with attention to physical, mechanical, and computational problems. This tradition made it possible for Czech mathematics to participate in the later rise of simulation-based science.

Theoretical modelling also changed the meaning of experimentation. In older scientific cultures, theory and experiment could often be imagined as separate domains: theory formulated laws, and experiment tested them. In contemporary research, especially in fields studied by the Academy, this separation became less stable. Models can generate hypotheses, guide experiments, reconstruct inaccessible processes, interpret large datasets, and estimate quantities that cannot be measured directly. A climate model, a plasma simulation, a material model, a biological network, or an economic model is not an experiment in the classical laboratory sense, but it functions as a disciplined exploratory environment. The Academy's mathematical institutes became important because they could provide the methods needed to build such environments responsibly. Without mathematical control, computational models risk becoming visually impressive but scientifically unstable.

The numerical solution of differential equations is one of the clearest examples of this transformation. Many processes studied by the natural and technical sciences are described through differential equations: fluid flow, elasticity, heat transfer, electromagnetic fields, chemical reactions, population dynamics, phase transitions, and wave propagation. Yet exact solutions are rare, especially when real geometry, nonlinear behaviour, multiple scales, or boundary conditions are involved. Numerical methods therefore become the bridge between theory and usable knowledge. The Academy's traditions in finite element methods, numerical linear algebra, error estimates, and computational mechanics allowed mathematical theory to enter practical modelling without losing rigour. The work associated with Ivo Babuška and later Czech numerical analysts showed that computation itself requires mathematical proof, not only programming skill (*Rákosník & Rozložník, 2021*).

This insistence on rigour is historically important. Computation can create an illusion of certainty because numbers, images, and simulations appear precise. Yet numerical results can be misleading if algorithms are unstable, meshes are inadequate, convergence is not understood, or uncertainty is ignored. The Academy's mathematical culture helped defend a more mature view: computation is a form of reasoning only when its limits are examined. Numerical analysis, error control, stability theory, and verification are therefore not technical details but epistemological safeguards. They determine whether a simulation can be trusted. This made the Academy's mathematical institutes essential not only for solving equations but for defining standards of reliability in model-based science.

The Institute of Mathematics contributed to this culture through departments concerned with evolution differential equations, constructive methods of mathematical analysis, numerical analysis, optimisation, control theory, mathematical physics, and related areas (*Institute of Mathematics, n.d.*). These fields are not isolated specialisms. They form a methodological continuum from abstract existence theorems to computational algorithms, from functional spaces to finite elements, and from mathematical physics to simulation of continuum processes. In this continuum, the Academy's role was to preserve depth. It could sustain researchers who worked on foundational questions of analysis while also supporting methods that entered mechanics, thermodynamics, materials science, and engineering. The value of

such work often becomes apparent only over time, when a mathematically secure method proves capable of supporting new scientific or technological domains.

The Institute of Computer Science added another institutional layer to this development. Its origins as the main computing centre of the Czechoslovak Academy of Sciences in the 1970s and its later transformation into a scientific institute illustrate the changing status of computation itself (*Institute of Computer Science, n.d.*). At first, computing served other sciences by providing calculation capacity to researchers who needed numerical support. Gradually, however, computer science became an independent research field concerned with algorithms, complexity, artificial intelligence, machine learning, statistical modelling, complex systems, and the theory and application of computing. This transformation is central to the Academy's modern history. It shows how an infrastructure created to support calculation became a source of theoretical and methodological innovation.

The Institute of Computer Science describes its fundamental research as focused on theoretical computer science and artificial intelligence, with the aim of frontier research and participation in the identification of new trends and directions in basic research (*Institute of Computer Science, n.d.*). This formulation is significant because it places computation within the Academy's basic-science mission rather than treating it only as technical service. Algorithms, complexity theory, formal methods, machine learning, and artificial intelligence are not merely tools borrowed from elsewhere. They are scientific objects in their own right. The Academy's role is to study their foundations, limits, and applications while keeping them connected to broader scientific and social questions. In this respect, computer science became one of the heirs of mathematical reasoning in the digital age.

Artificial intelligence represents the most visible contemporary expression of this shift. Within the Academy, AI developed not as a sudden fashion but through older traditions of machine learning, neural networks, statistical learning, optimisation, knowledge representation, automated reasoning, pattern recognition, signal processing, and complex systems. The Institute of Computer Science conducts research on the theoretical foundations of machine learning algorithms and biologically inspired optimisation methods, as well as applications involving data separation and time-series prediction in science, engineering, and other social fields (*Institute of Computer Science, n.d.*). This description is important because it reveals an approach to AI grounded in mathematics and modelling, not only in software implementation. AI in the Academy is therefore connected to the question of how machines can infer, classify, predict, optimise, and reason under uncertainty.

The Institute of Information Theory and Automation represents another major institutional centre for modelling, computation, and data science. Founded in 1959, it grew out of the cybernetic, information-theoretical, and automation traditions of the Czechoslovak Academy and later developed into a public research institute focused on artificial intelligence, signal and image processing, systems science, and applied mathematics (*Institute of Information Theory and Automation, n.d.*). Its history is especially revealing because it connects the early post-war and socialist fascination with cybernetics and automation to contemporary AI and data-driven science. What once appeared under the language of telemechanics, control, information channels, and systems theory later reappeared in the language of machine learning, probabilistic modelling, computer vision, natural language processing, econometrics, and complex adaptive systems.

UTIA's contemporary research profile shows how data science emerges from several older mathematical traditions. Artificial intelligence at the institute includes machine learning, natural language processing, knowledge representation, econometrics, and computer vision. Signal and image processing includes image restoration, blind deconvolution, superresolution, texture analysis, video tracking, recognition, and related areas. Systems science includes decision-making, adaptive systems, probability theory, statistics, data analysis, optimisation, continuum mechanics, and econometrics (*Institute of Information Theory and Automation, n.d.*). This is not a random accumulation of modern keywords. It is a coherent development from information, uncertainty, control, and modelling towards the analysis of complex data-rich systems. UTIA therefore demonstrates that data science in the Academy did not begin from the commercial rhetoric of "big data"; it grew from rigorous traditions of information theory, statistics, systems science, and applied mathematics.

The importance of uncertainty is central here. Real data are incomplete, noisy, biased, indirect, and often structured by measurement systems that introduce their own assumptions. A serious data science must therefore be probabilistic, statistical, and model-aware. The Academy's traditions in information theory, Bayesian modelling, decision theory, and statistical inference are crucial because they prevent data from being treated as self-explanatory. Data do not speak by themselves. They require models of generation, representation, error, uncertainty, dependence, causality, and interpretation. UTIA's work in probabilistic methods, Bayesian networks, uncertainty processing, and decision-making theory reflects this deeper understanding of data science as a discipline of disciplined inference rather than mere accumulation of information (*Institute of Information Theory and Automation, n.d.*).

The rise of data science also changed the relationship between mathematics and empirical fields. In earlier periods, mathematical modelling was often associated with physics, mechanics, engineering, and economics. Today it also enters biology, medicine, neuroscience, environmental science, linguistics, social sciences, humanities, and cultural heritage research. Image processing can support medicine and astronomy; machine learning can support materials discovery or climate analysis; statistical models can be used in economics and epidemiology; network analysis can illuminate social systems or biological pathways; optimisation can improve logistics, energy systems, or experimental design. The Academy's computational institutes are well positioned for this transformation because they are embedded in a multi-disciplinary research organisation. They can collaborate across institutes more naturally than a narrowly departmental university unit might.

Theoretical modelling also acquired a new role in physical research. Plasma physics, high-energy experiments, laser–matter interaction, materials science, nuclear physics, and astrophysics all depend increasingly on simulation, data analysis, and computational inference. Models are needed to interpret detector outputs, simulate particle interactions, predict plasma behaviour, reconstruct images, analyse spectra, and compare experimental results with theory. The connection between the Academy's physical institutes and its mathematical-computational institutes is therefore structurally important. The study of matter has become inseparable from the modelling of matter. Computation does not replace the laboratory, but the laboratory increasingly depends on computation to make its results intelligible.

In chemistry and materials science, the same movement is visible. Molecular modelling, quantum chemistry, reaction modelling, catalysis simulation, polymer dynamics, materials informatics, and machine-learning-assisted design all connect chemical intuition with computational methods. These developments make mathematics and computer science part of the creative process of chemistry. A molecule or material may be proposed, screened, optimised, or interpreted through computation before or after synthesis. The Academy's multi-institute structure makes this form of interaction especially valuable. The chemical institutes bring experimental knowledge and molecular problems; mathematical and computational institutes bring algorithms, models, statistical frameworks, and numerical methods. Their cooperation reflects a broader transformation of modern science from disciplinary separation to method-based integration.

Data science also affected the life sciences within the Academy. Biological and medical research increasingly produces large and complex datasets: genomic sequences, proteomic profiles, microscopy images, behavioural data, physiological signals, ecological observations, and clinical measurements. Such data require statistical modelling, machine learning, image analysis, network inference, and computational pipelines. The Academy's expertise in AI, signal processing, probabilistic modelling, and complex systems can therefore support biological interpretation. This does not mean that mathematics replaces biological expertise. Rather, it allows biological questions to be asked at new scales and levels of complexity. The result is a new partnership between experimental life science and formal reasoning.

The growth of computational modelling also transformed engineering and technical sciences. Mechanics, thermomechanics, fluid dynamics, control systems, robotics, power systems, transport, and industrial processes all depend on simulations and optimisation. Academy institutes concerned with mechanics and thermomechanics require mathematical models of continuum behaviour, heat and mass transfer, turbulence, structural stability, vibration, and coupled processes. These models are not merely calculations after the fact; they can guide experiments, reduce risk, improve design, and identify hidden mechanisms. The mathematical traditions of partial differential equations, numerical analysis, and optimisation therefore support technological sciences across the Academy. They give engineering research analytical depth and predictive capacity.

Theoretical modelling in the Academy also became important for economics and social systems. UTIA's work includes econometrics, decision-making, adaptive systems, and complex systems, which allow formal analysis of markets, uncertainty, policy effects, and networked behaviour (*Institute of Information Theory and Automation, n.d.*). This is significant within the broader history of the Academy because it connects mathematical methods to domains that had been ideologically sensitive under state socialism. After 1989, economic modelling, statistical inference, and decision theory could be re-situated within a more open research environment. The Academy's mathematical-computational capacities therefore contributed to the reconstruction of analytical social science as well as to natural and technical fields.

The growth of computation also required new institutional habits. Mathematical research can be conducted with paper, boards, and seminars, but computational research requires hardware, software, data storage, programming skills, reproducibility standards, cybersecurity, version control, and long-term maintenance of code and datasets. The Institute of Computer Science's origin in computing infrastructure gave the Academy a historical

advantage in understanding this material side of computation. Yet the contemporary situation is more demanding. Data-intensive research requires not only access to machines but also expertise in data governance, algorithmic transparency, and reproducible workflows. The Academy's computational institutes therefore became part of the institutional infrastructure of scientific reliability.

Algorithmic modelling also raises questions of explainability and trust. A mathematical proof can be checked through formal reasoning; a numerical model can be tested through convergence and validation; a machine-learning model may produce accurate predictions while remaining difficult to interpret. This creates a new epistemological challenge for the Academy. If AI is to be used in science, medicine, public policy, or industrial systems, researchers must understand not only its performance but also its assumptions, biases, robustness, and limits. The Academy's traditions in theory, statistics, logic, and mathematical modelling are especially important here. They can help prevent AI from becoming a black-box technology detached from scientific accountability.

The Academy's Strategy AV21 programme "Artificial Intelligence for Science and Society" reflects this new institutional awareness. Coordinated by the Institute of Computer Science, the programme aims to advance high-quality research in selected disciplines of artificial intelligence and machine learning, foster the application of AI and machine-learning methods across scientific disciplines, coordinate AI-related activities across Academy institutes, and strengthen cooperation among them (*Institute of Computer Science, n.d.*). This programme is historically significant because it makes AI not only a specialised research field but a cross-Academy methodological priority. It acknowledges that AI has become a general technology of knowledge production, capable of affecting physics, chemistry, biology, humanities, social science, and public administration. At the same time, by situating AI within the Academy, it reinforces the need for scientific responsibility rather than purely commercial enthusiasm.

The rise of data science also transformed the public mission of the Academy. In contemporary societies, decisions about health, climate, energy, transport, security, education, economy, and public administration increasingly rely on models and data. A public research institution must therefore be capable of evaluating, building, and criticising such models. The Academy's mathematical and computational institutes can provide independent expertise in areas where commercial or political actors may have strong interests. This is part of scientific autonomy in the digital age. Autonomy no longer means only freedom from ideological interference; it also means the capacity to assess models, algorithms, and data claims without subordination to market or governmental convenience.

This public role is visible in fields such as image analysis and signal processing. UTIA researchers work on restoration, deconvolution, superresolution, recognition, and pattern analysis, methods that may enter medicine, security, robotics, remote sensing, astronomy, and cultural heritage. These methods affect how society sees and interprets images. In an era of synthetic media, manipulated photographs, and AI-generated content, expertise in image processing also acquires civic relevance. The Academy's work in this area therefore belongs both to technical science and to the broader problem of trustworthy visual evidence. This illustrates a general principle: computational methods become socially important when they mediate between raw data and human judgement.

The mathematical-computational turn also affected the notion of interdisciplinarity. In earlier institutional language, interdisciplinarity often meant cooperation between neighbouring

fields, such as physics and chemistry or biology and medicine. Computation and data science changed this pattern because they offer methods that can travel across very different objects. The same statistical idea may be used in climate modelling, neuroscience, economics, and materials science; the same optimisation method may support engineering design, machine learning, and resource allocation; the same graph-theoretical concept may enter network biology, social analysis, and computer science. The Academy's computational institutes therefore became methodological connectors across the whole institution. Their importance cannot be measured only by their own disciplinary outputs, because they also shape the research capacity of other fields.

At the same time, interdisciplinarity creates risks. When mathematical and computational methods travel too quickly, they may be used superficially by researchers who do not understand their assumptions. Machine learning may be applied to inadequate data; statistical correlations may be mistaken for causation; simulations may be trusted beyond their validation range; optimisation may ignore ethical or social constraints. The Academy's role is not only to promote modelling and data science, but to cultivate their responsible use. This requires collaboration in which domain experts and method experts treat one another as intellectual partners. The best interdisciplinary work is not the export of algorithms into passive fields, but the joint construction of questions, models, and interpretations.

The relationship between computation and human expertise is therefore central. Data science does not eliminate the need for scientists who understand physical processes, chemical mechanisms, biological systems, historical sources, or social institutions. Rather, it changes the form of expertise. A climate scientist, chemist, physicist, or historian may need to work with data analysts, statisticians, and machine-learning researchers, while the latter must understand enough of the domain to avoid formal emptiness. The Academy's multi-institute environment can support this mutual learning because it brings diverse research cultures into one public organisation. This institutional proximity is one of its advantages over more fragmented research systems.

The growth of computation also affects scientific careers. Younger researchers increasingly need hybrid skills: mathematical literacy, programming, data handling, statistical thinking, disciplinary knowledge, and communication across fields. The Academy's institutes contribute to this training through doctoral supervision, seminars, joint programmes, workshops, and collaboration with universities. The Machine Learning and Modelling Seminar organised jointly by the Institute of Computer Science and the Faculty of Mathematics and Physics of Charles University is one example of how Academy and university environments intersect around contemporary computational research (*Institute of Computer Science, n.d.*). Such seminars are not merely academic events; they are mechanisms through which new research communities are formed and maintained.

The Academy's computational and mathematical institutes also help connect Czech science to international research networks. Modelling, AI, machine learning, and data science are global fields with rapidly changing standards, open-source communities, international conferences, and strong competition for talent. A national institute can remain relevant only if it participates in these networks while maintaining a clear research identity. The Czech Academy's advantage lies in its combination of older mathematical depth and newer computational orientation. This combination allows it to contribute not only applications of imported methods but also theoretical and methodological development. International

visibility in these areas is essential because computational science evolves through shared benchmarks, publications, datasets, software, and conferences.

The historical transformation from mathematical modelling to data science also changes how the Academy's past should be interpreted. Earlier work in topology, functional analysis, numerical methods, information theory, control, and automation may seem distant from contemporary AI. Yet many of the conceptual foundations are connected. Machine learning relies on optimisation, statistics, function approximation, geometry, probability, and computational complexity. Data science relies on inference, linear algebra, graph theory, numerical stability, and algorithmic thinking. Systems science relies on control, feedback, adaptation, and decision theory. The Academy's contemporary computational culture is therefore not a rupture with its mathematical traditions. It is one of their major continuations.

This continuity matters because it protects the Academy from purely fashionable readings of digital transformation. AI and data science are often presented as abrupt technological revolutions detached from older intellectual histories. The Academy's experience suggests a more sober interpretation. Contemporary AI is new in scale, speed, and public visibility, but it grows from long histories of mathematics, statistics, cybernetics, computation, modelling, and automation. By placing AI within this longer history, the Academy can treat it critically and constructively. It can recognise its transformative potential while resisting exaggerated promises and simplistic narratives. This historical depth is one of the Academy's intellectual assets.

Thus, theoretical modelling, computation, and data science became a central bridge between the Academy's mathematical traditions and the demands of contemporary science. Through the Institute of Mathematics, the Institute of Computer Science, and the Institute of Information Theory and Automation, the Czech Academy developed capacities in differential equations, numerical methods, optimisation, control, artificial intelligence, machine learning, signal and image processing, statistics, information theory, complex systems, and data analysis. These capacities support physics, chemistry, biology, engineering, economics, environmental research, and public expertise. They also show that the Academy's modernisation was not only a matter of new buildings or international memberships, but of new epistemic instruments. In the digital age, the Academy's ability to model, compute, infer, and interpret data became one of the key conditions of its scientific autonomy and public relevance.

3. The Growth of Computational and Interdisciplinary Methods

The growth of computational and interdisciplinary methods within the Czech Academy of Sciences represents one of the most important transformations of the late 20th and early 21st centuries. It changed not only the techniques used by researchers, but also the way scientific problems were formulated, organised, and justified. Computation became a common language across physics, chemistry, biology, environmental science, engineering, economics, linguistics, cultural heritage studies, and the social sciences. Interdisciplinarity, in turn, ceased to mean only occasional cooperation between neighbouring disciplines and became a structural condition of advanced research. Within the Academy, this transformation was supported by older traditions in mathematics, cybernetics, numerical analysis, information theory, automation, and computer science. The result was not the replacement of disciplinary

knowledge by algorithms, but the emergence of new forms of research in which mathematical models, computational tools, empirical data, and domain expertise became inseparable (*Akademie věd České republiky, n.d.*; *Institute of Computer Science, n.d.*).

This development had deep institutional roots. The Academy's mathematical institutes had long cultivated differential equations, numerical analysis, functional analysis, optimisation, control theory, mathematical logic, and theoretical computer science. The Institute of Information Theory and Automation grew from the Czechoslovak tradition of cybernetics, information theory, control, and systems science. The Institute of Computer Science emerged from the General Computing Centre of the Czechoslovak Academy of Sciences and gradually became a research institute focused on computing, artificial intelligence, theoretical computer science, and related methods (*Institute of Computer Science, n.d.*; *Institute of Information Theory and Automation, n.d.*; *Rákosník & Rozložník, 2021*). These histories matter because they show that computational interdisciplinarity in the Academy did not appear suddenly with the recent popularity of artificial intelligence. It developed through decades of work on models, algorithms, signals, systems, and numerical methods.

In the Czechoslovak period, computation first entered many institutes as a tool of calculation. Physicists needed numerical solutions of equations, engineers needed simulations, economists needed quantitative models, and chemists needed increasingly complex calculations of molecular and process behaviour. At this stage, computing was often treated as infrastructure rather than as an autonomous research culture. Yet even then, the use of computers changed scientific habits. It made larger systems mathematically tractable, encouraged new kinds of approximation, and created demand for specialists who could translate scientific problems into formal and computational procedures. The Academy's computing centres and mathematical institutes therefore helped prepare the ground for a later transformation in which computation would become not merely an auxiliary technique, but a way of producing knowledge.

The post-1989 transformation accelerated this process. The opening of Czech science to international networks, European projects, competitive funding, and new technologies placed greater emphasis on modelling, data processing, software, and interdisciplinary cooperation. Academy institutes had to publish internationally, join collaborative projects, modernise equipment, and respond to research questions that no single discipline could solve alone. Climate change, energy systems, biomedical research, nanomaterials, plasma physics, cultural heritage protection, disinformation, environmental monitoring, and artificial intelligence all required combinations of methods. Computation became one of the main means by which such combinations could be organised. It allowed researchers from different domains to work with shared models, datasets, simulations, and visualisations, even when their disciplinary languages differed.

The Institute of Mathematics remained central to this transformation because many computational methods depend on mathematical depth. Numerical analysis, optimisation, partial differential equations, mathematical logic, complexity theory, numerical linear algebra, topology, and control theory provide the foundations on which reliable computational research rests (*Institute of Mathematics, n.d.*). Without these foundations, computation risks becoming a collection of procedures whose accuracy, stability, and meaning are uncertain. The Academy's mathematical traditions therefore acted as a safeguard against superficial digitalisation. They ensured that computational methods remained connected to proof,

convergence, structure, and conceptual clarity. This was especially important as simulations and data-driven models became more visually persuasive and socially influential.

The growth of computational methods also gave new relevance to older Czech strengths in applied analysis and numerical mathematics. Problems in continuum mechanics, thermodynamics, fluid dynamics, elasticity, electromagnetic fields, phase transitions, and material behaviour require equations that often cannot be solved analytically. Numerical methods allow such systems to be studied, but only if the methods are mathematically justified. The Academy's work in finite element methods, numerical linear algebra, constructive analysis, and evolution differential equations helped connect mathematical theory with physical and engineering problems. This continuity shows that the digital turn did not make classical mathematical analysis obsolete. It made its rigour more necessary, because computation expanded the scale and ambition of modelling.

The Institute of Computer Science gave the Academy a different but complementary capacity. Its origins in the Academy's computing infrastructure placed it at the intersection of service and science, but its later development transformed it into a centre for theoretical computer science, artificial intelligence, machine learning, and computing for science and society (*Institute of Computer Science, n.d.*). This institutional path illustrates a broader global movement. Computing first supported research by providing calculation, then became a field that generated its own theories, and finally became a methodological environment for many other sciences. The Academy's Institute of Computer Science therefore became both a specialist institute and a cross-disciplinary partner. Its work helped shape the computational conditions under which other Academy fields could develop.

Artificial intelligence intensified this cross-disciplinary role. The Institute of Computer Science emphasises research in the theoretical foundations of machine learning and biologically inspired optimisation methods, as well as applications involving data separation, prediction, and modelling in different scientific and social domains (*Institute of Computer Science, n.d.*). AI is often publicly discussed as a technology of automation, but within the Academy it is better understood as a family of mathematical and computational methods for inference, classification, prediction, representation, and decision-making under uncertainty. Its importance lies not only in making machines perform tasks, but in changing how researchers handle complexity. Machine learning can detect patterns in large datasets, support hypothesis generation, assist image and signal interpretation, and accelerate modelling in fields from materials science to biology. Yet its responsible use requires mathematical understanding and domain expertise.

The Strategy AV21 programme "Artificial Intelligence for Science and Society" made this development explicit at the level of the whole Academy. Coordinated by the Institute of Computer Science, the programme aims to advance research in artificial intelligence and machine learning, foster AI and machine-learning applications across scientific disciplines, coordinate AI-related activities among Academy institutes, and strengthen cooperation within the institution (*Institute of Computer Science, n.d.*). This is institutionally significant because it treats AI not as a fashionable isolated topic, but as a methodological challenge for the entire Academy. The programme acknowledges that AI can support chemistry, physics, biology, environmental science, humanities, and social research, but it also implies that such support must be coordinated, critically assessed, and scientifically grounded. The Academy thereby

attempts to place AI within public research responsibility rather than within technological enthusiasm alone.

The Institute of Information Theory and Automation represents another major route through which computational interdisciplinarity developed. Its contemporary research profile includes artificial intelligence, signal and image processing, systems science, and applied mathematics (*Institute of Information Theory and Automation, n.d.*). Each of these areas is intrinsically interdisciplinary. Signal processing can serve medicine, astronomy, remote sensing, robotics, audio analysis, and cultural heritage research. Systems science can be applied to control, economics, energy systems, ecology, engineering, and decision-making. Applied mathematics can support probability theory, statistics, optimisation, continuum mechanics, and econometrics. UTIA therefore functions as one of the Academy's key methodological bridges between formal disciplines and empirical fields.

The history of UTIA also shows how older cybernetic and information-theoretical traditions were transformed rather than discarded. In the socialist period, cybernetics and automation were connected to industrial modernisation, control systems, telecommunications, and state planning. Some of these associations were politically conditioned, but the mathematical and technical content of systems theory, control, feedback, information channels, signal processing, and decision-making remained scientifically productive. After 1989, these traditions could be reinterpreted within a more open international environment. They became foundations for machine learning, computer vision, probabilistic modelling, adaptive systems, and data analysis. This continuity reveals one of the recurring patterns of the Academy's history: institutional and political contexts change, but methods can survive by moving into new scientific languages.

Signal and image processing provide one of the clearest examples of computational interdisciplinarity. Images are central to contemporary science, whether they come from microscopes, telescopes, satellites, medical scanners, historical paintings, industrial cameras, or experimental detectors. Yet images are not transparent windows onto reality. They are shaped by noise, blur, resolution limits, illumination, sensor properties, reconstruction algorithms, and interpretation. Research in image restoration, superresolution, deconvolution, recognition, texture analysis, and computer vision therefore becomes a form of scientific mediation. The Academy's expertise in this field allows researchers to recover, clarify, compare, and interpret visual information in ways that can affect medicine, cultural heritage, robotics, materials science, and environmental observation (*Institute of Information Theory and Automation, n.d.*).

The cultural heritage dimension of computational methods is especially revealing. At first glance, image processing and artificial intelligence may appear far removed from the traditional mission of humanities institutes or heritage research. Yet computational analysis can help detect underdrawings in paintings, compare visual patterns, preserve digital records, analyse degraded materials, and support documentation of fragile cultural artefacts. Such work shows that interdisciplinarity is not limited to natural and technical sciences. It can connect mathematics, computer vision, art history, conservation science, chemistry, and archival practice. In the Academy, where humanities and natural sciences coexist within one institution, such crossings are more than occasional curiosities. They demonstrate the institutional value of housing diverse research cultures under a common public framework.

The growth of data science further broadened this pattern. Data science depends on statistics, probability, optimisation, machine learning, databases, visualisation, and domain interpretation. It is often described as a new field, but within the Academy it grew from long-standing traditions in applied mathematics, information theory, econometrics, systems science, and computer science. UTIA's applied mathematics includes probability theory, applied statistics, data analysis, calculus of variations, optimisation theory, continuum mechanics, and econometrics (*Institute of Information Theory and Automation, n.d.*). This background gives data science conceptual discipline. It reminds researchers that data are not neutral accumulations of facts but structured outputs of measurement, classification, modelling, and social or natural processes.

The distinction between data and evidence is crucial. A dataset may be large without being reliable, representative, or meaningful. Computational methods can reveal patterns, but patterns may reflect measurement bias, sampling error, hidden confounders, or artefacts of preprocessing. The Academy's mathematical and statistical expertise is therefore essential for responsible interdisciplinary research. It helps researchers ask what a model assumes, how uncertainty is represented, whether conclusions are robust, and where interpretation exceeds evidence. This is particularly important in areas with public consequences, such as health, environmental risk, climate adaptation, economic policy, artificial intelligence, and disinformation. The Academy's contribution is not simply to process data faster, but to make data-based reasoning more trustworthy.

The study of disinformation illustrates this public dimension of computational methods. The Institute of Computer Science lists research related to the creation, dissemination, reception, and impact of disinformation, including the use of artificial intelligence tools in its detection (*Institute of Computer Science, n.d.*). Such work connects computer science with sociology, media studies, political communication, linguistics, statistics, and ethics. It also shows how computational methods enter the democratic public sphere. Algorithms can detect suspicious patterns, but they must be interpreted in relation to human communication, social trust, political context, and freedom of expression. This is a typical interdisciplinary problem: neither technical analysis nor social theory alone is sufficient. The Academy's public research mission gives it a suitable framework for such work because it can combine methodological expertise with civic responsibility.

In the natural sciences, computational methods transformed chemistry and materials research. Molecular modelling, quantum chemistry, polymer simulations, catalysis modelling, materials informatics, and machine-learning-guided design changed how chemists think about substances before and after synthesis. A material can be modelled at several scales: electronic structure, molecular arrangement, mesoscale morphology, macroscopic behaviour, and device performance. This multi-scale thinking requires cooperation among chemists, physicists, mathematicians, and computer scientists. The Academy's chemical and physical institutes, supported by mathematical-computational expertise, are well positioned for such work. Computational interdisciplinarity allows chemistry to move from empirical synthesis alone towards prediction, screening, optimisation, and mechanism-based design.

In physics, computation became indispensable across almost every advanced field. Plasma confinement, laser–matter interaction, condensed matter systems, detector data, nuclear reactions, astrophysical signals, and materials under extreme conditions all require modelling and data analysis. Large experimental infrastructures produce volumes of data that cannot be

interpreted without algorithms. Simulations help design experiments, estimate parameters, test theoretical scenarios, and compare observations with models. The Academy's physical institutes therefore depend increasingly on mathematical and computational methods, while mathematical institutes gain new problems from physical research. This reciprocal movement is one of the defining features of modern scientific interdisciplinarity.

Environmental and Earth sciences also rely heavily on computational methods. Climate research, atmospheric modelling, hydrology, geophysics, landscape change, biodiversity assessment, and environmental monitoring all require data assimilation, time-series analysis, spatial modelling, uncertainty quantification, and simulation. These problems are inherently interdisciplinary because they combine physical processes, biological systems, human activity, and long-term observation. The Academy's computational capacities can support this research by providing statistical and modelling methods, while environmental institutes supply observational data and domain knowledge. Here again, computation becomes a language through which different fields cooperate without losing their specific expertise.

Biology and biomedical research changed perhaps most dramatically under the pressure of data-intensive methods. Genomics, proteomics, high-resolution microscopy, electrophysiology, epidemiological data, and biomedical imaging all produce complex information that cannot be interpreted by traditional laboratory intuition alone. Machine learning, statistical modelling, image analysis, network inference, and bioinformatics become necessary partners of experiment. The Academy's interdisciplinary environment allows computational researchers to work with life scientists on questions of classification, prediction, mechanism, and diagnosis. This does not mean that biological judgement is replaced by algorithms. Rather, algorithms expand the scale at which biological questions can be asked and help identify patterns that require further experimental interpretation.

The engineering sciences within the Academy also benefited from this methodological growth. Mechanics, thermomechanics, control, robotics, materials engineering, transport, energy systems, and industrial processes are all increasingly simulation-driven. Computational models can reduce experimental costs, anticipate failure modes, optimise design, and improve safety. Systems theory and control methods are particularly important where machines, processes, and environments interact dynamically. The Academy's traditions in automation, control, optimisation, and continuum mechanics provide a strong basis for this type of research. They also show that interdisciplinarity is often a matter of method moving across different physical and technological systems.

The social sciences and economics were also affected by the computational turn. Econometrics, decision theory, network analysis, agent-based modelling, text analysis, and statistical inference allow researchers to study markets, organisations, public behaviour, policy effects, and social communication in new ways. The Academy's institutes in information theory, automation, and computer science provide methods that can support such research, but the interpretation of social data requires strong domain knowledge and ethical caution. Social systems cannot be treated simply as mechanical systems with more variables. Computational methods can clarify patterns, but they can also conceal assumptions about human behaviour. The Academy's interdisciplinary work must therefore remain sensitive to the difference between modelling natural processes and modelling social life.

The humanities increasingly encountered computational methods as well. Digital humanities, corpus linguistics, historical databases, stylometry, network analysis of correspondence,

spatial humanities, and image-based analysis of manuscripts or artworks all require computational tools. In an academy that contains both exact sciences and humanities, these possibilities are institutionally meaningful. They allow older archival and interpretative traditions to meet newer methods of pattern recognition and data organisation. Yet the best digital humanities work does not abandon close reading, historical context, or philological precision. It uses computation to extend questions, not to flatten them. This principle reflects a broader Academy ideal: interdisciplinary methods should enrich disciplines rather than dissolve them.

The growth of computational methods also changed the meaning of infrastructure. In the physical sciences, infrastructure often means instruments, laboratories, and large devices. In computational and interdisciplinary research, infrastructure also means software, datasets, code repositories, algorithms, standards, metadata, digital libraries, and trained personnel. These infrastructures are less visible than lasers or accelerators, but they are equally important. They determine whether results can be reproduced, reused, verified, and connected across projects. The Academy's mathematical and computational institutes therefore contribute to infrastructure not only by maintaining hardware or services, but by creating methodological reliability.

Reproducibility became one of the central challenges of computational science. A published result based on code, data, and modelling assumptions may be difficult to verify unless the workflow is documented and accessible. This issue is not limited to computer science; it affects biology, climate research, economics, image processing, materials science, and any field using complex computational pipelines. The Academy's public research mission requires attention to reproducibility, transparency, and methodological accountability. Interdisciplinary work increases this responsibility because collaborators from different fields must understand enough of one another's methods to trust the results. Computation therefore forces a new discipline of documentation and communication.

The rise of artificial intelligence also raised ethical and epistemological questions. AI systems can classify, predict, generate text or images, detect anomalies, and optimise decisions, but they can also reproduce biases, obscure reasoning, and produce persuasive errors. The Academy's traditions in logic, probability, statistics, explainable machine learning, and systems theory are important because they support critical engagement with AI rather than passive adoption. The Institute of Computer Science identifies competencies in symbolic and explainable machine learning, where algorithms are designed to provide understandable rules and transparent explanations for classification decisions (*Institute of Computer Science, n.d.*). Such work is especially important in domains where trust, accountability, and human decision-making cannot be delegated blindly to opaque systems.

Interdisciplinary computational methods also created new forms of collaboration between Academy institutes and universities. Seminars, doctoral supervision, joint projects, shared software, methodological workshops, and research programmes became mechanisms through which mathematical and computational expertise circulated. The Machine Learning and Modelling Seminar, organised jointly by Charles University and the Institute of Computer Science, is one example of this cooperation (*Institute of Computer Science, n.d.*). Such activities are not peripheral to institutional history. They show how new research communities are built, how young researchers acquire hybrid skills, and how the Academy's non-university research environment complements university education.

Career structures changed accordingly. A young researcher in the Academy might now need to understand a disciplinary object and also work with code, statistics, data formats, visualisation, machine learning, or modelling assumptions. Conversely, a mathematician or computer scientist increasingly needs to communicate with chemists, biologists, physicists, economists, historians, or engineers. This creates both opportunity and pressure. Hybrid researchers can move across fields and ask new questions, but they may also face evaluation systems that remain disciplinary. The Academy's challenge is to recognise and reward interdisciplinary work without losing the standards of expertise that make such work credible.

The growth of computational interdisciplinarity also reshaped institutional governance. Programmes like Strategy AV21 require coordination across institutes, shared priorities, and the ability to identify public challenges that demand multiple forms of expertise. AI, climate, energy, health, security, and cultural heritage cannot be assigned neatly to one discipline. The Academy's structure, with specialised institutes under a common umbrella, gives it a distinctive ability to organise such cooperation. However, this ability must be actively maintained. Interdisciplinarity does not happen automatically because institutes are listed in the same organisation. It requires incentives, shared language, project structures, leadership, and time for researchers to understand one another's assumptions.

Internationalisation strengthened the computational turn. AI, machine learning, numerical mathematics, image processing, and data science are global fields with fast-changing standards. Czech Academy researchers must participate in international conferences, European projects, software communities, and collaborative networks. At the same time, they bring to these networks a specific institutional heritage: Czech traditions in mathematics, cybernetics, control, numerical analysis, and information theory. This combination of global participation and local continuity is important. It prevents the Academy from becoming merely a consumer of imported computational tools and allows it to contribute methods, theory, and applications from its own research culture.

The public visibility of computation is greater today than at any earlier point in the Academy's history. Artificial intelligence, automated decision-making, digital misinformation, cyber-physical systems, and data privacy are topics of public debate, not only academic research. Institutes such as UTIA and the Institute of Computer Science increasingly participate in outreach, media discussion, and public explanation of AI and related technologies (*Institute of Information Theory and Automation, n.d.*). This communicative role matters because society often encounters computational methods through exaggerated hopes or fears. A public academy can provide more sober interpretation, explaining both the power and the limits of algorithms. This is part of its democratic responsibility in a data-driven age.

The growth of computational and interdisciplinary methods therefore marks a major stage in the Academy's modernisation. It connects older mathematical traditions with new scientific practices; it makes institutes interact across disciplinary boundaries; it gives research new instruments of prediction and interpretation; and it creates public responsibilities around data, AI, and modelling. Yet this growth does not mean that computation replaces scientific judgement. The deepest lesson of the Academy's experience is the opposite. Computation is powerful only when joined to theory, experiment, institutional memory, and domain knowledge. Interdisciplinarity is productive only when participants retain enough disciplinary seriousness to contribute something real.

Thus, the expansion of computational and interdisciplinary methods within the Czech Academy of Sciences shows how the institution adapted to one of the defining transformations of contemporary knowledge. Through the Institute of Mathematics, the Institute of Computer Science, the Institute of Information Theory and Automation, and their cooperation with physical, chemical, biological, environmental, technical, social, and humanities institutes, the Academy created a methodological network capable of modelling complex systems, analysing data, developing artificial intelligence, processing images and signals, and supporting research across disciplinary borders. This development did not erase the Academy's older traditions; it reactivated them in new contexts. Czech traditions of analysis, numerical mathematics, cybernetics, information theory, automation, and computer science became the foundations of a modern interdisciplinary research culture. In this sense, computation became not merely a technical tool of the Academy, but one of the main forms through which its scientific autonomy, public relevance, and international integration are now expressed.

Earth, Space, and Environmental Sciences

1. Geology, Geophysics, Atmospheric Research, and Climate

The Earth, space, and environmental sciences within the Czech Academy of Sciences occupy a position that is both ancient and modern. They deal with the oldest temporal horizons accessible to scientific reconstruction, from the formation of rocks and basins to the evolution of landscapes, climates, organisms, and planetary environments. At the same time, they are among the most urgent sciences of the contemporary world because they address climate change, environmental risk, seismic activity, atmospheric processes, natural hazards, land-use transformation, and the human alteration of the Earth system. This double temporality gives them a special place in the Academy's history. They are sciences of deep time and sciences of immediate public responsibility. Their institutional development shows how the Academy moved from descriptive and regional traditions of geology and geophysics towards integrated Earth-system research, atmospheric modelling, climate-impact studies, and space-related observation. In this respect, they connect the older natural history of the Czech lands with the global environmental agenda of the 21st century (*Akademie věd České republiky, n.d.*; *Global Change Research Institute, n.d.*).

The Czech Academy's own description of earth-science research emphasises two major scales: global-continental and local-regional. Global-continental research concerns the composition, structure, and evolution of the Earth as a planetary body, including its envelopes, while local-regional research focuses on the internal structure of the territory of the Czech Republic, which is described as a geological formation unique in Europe (*Akademie věd České republiky, n.d.*). This formulation is historically important because it captures the tension that has shaped Czech earth sciences for generations. On the one hand, Czech researchers study universal geological and geophysical processes: plate movement, lithospheric structure, palaeoclimate, geodynamics, atmospheric circulation, and global change. On the other hand, their expertise is deeply rooted in the specific geological, geomorphological, and

environmental conditions of Bohemia, Moravia, and Silesia. The Academy's earth sciences therefore developed as a bridge between national territory and planetary science.

Geology was one of the disciplines through which the Czech lands were first scientifically read as a historical landscape. The study of rocks, sediments, fossils, tectonic structures, mineral resources, karst systems, and Quaternary deposits connected natural science with the cultural and economic history of the region. Long before the modern Czech Academy, geological research had been linked to mining, mapping, industrial development, agriculture, water management, and national scholarly culture. The Academy inherited this older tradition and placed it within a research-institute framework. The Institute of Geology of the Czech Academy of Sciences became a central institution for the interpretation and integration of knowledge about the Earth system and its geological and biological past (*Institute of Geology, n.d.*). Its mission is especially revealing because it does not treat geology as a narrow study of rocks alone. It connects endogenous and exogenous geological processes, the development of biota, and anthropogenic effects within a single Earth-system perspective.

This Earth-system perspective represents a major conceptual shift. Classical geology often proceeded by describing strata, structures, fossils, and regional formations. Modern geology still depends on those foundations, but it increasingly interprets them within wider systems of climate, life, erosion, sedimentation, tectonics, environmental change, and human activity. The geological past becomes relevant not only because it explains how the present landscape came into being, but because it gives context for contemporary environmental processes. Sedimentary records may preserve evidence of earlier climates; fossil assemblages may illuminate biological responses to environmental shifts; geomorphological structures may reveal hazard-prone landscapes; and mineralogical or geochemical studies may help interpret pollution, weathering, and material cycles. The Academy's geological research therefore participates in a broader transformation of geology from a primarily historical discipline into an integrative science of the Earth system.

The Czech geological context is particularly rich because the territory of the Czech Republic contains the meeting points and remnants of several major European geological histories. The Bohemian Massif, the Western Carpathians, volcanic regions, sedimentary basins, karst areas, coal-bearing formations, and Quaternary landscapes provide a dense natural archive. For the Academy, this archive is not merely local material for national study. It is also a laboratory for European and global questions. Research on palaeoenvironments, tectonic evolution, sedimentary processes, palaeontology, geochemistry, and geomorphology can use Czech evidence to address wider problems in Earth history. The "local" thus becomes scientifically universal when interpreted through rigorous methods and international comparison. This is one of the recurrent patterns of Czech Academy science: national territory provides empirical specificity, while scientific interpretation links it to global knowledge.

The Institute of Geology's research profile reflects this combination of local depth and conceptual breadth. Its work includes studies of the Earth system and its geological and biological past, with attention to the interaction of internal and external geological processes, biotic development, and anthropogenic effects (*Institute of Geology, n.d.*). Such research is important for understanding the present environment because geological history determines soil formation, water circulation, slope stability, mineral composition, landscape evolution, and ecological potential. It also helps society understand that environmental problems do not occur on an empty surface. They occur in landscapes shaped by millions of years of geological

processes and by centuries of human transformation. Geology therefore gives environmental policy a memory deeper than ordinary political or economic time.

The Institute of Rock Structure and Mechanics adds another crucial dimension to this geological landscape. It focuses on the structure and properties of rocks and rock environments, and also studies glasses, technical ceramics, composites, biomaterials, and issues of inorganic and organic waste processing (*Institute of Rock Structure and Mechanics, n.d.*). This institute sits at the boundary between geology, geomechanics, materials science, engineering, and environmental technology. Its work shows that rocks are not only historical records but also mechanical bodies affected by stress, deformation, fracture, weathering, water, temperature, and human intervention. In a country with mining legacies, underground structures, landslide hazards, industrial waste, and infrastructure needs, such research has clear public relevance. Yet its scientific basis remains fundamental: understanding how rock environments behave requires theory, experiment, monitoring, and modelling.

Rock mechanics and engineering geology also connect the Academy's earth sciences with risk. Landslides, subsidence, rockfalls, underground deformation, seismicity induced by human activity, and instability of slopes or cavities are not purely academic topics. They affect settlements, transport, energy infrastructure, mining areas, and cultural landscapes. The Academy's capacity to study such phenomena gives it a role in national expertise that differs from ordinary project consultancy. It can investigate underlying mechanisms, long-term behaviour, and methodological principles. This is important because risk cannot be understood only at the moment of disaster. It must be read through the slow accumulation of geological, mechanical, climatic, and anthropogenic factors. Earth science here becomes a form of public foresight.

Geophysics extends the study of the Earth into processes that are often invisible at the surface. The Institute of Geophysics of the Czech Academy of Sciences defines its mission as fundamental and applied research in the Earth sciences, the maintenance of Earth-observation facilities, and public engagement on issues of high societal importance (*Institute of Geophysics, n.d.*). Its work belongs to a tradition that reaches back to the early Czechoslovak Republic, when geophysical observation, seismology, geomagnetism, and geodetic measurement were linked to the scientific understanding of the national territory. In the Academy, geophysics developed into a field that combines observation, theory, instrumentation, and modelling. It studies the structure, dynamics, and physical fields of the Earth, including seismic, geomagnetic, geodynamic, and geothermal phenomena.

Seismology is among the most publicly recognisable branches of this work. Although the Czech Republic is not among the world's most seismically active countries, seismic monitoring remains essential. The region contains natural seismicity, earthquake swarms, tectonic structures, and possible induced seismic effects connected with human activities. The Academy's geophysical networks allow researchers to detect, locate, interpret, and compare seismic events. They also connect Czech observations with international data exchange. This matters because even moderate seismicity can reveal important information about crustal structure, fluid movement, fault systems, and geodynamic processes. Seismology in the Academy is therefore both a national monitoring responsibility and a contribution to the global science of the Earth's interior.

The maintenance of observational networks gives geophysics a distinctive institutional character. Unlike some laboratory sciences, geophysics depends heavily on continuous

records: seismic stations, geomagnetic observatories, geodynamic measurements, geothermal observations, and other monitoring systems. A gap in observation may mean the loss of information that cannot be recreated later. The Academy's role is therefore not only to interpret data but to preserve continuity of measurement. This gives geophysical research a temporal discipline comparable to climatology and astronomy. Long records are scientific assets. They allow researchers to distinguish anomalies from trends, events from background behaviour, and local signals from broader geophysical processes.

Geophysics also connects the Academy to international services and data centres. Earth's physical fields do not stop at national borders, and neither can their scientific interpretation. Seismic waves travel across continents; geomagnetic disturbances are linked to solar and magnetospheric activity; geodynamic processes form part of regional and global tectonic systems. Czech geophysical observations therefore become valuable when integrated into wider networks. The Academy's national service role is inseparable from international cooperation. This is a recurring feature of modern Earth science: a national institute may be responsible for local observation, but the meaning of its data often emerges only through global comparison.

Atmospheric research forms another major pillar of this section. The Institute of Atmospheric Physics of the Czech Academy of Sciences studies processes in the Earth's atmosphere and near space (*Institute of Atmospheric Physics, n.d.*). This formulation is important because it places atmospheric science between terrestrial environmental research and space physics. The atmosphere is not merely the air above the landscape. It is a dynamic, stratified, chemically active, electrically complex, and solar-influenced system connecting Earth to near-Earth space. Research at the Institute includes meteorology, climatology, boundary-layer processes, cloud and precipitation physics, atmospheric dynamics, ionosphere and aeronomy, and the interaction of the atmosphere with solar and magnetospheric phenomena. The Academy's atmospheric research thus spans the surface, the troposphere, the upper atmosphere, and near space.

The Milešovka observatory symbolises the importance of long-term atmospheric observation. As the oldest mountain meteorological observatory in the Czech Republic, with measurements beginning in 1905, it represents a historical continuity that predates the modern Academy but became part of the country's scientific infrastructure (*Institute of Atmospheric Physics, n.d.*). Such observatories are irreplaceable because climate and atmospheric variability can be understood only through long, carefully maintained records. The value of an observatory increases with time, provided that measurements remain reliable and comparable. In the Academy's history, Milešovka is therefore more than a station. It is a witness to the transformation of meteorology from descriptive observation into climate science, boundary-layer research, and environmental expertise.

Atmospheric physics also links the Academy to space science. The Institute of Atmospheric Physics has a tradition connected with ionospheric and magnetospheric research, including the MAGION satellites and participation in missions such as Solar Orbiter, where high-frequency electromagnetic waves in the solar wind and interplanetary dust particles are studied (*Institute of Atmospheric Physics, n.d.*). This connection shows that Earth science and space science cannot be sharply separated. Solar wind, geomagnetic storms, ionospheric disturbances, and upper-atmospheric processes affect radio communication, satellite operation, navigation systems, and the physical environment of near-Earth space. Czech

atmospheric research therefore belongs not only to meteorology and climate studies, but also to the wider field of space weather and planetary environments.

The Astronomical Institute of the Czech Academy of Sciences adds a further space-related dimension to this picture. It is a modern public research organisation for astronomy and astrophysics and carries out a major part of Czech research in those fields, with research extending from the immediate environs of the Earth to distant galaxies and black holes (*Astronomical Institute, n.d.*). Although astronomy is treated more directly in the broader space-science context, its connection with atmospheric and Earth sciences is real. Meteor observations, interplanetary matter, solar physics, solar activity, and near-Earth objects all connect the Earth to the wider Solar System. The Academy's research on meteors and minor bodies, for example, links planetary history, impact risk, atmospheric entry, and the material history of the Solar System. Space is therefore not an abstract distance from Earth; it is part of the environment in which Earth exists.

Climate research represents the most contemporary and politically charged development in this whole domain. The climate system is not merely a meteorological average; it is an interacting system of atmosphere, oceans, land, cryosphere, biosphere, and human activity. The IPCC's 7th Assessment Report synthesised the state of global climate knowledge and confirmed the central role of human influence in observed climate change (*IPCC, 2021*; *IPCC, 2023*). For the Czech Academy, climate research has a specific institutional expression in the Global Change Research Institute, known as CzechGlobe. CzechGlobe investigates current and future manifestations of global change in the atmosphere, ecosystems, and human society, using methods ranging from molecular-level analysis to satellite imagery (*Global Change Research Institute, n.d.*). This range shows that climate science in the Academy is not confined to atmospheric physics alone. It is a multidisciplinary field connecting biogeochemistry, ecology, remote sensing, socio-economic impacts, climate services, and environmental risk.

CzechGlobe's focus on energy and substance fluxes, especially greenhouse gases, places it at the centre of Earth-system research (*Global Change Research Institute, n.d.*). Greenhouse-gas fluxes are not abstract quantities. They are produced and absorbed by forests, soils, wetlands, agricultural systems, cities, industrial activity, and atmospheric transport. Measuring and modelling them requires field stations, eddy-covariance towers, atmospheric monitoring, remote sensing, ecological experiments, laboratory analyses, and statistical modelling. The Academy's climate-related research therefore depends on a combination of observation and interpretation. It must measure what is happening in real landscapes while also modelling how those processes may develop under future climate scenarios. This gives climate science a public importance that few other fields possess.

The rise of CzechGlobe also shows how environmental science moved beyond the older division between natural and social sciences. Global change includes climate, land productivity, atmospheric chemistry, ecosystems, and the socio-economic systems that both drive and suffer from environmental transformation (*Global Change Research Institute, n.d.*). In this sense, the Academy's climate science cannot be understood as physical science alone. It also requires knowledge of agriculture, forestry, water management, urban environments, health risks, economics, adaptation policy, and social resilience. This is one of the reasons why climate research is institutionally challenging. It requires a scientific culture capable of

crossing boundaries while maintaining methodological seriousness in each field. The Academy's multi-institute structure gives it a strong basis for such work.

The connection between atmospheric research and climate science is especially important. Weather and climate are distinct, but they are physically connected through atmospheric circulation, radiation, moisture, clouds, aerosols, land-surface interactions, and oceanic influences. The Institute of Atmospheric Physics contributes to understanding atmospheric processes, while CzechGlobe focuses on global change, greenhouse gases, ecosystems, and impacts. Together, these institutions show how the Academy covers both the physics of atmospheric behaviour and the broader consequences of climate transformation. This division of labour is productive because it allows atmospheric mechanisms and environmental impacts to be studied in relation to one another. Climate change is not only a trend in temperature. It is a change in the behaviour of systems that affect drought, floods, heatwaves, ecosystems, agriculture, forests, and human settlements.

The Czech regional context gives climate research a particular urgency. Central Europe is sensitive to drought, heat extremes, forest stress, soil-water changes, urban heat islands, and changes in agricultural productivity. These issues cannot be solved by global climate models alone. They require regional observation, downscaling, impact modelling, and knowledge of local landscapes. CzechGlobe's climate and climate-risk portals, including work on climatic conditions, meteorological extremes, and their impacts on agriculture, forestry, water regime, and landscape, demonstrate this applied dimension of Academy research (*Global Change Research Institute, n.d.*). Yet this applied orientation rests on fundamental scientific capacities. Reliable climate services require good data, strong models, ecological understanding, and long-term monitoring.

The Academy's earth and climate sciences therefore operate at multiple time-scales. Geology studies processes unfolding across millions of years. Geophysics records events that may occur in seconds but arise from deep tectonic histories. Atmospheric science observes minutes, days, seasons, and long-term climatic series. Climate research examines decades, centuries, and future scenarios. Environmental science connects these natural time-scales with human decision-making, which often operates under political and economic pressure. The Academy's value lies partly in its ability to hold these time-scales together. It reminds society that present choices occur within histories much longer than ordinary public debate recognises.

Methodologically, these sciences also connect fieldwork, observation, laboratory analysis, modelling, remote sensing, and computation. Geological mapping and palaeontological interpretation require direct engagement with landscapes and specimens. Geophysics depends on instruments and continuous signals. Atmospheric research uses observatories, radars, satellites, models, and theoretical physics. Climate science integrates field measurements, ecosystem experiments, greenhouse-gas monitoring, satellite imagery, socio-economic analysis, and scenario modelling. The Academy's institutes therefore represent different modes of knowing the Earth: collecting, measuring, drilling, mapping, modelling, comparing, and forecasting. This methodological plurality is one of the strengths of the field. It prevents environmental knowledge from becoming either purely abstract or merely descriptive.

The post-socialist transformation affected these fields in distinctive ways. Geology and geophysics inherited strong Czechoslovak traditions, including mapping, seismology, mineral

research, palaeontology, geodynamics, and engineering geology. Atmospheric research inherited long observational records and expertise in meteorology, ionosphere, and near-space studies. After 1989, these traditions had to be reconnected with European frameworks, international publication standards, research infrastructures, competitive grants, and global environmental agendas. Climate science, in particular, gained new importance as environmental questions moved from the margins of policy to the centre of international debate. The Academy's earth sciences thus shifted from national description and sectoral expertise towards global environmental participation.

This transformation also changed the relationship between the Academy and the state. Earth, atmospheric, and climate sciences are not politically neutral in their consequences, even when their methods are rigorously scientific. They provide evidence relevant to land-use planning, hazard management, climate adaptation, energy policy, water resources, agriculture, forestry, infrastructure, and environmental protection. The Academy's public research status gives it a special responsibility to provide expertise that is independent, long-term, and methodologically credible. In these fields, scientific autonomy is not a withdrawal from public life. It is the condition under which public advice can be trusted.

At the same time, these sciences must communicate uncertainty. Geological hazards, seismic risk, climate projections, weather extremes, ecosystem responses, and environmental impacts all involve uncertainty. Public discussion often demands simple answers, but responsible science must distinguish between what is known, what is probable, what is model-dependent, and what remains uncertain. The Academy's role is not to eliminate uncertainty by rhetorical force, but to make it scientifically intelligible. This is especially important in climate science, where uncertainty can be misused either to exaggerate confidence or to deny robust conclusions. A public academy must maintain a language of evidence, confidence, probability, and limitation.

The Earth, space, and environmental sciences also deepen the Academy's international role. Geological correlations, seismic networks, atmospheric observations, space missions, greenhouse-gas monitoring, and climate-impact studies all require cross-border cooperation. Czech institutes contribute data, methods, expertise, and regional knowledge to European and global systems. At the same time, they receive models, satellite products, international standards, and comparative frameworks from abroad. This reciprocal relation is one of the defining features of modern Earth science. No country studies the Earth alone. Yet each country's observations matter, because global knowledge depends on distributed local competence.

The cultural meaning of these sciences is also significant. They place the Czech lands within deep natural history and within planetary processes. Geology tells society that its landscapes are historical formations, not merely economic spaces. Geophysics reveals that the apparent stability of the ground rests on dynamic processes. Atmospheric science shows that the air above the country is part of a layered and global system. Space research situates Earth within solar and cosmic environments. Climate science demonstrates that human society is now a geological and atmospheric force. The Academy's work in these fields therefore contributes not only to policy and technology but to a changed understanding of humanity's place in nature.

Thus, geology, geophysics, atmospheric research, and climate science within the Czech Academy of Sciences form an integrated domain of knowledge in which deep time, national

territory, planetary processes, and contemporary public responsibility meet. The Institute of Geology, the Institute of Rock Structure and Mechanics, the Institute of Geophysics, the Institute of Atmospheric Physics, the Astronomical Institute, and CzechGlobe together show how the Academy studies the Earth from its rocks and crust to its atmosphere, near-space environment, ecosystems, and climate future. These fields preserve older Czechoslovak traditions of observation, mapping, seismology, meteorology, and natural history, but they also transform them through modelling, remote sensing, global-change research, international networks, and public expertise. In this sense, the Academy's earth and environmental sciences are not a peripheral extension of natural science. They are one of the central arenas in which the Academy defines its responsibility to the Czech lands, to Europe, and to the planetary conditions of human life.

2. Environmental Monitoring and Long-Term Scientific Expertise

Environmental monitoring is one of the least spectacular but most decisive functions of the Czech Academy of Sciences. It rarely produces a single dramatic discovery that can be narrated as a breakthrough, yet it creates the evidential foundations without which environmental science, public policy, risk assessment, and climate adaptation would remain fragile. Monitoring means returning to the same places, measuring comparable variables, maintaining instruments, preserving data, interpreting trends, and distinguishing short-term fluctuation from long-term change. It is therefore a form of scientific patience. In the Academy, environmental monitoring connects geology, geophysics, atmospheric physics, hydrology, ecology, botany, hydrobiology, climate research, and data science. Its institutional value lies in the fact that many environmental processes become visible only when knowledge is accumulated across years, decades, and sometimes generations (*Akademie věd České republiky, n.d.*; *Global Change Research Institute, n.d.*).

The Academy's role in monitoring differs from the role of administrative agencies or emergency services. State agencies often operate official monitoring systems required for regulation, public warnings, water management, meteorology, or environmental compliance. The Academy does not replace these functions. Its distinctive contribution is to produce research-grade monitoring, to develop methods, to interpret complex processes, and to preserve long-term expertise that can support both national and international knowledge systems. Academy monitoring is therefore not merely data collection. It is the creation of scientific continuity. It gives society the ability to ask how landscapes, ecosystems, waters, atmosphere, soils, seismic zones, and climate risks are changing, and why those changes matter.

This long-term function is especially important in environmental science because the environment is never static. Rivers respond to rainfall, drought, land use, pollution, and regulation. Forests respond to temperature, pests, soil chemistry, management, and atmospheric deposition. Lakes respond to nutrient loads, climate, fish communities, and internal biogeochemical cycles. The atmosphere responds to circulation, aerosols, greenhouse gases, radiation, and local land-surface processes. Seismic networks record sudden events, but their interpretation depends on background knowledge accumulated over time. Environmental monitoring therefore requires both temporal depth and disciplinary breadth. The Academy's multi-institute structure gives it the capacity to sustain this breadth without reducing complex environmental systems to one administrative category.

The Institute of Geophysics provides one of the clearest examples of monitoring as public scientific expertise. Its mission includes fundamental and applied research in the Earth sciences, maintenance of a network of Earth-observation facilities, dissemination of scientific outcomes, and public engagement on issues of high societal importance (*Institute of Geophysics, n.d.*). This mission expresses the double role of geophysical observation. On the one hand, seismic, geomagnetic, geodynamic, and related data are research materials for understanding the Earth's crust, lithosphere, geodynamics, magnetism, volcanism, tectonics, and surface processes. On the other hand, they are part of the knowledge infrastructure through which society can recognise and interpret natural hazards. The Academy's geophysical monitoring therefore connects pure research with civic responsibility.

Seismology illustrates this connection particularly well. The Department of Seismology of the Institute of Geophysics operates the Czech Regional Seismological Network, the local seismic network WEBNET in West Bohemia and Vogtland, and other regional and international networks. The Czech Regional Seismological Network monitors earthquakes in West Bohemia, near Hronov, and in northern Moravia and Silesia, as well as other seismic events such as rockbursts and mine explosions; it consists of more than 20 permanent broadband stations located in the Czech Republic (*Institute of Geophysics, n.d.*). WEBNET, operated by the Institute of Geophysics and the Institute of Rock Structure and Mechanics, consists of 23 stations, most of them streaming data in real time (*Institute of Geophysics, n.d.*). These systems show how a research institute becomes a national custodian of signals that might otherwise remain invisible until they become crises.

The significance of such seismic monitoring lies not only in detecting earthquakes. It also enables the study of earthquake generation, wave propagation, crustal and upper-mantle structure, natural and induced seismicity, and macroseismic effects felt by citizens. The seismic service localises regional and global earthquakes, analyses seismograms, ensures international data exchange and archiving, and collects macroseismic data from events felt in Czechia (*Institute of Geophysics, n.d.*). This is a form of long-term scientific memory. A single earthquake may attract public attention, but its scientific meaning depends on comparison with earlier events, station histories, geological context, and models of the subsurface. The Academy's expertise turns individual events into knowledge about processes.

Geophysical monitoring also demonstrates why environmental expertise cannot be organised only around visible ecological change. The environment includes hidden structures and forces: stresses in rocks, fluid movements in the crust, geomagnetic variations, induced seismic effects, and the interaction between natural systems and human activities such as mining, drilling, geothermal exploration, and underground storage. The Academy's geophysical networks make these hidden dynamics observable. This matters for public safety, infrastructure planning, and scientific understanding. It also shows that environmental science is not only about landscapes and ecosystems, but about the physical stability and dynamics of the territory itself.

Atmospheric observation represents another major form of long-term expertise. The Institute of Atmospheric Physics maintains and develops research in meteorology, atmospheric dynamics, boundary-layer processes, cloud and precipitation physics, ionosphere and aeronomy, and near-space processes (*Institute of Atmospheric Physics, n.d.*). Its Milešovka observatory is especially significant because it is the oldest mountain meteorological observatory in the Czech Republic, with measurements beginning in 1905 (*Institute of*

Atmospheric Physics, n.d.). Such long observational series are scientific treasures. They provide continuity across political regimes, institutional reforms, changes in technology, and changes in scientific language. The atmosphere has been measured there through the late Habsburg period, the First Czechoslovak Republic, occupation, state socialism, the Velvet Revolution, and the modern Czech Republic.

The long-term importance of Milešovka lies in the possibility of comparing present atmospheric conditions with more than a century of observations. Climate change cannot be understood from a few hot summers or isolated extreme events. It requires long records that allow scientists to place anomalies within historical distributions. Mountain observatories are especially valuable because they record conditions less directly shaped by local urban environments than many lowland stations. They help researchers study cloudiness, precipitation, wind, temperature, visibility, and boundary-layer processes in a setting sensitive to regional atmospheric circulation. The Academy's maintenance of such observatories is therefore not a conservative attachment to old instruments, but an active contribution to climate and atmospheric science.

The connection between Milešovka and ACTRIS-CZ shows how older observational traditions are being integrated into modern European research infrastructures. The Institute of Atmospheric Physics describes the aim of its participation in ACTRIS-CZ as the establishment and long-term operation of an observational platform at Milešovka capable of meeting ACTRIS standards (*Institute of Atmospheric Physics, n.d.*). This is institutionally significant because it transforms a national long-term station into part of a European infrastructure for atmospheric composition, aerosols, clouds, and trace gases. The value of a historical observatory increases when its data can be standardised, compared, and integrated with international networks. In this way, the Academy links local continuity to European atmospheric science.

Climate and global-change monitoring have become one of the strongest contemporary expressions of the Academy's environmental expertise. The Global Change Research Institute, CzechGlobe, focuses on the manifestations and impacts of global change in the atmosphere, ecosystems, and human society, using methods that range from molecular-level analysis to satellite imagery (*Global Change Research Institute, n.d.*). Its monitoring activities include greenhouse gases and pollutants, ecosystem carbon fluxes, drought, vegetation condition, yield forecasts, fire risk, climate extremes, and adaptation-support tools. This breadth is important because global change is not one variable. It is a system of interacting atmospheric, ecological, hydrological, agricultural, and socio-economic processes. Monitoring it requires a distributed scientific architecture.

CzechGlobe's public portals are especially important for translating long-term expertise into usable knowledge. InterSucho combines ground-based measurements, a dynamic water-balance model, remote sensing methods, and observations from a wide network of reporters to monitor and forecast soil drought (*Global Change Research Institute, n.d.*). The ClimRisk and Climate Change portals provide information about the long-term development of climatic conditions, meteorological extremes, and impacts on agriculture, forestry, the water regime, and landscape (*Global Change Research Institute, n.d.*). Early-warning systems monitor vegetation, yields, abiotic and biotic crop risks, and fire risk. These systems show that environmental monitoring is not only retrospective. It is also anticipatory. It helps farmers, foresters, municipalities, planners, and public authorities prepare for risks before they become irreversible damage.

Drought monitoring is particularly important in Central Europe. Drought is not a single event but a sequence of deficits in precipitation, soil moisture, streamflow, groundwater, vegetation condition, crop productivity, and ecosystem resilience. A dry year may be damaging, but repeated droughts can restructure forests, agriculture, water management, and rural economies. The Academy's drought-monitoring systems help distinguish meteorological drought from agricultural and ecological consequences. They integrate measurement, modelling, remote sensing, and field observations. This integration is vital because drought is experienced locally but driven by regional atmospheric and hydrological processes. The Academy's expertise gives Czech society a more precise language for a risk that is likely to remain central under climate change.

Greenhouse-gas monitoring forms another crucial dimension. CzechGlobe's Domain of Ecosystem Analyses focuses on monitoring greenhouse gases and air pollutants in the atmosphere and their long-range transport; it also gathers and analyses information on carbon fluxes, sequestration, and storage at ecosystem and landscape scales and contributes to major global databases (*Global Change Research Institute, n.d.*). The large research infrastructure CzeCOS provides a platform for international interdisciplinary research on global change and its impacts on ecosystems, contributing to Czech obligations in research, adaptation, and mitigation (*CzeCOS, n.d.*). Its ecosystem stations are equipped according to ICOS protocol for measuring fluxes of carbon dioxide, nitrous oxide, methane, water, and energy between terrestrial ecosystems and the atmosphere, along with climatic characteristics and related variables (*Global Change Research Institute, n.d.*). This kind of monitoring connects Czech landscapes to the global carbon cycle.

Participation in ICOS gives this work a European and international framework. The ICOS Czech Republic network comprises one Atmosphere station and three Ecosystem stations, conducting long-term research on greenhouse gases and carbon cycles in the atmosphere and in Czech ecosystem types such as floodplain forest, evergreen needle-leaf forest, and wetland (*ICOS, n.d.*). The broader ICOS infrastructure offers open access to high-quality, standardised greenhouse-gas data and scientific products (*ICOS, n.d.*). This matters because carbon-cycle knowledge depends on comparability. A flux measurement in a Czech forest gains global meaning only when it can be interpreted alongside measurements in other European ecosystems and atmospheric stations. The Academy's contribution is therefore both national and planetary.

Hydrological monitoring is another area where long-term expertise is indispensable. The Institute of Hydrology of the Czech Academy of Sciences, formerly known in English as the Institute of Hydrodynamics, presents its scientific activities as fully oriented towards water issues, including water balance, rainfall–runoff processes in basins, hydrological monitoring, water in soil, wetland hydrology, water treatment, micropollutants, and water-quality problems (*Institute of Hydrology, n.d.*). Its description of hydrological monitoring is especially direct: monitoring is a basic prerequisite for understanding the water cycle in the landscape and for describing and quantifying the processes involved (*Institute of Hydrology, n.d.*). This statement captures the essence of environmental monitoring. Without repeated observation, hydrology becomes speculation about a system that is constantly moving.

Water connects climate, geology, soil, vegetation, settlement, agriculture, industry, and public health. The Academy's hydrological expertise therefore has many layers. It includes rainfall–runoff processes, soil hydrology, wetland water regimes, water retention, flood and drought

behaviour, natural organic matter, micropollutants, microplastics, PFAS, treatment technologies, and water purification. This work is not limited to environmental description. It provides knowledge for water management, drinking-water safety, wastewater treatment, landscape adaptation, and protection of water resources. In a changing climate, water expertise becomes one of the most important forms of public science. The Academy's role is to maintain research depth in a field where political attention often rises only during crises.

The Institute of Hydrology's work on wetland hydrology is a good example of how monitoring can challenge public assumptions. Wetlands are often described simply as natural sponges that retain water, but their actual hydrological behaviour depends on peat structure, soil properties, vegetation, rainfall patterns, slope, catchment context, and seasonal conditions. Studies of peatland and forest-soil hillsides show that different landscape elements may respond very differently to precipitation events and that environmental tracers and hydrological models are needed to understand these differences (*Akademie věd České republiky, 2024*). Such research matters because adaptation policies often rely on simplified ideas about "nature-based solutions". The Academy's expertise helps make those solutions scientifically realistic.

Aquatic ecosystems add another long-term monitoring tradition. The Institute of Hydrobiology at the Biology Centre of the Czech Academy of Sciences has roots in early Czechoslovak Academy hydrobiological research and pursues long-term projects focused on biological processes in reservoirs, including eutrophication, plankton communities, microbial loops, water blooms, phosphorus load, lake turnover, and atmospheric acidification of mountain lakes (*Biology Centre, n.d.*). These topics are crucial because reservoirs and lakes are sensitive indicators of environmental change. They integrate signals from catchments, climate, nutrient inputs, fish communities, sediment processes, and human management. A lake or reservoir is therefore not a static water body but a dynamic ecological archive.

Long-term hydrobiological expertise is especially important for eutrophication. Nutrient enrichment can alter plankton composition, trigger algal blooms, reduce water quality, affect oxygen conditions, and change food webs. Its effects may persist even after external nutrient inputs are reduced, because internal loading from sediments and biological feedbacks can maintain degraded states. Monitoring allows researchers to understand these delayed and interacting processes. It also provides public authorities with knowledge needed for water protection, fisheries management, reservoir operation, and biodiversity conservation. The Academy's hydrobiological work thus links fundamental ecology with very practical questions of water quality and ecosystem management.

Modern hydrobiology has also become a data-rich field. Fish telemetry, hydroacoustics, stable isotopes, plankton monitoring, microbial analysis, and long-term reservoir datasets allow researchers to study aquatic ecosystems with increasing precision. The Biology Centre's work on lake fish telemetry and large datasets of tracked fish positions shows how environmental monitoring now intersects with big data and behavioural ecology (*Biology Centre, 2022*). This is a major methodological change. Monitoring is no longer only the periodic sampling of water or organisms; it can involve continuous or high-resolution observation of movement, behaviour, trophic interactions, and ecosystem dynamics. The Academy's hydrobiological expertise therefore belongs to the same computational turn described in the mathematical and data-science section of this chapter.

Botanical and biodiversity monitoring represent another major area of long-term expertise. The Institute of Botany of the Czech Academy of Sciences is the largest botanical research centre in the Czech Republic and contributes to research and nature conservation in the Czech Republic and abroad (*Institute of Botany, 2022*). Botanical expertise depends on continuity because plant distributions, vegetation types, invasive species, forest dynamics, and local biodiversity patterns change slowly, unevenly, and often in response to multiple drivers. Field records, herbarium knowledge, vegetation plots, species traits, historical literature, and digital databases all become part of the monitoring apparatus. In this domain, long-term expertise includes not only instruments but also taxonomic judgement and memory of landscapes.

The PLADIAS database is one of the most important examples of this modernised botanical expertise. It was developed to create an integrated database and online information system on plant diversity in the Czech Republic, linked to international databases and used to test hypotheses about the evolution and maintenance of temperate plant diversity across scales (*Institute of Botany, n.d.*). The database focuses on native and naturalised flora of the Czech Republic and provides information on distribution maps, plant traits, vegetation types, descriptions, maps, and species composition (*PLADIAS, n.d.*). Its aim is to support scientific research, education, nature conservation, and environmental assessment (*PLADIAS, n.d.*). This is environmental monitoring in a digital form: not a single station or instrument, but a curated knowledge system.

PLADIAS also shows how historical and contemporary data can be integrated. Plant distribution records, traits, vegetation classification, taxonomic concepts, bibliographies, and digital maps allow researchers and conservationists to ask questions about biodiversity change, species invasions, habitat loss, climate responses, and landscape history. Such databases transform scattered observations into usable scientific infrastructure. They also demonstrate that long-term expertise is not only about measuring the same variable repeatedly. It may also involve maintaining taxonomic standards, verifying records, linking old literature to new data, and making information accessible for conservation and policy. The Academy's botanical expertise therefore preserves a national biodiversity memory while opening it to modern analysis.

Environmental monitoring also reaches beyond the borders of the Czech Republic. CzechGlobe's ecosystem stations and collaborations in Ghana and Vietnam, the Institute of Botany's long-term tropical monitoring, and the Biology Centre's international biodiversity and aquatic collaborations show that Academy expertise is not confined to national territory (*Global Change Research Institute, 2023*; *Institute of Botany, n.d.*; *Biology Centre, 2022*). This international dimension is important because global change is not a set of isolated national problems. Tropical forests, wetlands, Central European droughts, lake ecosystems, greenhouse-gas fluxes, and invasive species all belong to interconnected environmental processes. The Academy's long-term expertise becomes more valuable when it is able to compare Czech patterns with global ones.

At the same time, national environmental expertise remains essential. The Czech Republic's landscapes have specific histories: mining, agriculture, forestry, river regulation, industrial pollution, urbanisation, protected areas, reservoirs, and post-socialist land-use changes. Monitoring must therefore be sensitive to local and regional contexts. Imported models are not enough. The Academy's institutes contribute by generating local data, interpreting them through international science, and returning knowledge to Czech society. This is one of the

defining features of a national academy in an interconnected world. It must be able to think globally without abandoning the responsibility to know its own territory.

The environmental expertise of the Academy also has a strong advisory and public-communication dimension. Seismic events felt by citizens, drought warnings, water-quality problems, biodiversity decline, climate risks, invasive species, pollutant monitoring, and landscape adaptation all require communication beyond academic journals. The Academy must explain uncertainty, probability, thresholds, and risk without either minimising or sensationalising environmental problems. This is difficult because environmental questions are often politically charged. Drought affects agriculture; water pollution affects municipalities and industry; biodiversity loss affects land-use policy; climate adaptation affects investment and planning. The Academy's credibility depends on maintaining methodological seriousness and independence in such contexts.

Long-term expertise is also vulnerable. Monitoring networks require stable funding, trained personnel, technical maintenance, data storage, and institutional commitment. A station can be closed quickly, but the loss of its long-term series cannot be repaired. A database can become obsolete if curation stops. Taxonomic expertise can disappear if no new generation is trained. Environmental monitoring therefore depends on institutional memory and strategic protection. The Academy's public research status makes it one of the few institutions capable of sustaining such capacities when immediate political attention shifts elsewhere. This role is especially important in periods when short-term project funding dominates research life.

The post-socialist transformation changed the conditions of monitoring in several ways. It opened Czech environmental science to European infrastructures, international data standards, competitive projects, and cross-border collaboration. It also increased the demand for publicly accountable expertise in areas such as climate change, water management, environmental health, and biodiversity conservation. At the same time, it exposed long-term monitoring to new financial pressures. The Academy had to defend monitoring not merely as routine observation but as the basis of research excellence and public responsibility. In this sense, environmental monitoring became part of the broader struggle to define the modern Academy's mission after 1989.

Environmental monitoring also connects strongly with Strategy AV21. Programmes focused on water, global change, environmental protection, and public-interest research express the Academy's attempt to organise expertise around societal challenges while preserving scientific autonomy (*Strategy AV21, n.d.*). The language of public interest is especially appropriate here. Environmental monitoring is public-interest research in its purest form because its value often becomes obvious only when society faces drought, flood, pollution, seismic events, forest decline, biodiversity loss, or climate extremes. The Academy's task is to produce knowledge before the emergency, not only after it.

The growth of data science further changes the future of monitoring. Remote sensing, automated sensors, telemetry, machine learning, spatial databases, climate portals, and open data systems allow environmental researchers to observe more variables at higher resolution. Yet the basic problem remains interpretative. More data do not automatically produce better understanding. They must be calibrated, validated, compared, archived, and placed within models and field knowledge. The Academy's long-term expertise is therefore more necessary, not less, in the age of data abundance. It provides the judgement needed to turn streams of measurements into evidence.

Thus, environmental monitoring and long-term scientific expertise form one of the central public functions of the Czech Academy of Sciences. Through geophysical networks, mountain meteorological observatories, atmospheric and greenhouse-gas stations, drought and climate-risk portals, hydrological catchments, water-quality laboratories, reservoir studies, botanical databases, biodiversity monitoring, and ecosystem infrastructures, the Academy preserves the temporal continuity of environmental knowledge. This work is less visible than spectacular discoveries, but it is indispensable for understanding change, preparing for risk, and governing the relationship between society and nature. It shows that the Academy's authority rests not only on its ability to produce new theories, but on its capacity to remember, measure, compare, and interpret the changing world over long periods of time.

3. Czech Contributions to Global Environmental Science

Czech contributions to global environmental science emerged from a specific historical position: the Czech Academy of Sciences was never the scientific institution of a great territorial empire or a large global power, but it developed a dense and sophisticated research culture in a country whose landscapes, industrial history, biodiversity, water systems, forests, and climate risks made environmental knowledge unusually concrete. This gave Czech environmental science a particular character. It was strongly rooted in national territory, but it repeatedly turned local observation into knowledge relevant beyond national borders. The Czech lands offered geological complexity, managed forests, agricultural basins, mountain observatories, reservoirs, urban-industrial legacies, polluted and recovered ecosystems, and Central European climate gradients. These conditions became field laboratories for questions that are now global: how ecosystems respond to climate change, how carbon moves between land and atmosphere, how biodiversity is altered by human activity, how water systems react to drought and eutrophication, and how societies can adapt to environmental stress. The Academy's contribution to global environmental science therefore did not lie in abandoning the Czech context, but in making it scientifically comparable, internationally connected, and methodologically useful (*Akademie věd České republiky, n.d.*; *Global Change Research Institute, n.d.*).

This contribution must be understood within the broader transformation of environmental science itself. In the 19th and early 20th centuries, naturalists, botanists, geologists, meteorologists, and hydrologists often studied particular landscapes, species, rocks, rivers, or weather records. By the late 20th century, those older traditions were increasingly reorganised around the concept of global environmental change. Climate change, biodiversity loss, nitrogen deposition, land-use change, invasive species, water scarcity, soil degradation, and atmospheric pollution were no longer treated as separate problems. They became parts of an interconnected Earth system shaped by human activity. The Czech Academy's environmental institutes entered this global scientific culture through long-term monitoring, ecosystem experiments, remote sensing, greenhouse-gas observation, biodiversity databases, climate-risk portals, international collaborations, and contributions to global assessments. Their work shows how a national academy can participate in planetary science by providing high-quality local and regional knowledge within international networks.

The most visible institutional expression of this global orientation is the Global Change Research Institute of the Czech Academy of Sciences, known as CzechGlobe. Its research focuses on the current and future manifestations of global change in the atmosphere,

ecosystems, and human society, using methods ranging from molecular analysis to satellite imagery (*Global Change Research Institute, n.d.*). This range is significant because global change is not a single discipline. It requires atmospheric chemistry, plant physiology, ecosystem ecology, remote sensing, climate modelling, socio-economic analysis, adaptation studies, and policy-relevant communication. CzechGlobe's very institutional form demonstrates that environmental science had moved beyond the older division between natural history, meteorology, forestry, agriculture, and geography. It became a research field in which biophysical and social processes had to be analysed together.

CzechGlobe's work on greenhouse gases and ecosystem carbon fluxes places Czech environmental science inside one of the central problems of global climate science. The exchange of carbon dioxide, methane, water vapour, and energy between ecosystems and the atmosphere is a key part of the global carbon cycle. It cannot be understood only by atmospheric measurement or by satellite observation. It requires field stations, eddy-covariance towers, vegetation measurements, soil analysis, modelling, remote sensing, and long-term data series. Through CzeCOS and ICOS-related activities, Czech researchers contribute observations from forests, wetlands, and other ecosystem types to European and global efforts to quantify carbon and greenhouse-gas dynamics (*CzeCOS, n.d.*; *Integrated Carbon Observation System, n.d.*). This contribution matters because global models depend on distributed measurements. A Czech forest or wetland becomes scientifically global when its fluxes are measured according to international standards and interpreted alongside sites from other regions.

The location of the FLUXNET annual conference in Brno in 2023, organised by CzechGlobe and Mendel University in Brno, symbolised this integration. FLUXNET is a global network of regional networks using eddy-covariance measurements to study carbon, water, and energy exchanges between ecosystems and the atmosphere (*Global Change Research Institute, 2023*; *Integrated Carbon Observation System, 2023*). Hosting such a conference is not merely a matter of prestige. It indicates that Czech environmental science is not peripheral to global ecosystem research. It participates in the methodological debates, data standards, and international communities that shape how the terrestrial biosphere is represented in climate science. The Academy's role here is both empirical and organisational: it supplies observations and helps sustain the scientific networks through which observations become global knowledge.

Remote sensing became another major avenue of Czech contribution. Global environmental science depends increasingly on satellites, airborne platforms, drones, imaging spectroscopy, vegetation indices, land-cover classification, and spatial modelling. CzechGlobe's remote-sensing research connects satellite and airborne data with ecosystem observations, drought assessment, vegetation condition, land-use change, and global-change impacts (*Global Change Research Institute, n.d.*). This is important because remote sensing alone can produce images without interpretation, while field ecology alone can produce detail without sufficient spatial coverage. The Czech contribution lies in linking these scales. By combining field measurements, ecosystem stations, hyperspectral data, and modelling, Czech researchers help translate spatial observation into ecological and climatic evidence.

The SCERIN network and related Earth-system observation activities further illustrate this role. CzechGlobe's hosting of the SCERIN workshop in Brno in 2023 on terrestrial ecosystems, land-cover and land-use change, and driving forces reflected the Academy's participation in international remote-sensing and environmental-observation communities (*Global Change*

Research Institute, 2023). Such meetings are important because global environmental problems require comparable methods across regions. Land-use change in Central Europe, drought effects in agricultural landscapes, forest stress, and urban expansion can be understood more clearly when they are studied with methods that are comparable to those used elsewhere. Czech environmental science thus contributes not only data from Czech territory but also methodological exchange within global Earth-observation science.

Climate-impact and adaptation research is another area in which Czech contributions acquired global relevance. CzechGlobe's work includes climate-risk portals, drought monitoring, yield forecasts, fire-risk monitoring, and assessment of climate impacts on agriculture, forestry, water regimes, and landscapes (*Global Change Research Institute, n.d.*). These tools have direct national value, but their scientific importance reaches further. Central Europe is a region where climate change interacts with intensive agriculture, managed forests, river regulation, urbanisation, and historical land-use change. Studying these interactions helps clarify how temperate societies adapt to heat, drought, forest disturbance, crop stress, and water scarcity. Czech research therefore contributes to the wider European and global question of how middle-latitude regions respond to climate instability.

The participation of CzechGlobe researchers in global assessment bodies deepens this contribution. The Intergovernmental Panel on Climate Change and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services are not ordinary scientific projects; they are mechanisms through which scientific knowledge is assessed for international policy. CzechGlobe has been represented in these processes, including the selection of Lenka Suchá as a review editor for the IPCC 7th Assessment Report Working Group II and her role as coordinating lead author in the second IPBES Global Assessment (*Global Change Research Institute, 2025*; *Global Change Research Institute, n.d.*). Such participation shows that Czech environmental science contributes not only observations and papers but also judgement. Assessment work requires the ability to evaluate evidence, compare regions, identify uncertainties, and formulate knowledge in a way that can inform public decisions without becoming political advocacy.

The IPBES connection is especially important because biodiversity and ecosystem services have become central to global environmental science. Climate change is not the only planetary crisis. Species loss, habitat transformation, biotic homogenisation, invasive species, soil degradation, pollinator decline, and ecosystem-function changes all affect the conditions of human life. Czech Academy institutes have contributed to these debates through botany, ecology, soil biology, hydrobiology, and global biodiversity networks. This work carries forward older traditions of field biology and taxonomy, but it is now framed by global questions: how much biodiversity is being lost, where human impacts are strongest, which ecosystems are resilient, and how biodiversity affects carbon storage, productivity, and ecosystem services.

The Institute of Botany of the Czech Academy of Sciences provides one of the most important institutional foundations for these contributions. As the largest botanical research centre in the Czech Republic, it conducts research in plant diversity, vegetation ecology, functional ecology, experimental ecology, mycology, and related areas, while also supporting conservation and environmental assessment (*Institute of Botany, 2022*). Botanical science may seem less dramatic than climate modelling or satellite observation, but it is indispensable to global environmental knowledge. Plants are primary producers, carbon stores, habitat formers, indicators of environmental change, and key elements of cultural landscapes.

Without botanical expertise, biodiversity science becomes abstract and unreliable. The Academy's botanical work therefore gives global environmental science a necessary taxonomic, ecological, and historical depth.

One clear example is the Institute of Botany's participation in international studies of plant diversity across large spatial scales. Research involving Czech botanists has contributed to understanding species richness in small areas, including studies showing that some Eastern European steppe sites can contain exceptionally high plant diversity at fine spatial scales (*Institute of Botany, 2022*). This matters because global biodiversity is often discussed through tropical forests, coral reefs, or charismatic fauna, while temperate grasslands and steppes may receive less attention. Czech and Central European botanical expertise helps correct that imbalance by showing that high biodiversity can occur in small, historically managed, semi-natural landscapes. This contribution is both scientific and cultural: it reminds global environmental science that biodiversity value is not always where public imagination expects it to be.

The PLADIAS database represents another major Czech contribution to global and comparative biodiversity science. It integrates information on Czech flora and vegetation, including species distribution, traits, vegetation types, descriptions, maps, and species composition, and is designed to support research, education, conservation, and environmental assessment (*PLADIAS, n.d.*). Although PLADIAS is nationally focused, its scientific value is broader. Trait databases, vegetation records, and distribution maps allow Czech flora to be compared with other regional floras, used in macroecological analysis, and connected to international biodiversity infrastructures. A well-curated national database can therefore become part of global biodiversity science. It shows how local expertise, when standardised and digitised, becomes internationally usable.

Czech botanical research also contributes to global questions of plant adaptation and climate change. Studies involving researchers from the Institute of Botany have addressed epigenetic memory in clonal plants, forest microclimate mapping, Himalayan alpine shrub growth under global warming, and Arctic tundra plant-community responses to climate change (*Institute of Botany, 2024*; *Institute of Botany, n.d.*; *Biology Centre, 2025*). These examples are important because they show that Czech Academy-related environmental science is not confined to Central Europe. Czech researchers work in mountain systems, Arctic environments, tropical regions, and global comparative networks. Their contribution lies in applying strong ecological, physiological, and statistical expertise to environments where climate change is altering growth, distribution, disturbance, and community dynamics.

The Dendrochronological Laboratory of the Institute of Botany adds another global dimension. Its research focuses on reconstruction of tropical cyclone activity, impacts of climate change on forest growth, detection of forest disturbances, forest dynamics, and forest management (*Institute of Botany, n.d.*). Tree rings are among the most powerful natural archives of environmental history. They allow researchers to reconstruct climate variability, drought, disturbance events, forest growth responses, and long-term ecological change. Czech dendrochronological work therefore contributes to global environmental science by linking biological records with climate history. It also shows how a method rooted in careful measurement of wood anatomy and tree growth can illuminate broad questions of climate change and forest resilience.

The Biology Centre of the Czech Academy of Sciences contributes to global environmental science through ecology, hydrobiology, soil biology, parasitology, entomology, and related fields. Its researchers participate in international studies of biodiversity, aquatic systems, soil carbon, invasive species, and ecosystem responses to climate and human pressure. The Biology Centre's involvement in the DarkDivNet study, for example, linked Czech Academy researchers to a global network examining "dark diversity" — species that could live in a site but are absent — across thousands of vegetation plots in 119 regions (*Biology Centre, 2025*). This approach revealed hidden human impacts that ordinary species counts might miss. The significance of such work is methodological as well as empirical: it changes how biodiversity loss is measured and interpreted.

The Biology Centre's work on soil carbon also has global relevance. Soil is one of the largest terrestrial carbon reservoirs, and its response to plant diversity, land use, climate, and management is crucial for climate mitigation. Research involving Biology Centre scientists has examined why plant diversity can increase soil carbon storage in some contexts but not others, showing that the effect depends on the amount and form of carbon already present in the soil and on ecosystem type (*Biology Centre, 2025*). This kind of work is important because simplistic claims about biodiversity and carbon storage can mislead policy. Czech researchers contribute by clarifying the conditions under which biodiversity supports soil carbon sequestration. Their work therefore links ecology, biogeochemistry, climate policy, and land management.

Aquatic research provides another important Czech contribution. The Biology Centre's Institute of Hydrobiology works on reservoirs, lakes, eutrophication, plankton, microbial loops, fish communities, phosphorus cycling, and long-term aquatic ecosystem processes (*Biology Centre, n.d.*). These themes are globally significant because freshwater ecosystems are among the most pressured environments in the world. Eutrophication, algal blooms, phosphorus accumulation, climate warming, fish-community shifts, and reservoir management affect water quality, biodiversity, public health, recreation, and food systems. Czech reservoir research is especially valuable because reservoirs integrate catchment processes, nutrient loads, management decisions, and climate variability. They are experimental and observational systems where global freshwater problems can be studied in detail.

The FERRO project, involving the Biology Centre as one of seven partners from six European countries, illustrates how Czech hydrobiology participates in European environmental innovation. The project addresses eutrophication in European lakes, with attention to phosphorus, algal blooms, restoration, Earth observation, biochemistry, hydrobiology, plant science, and sonar sediment monitoring (*Biology Centre, 2024*). Its importance lies in the combination of ecological restoration and resource thinking. Phosphorus is both a pollutant in lakes and a finite nutrient resource essential for food production. Czech participation in this project shows how environmental science now has to link ecosystem recovery, circular resource use, remote sensing, and climate-change impacts. This is a genuinely global problem expressed through European freshwater systems.

Czech hydrobiology has also contributed to the digital transformation of conservation science. Biology Centre researchers have led or participated in work on emerging digital tools for marine and freshwater conservation, including culturomics and iEcology, which use digital traces and large-scale online information to support ecological and conservation research (*Biology Centre, 2020*). Such work expands the meaning of environmental data. It suggests that public

attention, digital media, citizen observations, online images, and cultural signals may complement traditional ecological monitoring. This does not replace field science, but it gives conservation researchers new sources for understanding human–nature interactions. Czech contributions here are methodological and interdisciplinary, joining ecology with data science and social observation.

The Academy's contribution to global environmental science also includes atmospheric research and participation in European atmospheric infrastructures. The Institute of Atmospheric Physics maintains long-term observations and works on meteorology, atmospheric dynamics, cloud and precipitation processes, boundary-layer physics, ionospheric research, and near-space phenomena (*Institute of Atmospheric Physics, n.d.*). Its Milešovka observatory, with measurements beginning in 1905, is part of a long tradition of atmospheric observation that now feeds into climate and atmospheric-composition research. Through ACTRIS-CZ and related European cooperation, Czech atmospheric observations become part of wider efforts to standardise and compare data on aerosols, clouds, trace gases, and atmospheric processes (*Institute of Atmospheric Physics, n.d.*; *ACTRIS, n.d.*). This contribution is essential because atmospheric change is spatially distributed and requires coordinated observation.

Space-related environmental science also forms part of the Czech contribution. The boundary between Earth science and space science has become increasingly porous because satellites, solar activity, ionospheric disturbances, geomagnetic storms, and near-Earth objects all affect environmental observation and technological systems. The Institute of Atmospheric Physics has long worked on upper-atmospheric and near-space processes, including participation in satellite missions and solar-wind research (*Institute of Atmospheric Physics, n.d.*). The Astronomical Institute contributes research on solar physics, meteors, interplanetary matter, and the near-Earth space environment (*Astronomical Institute, n.d.*). These fields may seem distant from environmental science in a narrow sense, but they are part of the observational and physical context in which global environmental knowledge is produced. Earth observation itself depends on space technology, and the Earth's atmosphere is influenced by solar and cosmic processes.

Geology and geophysics provide another foundation for global environmental contributions. The Institute of Geology, Institute of Rock Structure and Mechanics, and Institute of Geophysics study geological history, rock environments, geodynamics, seismology, geomagnetism, and the physical structure of the Earth (*Institute of Geology, n.d.*; *Institute of Geophysics, n.d.*; *Institute of Rock Structure and Mechanics, n.d.*). These fields contribute to global environmental science by providing knowledge of deep time, landscape evolution, natural hazards, mineral and rock systems, and the physical stability of the environment. Climate and biodiversity change are often discussed as contemporary issues, but they unfold in landscapes shaped by geological structures and histories. Czech earth-science expertise therefore helps place environmental change within the longer temporal and physical context of the Earth system.

Seismological monitoring and international data exchange show how even a relatively low-seismicity country can contribute to global geophysical science. The Czech Regional Seismological Network and WEBNET record natural and induced seismicity, earthquake swarms, rockbursts, and other seismic events, while contributing to international seismological data systems (*Institute of Geophysics, n.d.*). Such observations help

researchers understand crustal processes, fault systems, induced seismicity, and regional geodynamics. In global environmental science, natural hazards are increasingly studied together with human activity, infrastructure, and risk governance. Czech geophysical expertise therefore belongs to the wider field of environmental risk science, even when its immediate object is the Earth's physical interior.

The Czech Academy's environmental contribution is also institutional and methodological. It helps demonstrate how environmental science can be organised in a small or medium-sized country without losing global relevance. The Academy combines specialised institutes with cross-cutting programmes, long-term monitoring with modern data systems, national databases with international networks, and field expertise with remote sensing and modelling. This institutional pattern is important because global environmental science depends on distributed competence. No single country, no matter how large, can observe all ecosystems, climates, species, soils, waters, or atmospheric processes. The global system depends on many national and regional institutions producing reliable knowledge. The Czech Academy is one such institution, and its contribution is strongest when local expertise is made globally comparable.

The role of long-term observation is especially important in this regard. Global environmental science is increasingly data-rich, but long-term, carefully curated, standardised records remain rare. Mountain observatories, greenhouse-gas stations, ecosystem flux towers, botanical databases, hydrological catchments, reservoir records, seismic networks, and vegetation plots are forms of scientific memory. Czech contributions to global science often come from precisely this memory. They allow researchers to ask whether change is new, how fast it is happening, what baselines are appropriate, and how local processes fit into global trends. The Academy's long-term commitment to observation is therefore one of its most valuable international assets.

The Academy's environmental science also contributes through conceptual caution. Global environmental debates often seek simple narratives: more biodiversity always means more carbon, wetlands always retain more water, forests always cool landscapes, and technological solutions can quickly solve complex environmental problems. Czech Academy research frequently complicates such narratives. Hydrological studies of peatlands and forest soils, biodiversity studies of dark diversity and plant traits, soil-carbon research, eutrophication studies, and climate-risk modelling all show that environmental processes are conditional, scale-dependent, and historically shaped (*Akademie věd České republiky, 2024*; *Biology Centre, 2025*; *Institute of Hydrology, n.d.*). This caution is not scepticism about environmental change. It is a sign of mature science. It makes policy more realistic because it prevents ecological slogans from replacing evidence.

The human dimensions of global environmental change have become increasingly important in Czech Academy research. CzechGlobe includes research on impacts of global change on human society, adaptation, governance, and socio-economic systems (*Global Change Research Institute, n.d.*). This is essential because environmental change is not only biophysical. It affects agriculture, forestry, urban life, infrastructure, migration, health, cultural values, and political decision-making. Conversely, human choices shape land use, emissions, adaptation pathways, and biodiversity outcomes. Czech contributions to global environmental science therefore include not only measurements of atmosphere and ecosystems, but also analysis of how societies understand, govern, and respond to environmental risk.

This social-scientific dimension connects the environmental sciences to the broader institutional history of the Academy. Earlier chapters of this book have shown that the Academy's mission repeatedly shifted in relation to the state, public needs, and scientific autonomy. Environmental science makes this relation especially explicit. Climate and biodiversity knowledge cannot remain enclosed in institutes; it must enter public debate, planning, education, and international assessment. Yet it must do so without losing scientific independence. The Academy's contribution to global environmental science is therefore also a contribution to the democratic culture of expertise. It shows how public research can inform society while resisting both political manipulation and simplistic activism.

International collaboration is not an optional supplement to this work. It is the condition of global environmental science. Czech researchers participate in European infrastructures, Horizon Europe projects, IPCC and IPBES assessments, FLUXNET, ICOS, ACTRIS, biodiversity networks, lake-restoration consortia, Arctic and mountain studies, tropical monitoring, and remote-sensing communities. These collaborations allow Czech science to compare its data, test its methods, and contribute to wider syntheses. They also expose Czech researchers to international standards of openness, reproducibility, data sharing, and peer review. Through these practices, the Academy's environmental institutes become part of a global epistemic community while retaining responsibility for Czech territory and Central European problems.

The educational role of these contributions should also be emphasised. Global environmental science requires researchers capable of working across disciplines, scales, and cultures. The Academy trains young scientists through doctoral supervision, field stations, international projects, ecosystem infrastructures, databases, modelling platforms, and cooperation with universities. A young ecologist, climatologist, hydrologist, botanist, geophysicist, or remote-sensing specialist trained in the Academy's environment learns not only techniques, but also the discipline of long-term observation and international comparison. This human-capital contribution is less visible than a major paper or database, but it is essential for the reproduction of environmental expertise.

Czech contributions to global environmental science also have a cultural dimension. They show that a country's landscapes are not merely domestic scenery; they are part of the planetary system. Czech forests, fields, wetlands, reservoirs, mountain observatories, seismic stations, botanical plots, and urban heat islands can all become sites where global environmental questions are investigated. This changes the meaning of national scientific responsibility. To know one's own territory well is no longer a provincial task. It is part of global environmental knowledge. The Academy's work thus continues the older Czech tradition of linking science with national cultural self-understanding, but it gives that tradition a planetary horizon.

The global environmental contribution of the Czech Academy is therefore not a single achievement or one famous discovery. It is a cumulative pattern of participation: greenhouse-gas measurements, ecosystem flux data, remote-sensing methods, climate-risk portals, IPCC and IPBES expertise, botanical databases, biodiversity syntheses, hydrobiological lake studies, soil-carbon research, atmospheric observations, seismic networks, hydrological monitoring, and interdisciplinary adaptation research. This pattern is typical of environmental science as a whole. Its most important contributions often take the form of networks, datasets, assessments, models, methods, and long-term comparisons rather than isolated

breakthroughs. The Academy's strength is that it can sustain precisely these less spectacular but globally necessary forms of knowledge.

Thus, Czech contributions to global environmental science demonstrate how the Czech Academy of Sciences transformed national expertise into international relevance. Through CzechGlobe, the Institute of Botany, the Biology Centre, the Institute of Atmospheric Physics, the Institute of Hydrology, the Institute of Geophysics, the Institute of Geology, the Institute of Rock Structure and Mechanics, the Astronomical Institute, and their partners, the Academy contributes to climate science, biodiversity research, ecosystem monitoring, atmospheric observation, freshwater restoration, soil-carbon analysis, remote sensing, geological and geophysical knowledge, and global environmental assessments. These contributions are rooted in the landscapes and scientific traditions of the Czech lands, but they now operate within planetary frameworks. They show that a national academy can serve both its own society and the global community by preserving long-term expertise, producing reliable data, participating in international networks, and offering scientifically grounded interpretations of environmental change. In this sense, Czech environmental science is one of the clearest expressions of the modern Academy's wider mission: to make local knowledge part of global responsibility.

References

ACTRIS. (n.d.). *International collaboration*. Aerosol, Clouds and Trace Gases Research Infrastructure.

Akademie věd České republiky. (2021). *The COMPASS tokamak ends: A new era of fusion research begins in Czechia*. CAS.

Akademie věd České republiky. (2022). *We want to help scientists apply their research, says head of CeTTAV*. CAS.

Akademie věd České republiky. (2023). *Gilead Sciences and IOCB Prague renew partnership*. CAS.

Akademie věd České republiky. (2024). *IOCB Prague expands overseas, opens a new branch in Boston*. CAS.

Akademie věd České republiky. (2024). *Peatlands do not retain water as well as regular forest soil, hydrologists find*. CAS.

Akademie věd České republiky. (n.d.). *Research areas*. CAS.

Akademie věd České republiky. (n.d.). *Research institutes*. CAS.

Astronomical Institute. (n.d.). *About the Institute*. Astronomical Institute of the CAS.

Biology Centre. (2020). *Emerging digital tools for marine and freshwater conservation*. Biology Centre of the CAS.

Biology Centre. (2022). *Big-data world brings revolution to movement ecology*. Biology Centre of the CAS.

Biology Centre. (2024). *FERRO Project launches with ambitious goals to restore European lakes*. Biology Centre of the CAS.

Biology Centre. (2025). *Arctic plants react to climate change in unexpected ways*. Biology Centre of the CAS.

Biology Centre. (2025). *Global dark diversity study reveals hidden impact of human activities on nature*. Biology Centre of the CAS.

Biology Centre. (2025). *Plant diversity helps store carbon in soil — but not everywhere equally*. Biology Centre of the CAS.

Biology Centre. (n.d.). *Research activities of the Institute of Hydrobiology*. Biology Centre of the CAS.

CERN-CZ. (n.d.). *Research infrastructure for experiments at CERN*. Institute of Physics of the CAS.

CTA-CZ. (n.d.). *Cherenkov Telescope Array — participation of the Czech Republic*. Institute of Physics of the CAS.

CzechNanoLab. (n.d.). *CzechNanoLab: Large research infrastructure for nanoscience and nanotechnology*. CzechNanoLab.

CzeCOS. (n.d.). *About project*. CzeCOS research infrastructure.

Demel, J. (n.d.). *ICR MOFs and coordination polymers*. Institute of Inorganic Chemistry of the Czech Academy of Sciences.

ELI Beamlines. (n.d.). *ELI Beamlines — Dolní Břežany*. Extreme Light Infrastructure ERIC.

ELI ERIC. (n.d.). *What is ELI?* Extreme Light Infrastructure ERIC.

EUROfusion. (n.d.). *Czech Republic*. EUROfusion consortium.

Extreme Light Infrastructure ERIC. (n.d.). *What is ELI?* Extreme Light Infrastructure ERIC.

Franc, M. (2024). The showcase of Czechoslovak science. In *Science, technology and state socialism*.

Fyzikální ústav AV ČR. (n.d.). *About FZU*. Institute of Physics of the Czech Academy of Sciences.

Fyzikální ústav AV ČR. (n.d.). *Research activities*. Institute of Physics of the Czech Academy of Sciences.

Fyzikální ústav AV ČR. (n.d.). *Research divisions and departments*. Institute of Physics of the Czech Academy of Sciences.

Gilead Sciences. (2006). *Gilead Sciences and the Institute of Organic Chemistry and Biochemistry establish new academic research centre in Prague*. Gilead Sciences.

Gilead Sciences. (2011). *Gilead extends its funding support for the Gilead Sciences Research Centre at the Institute of Organic Chemistry and Biochemistry in Prague*. Gilead Sciences.

Global Change Research Institute. (2023). *Ecosystem station in Ghana officially starts operations*. Global Change Research Institute of the CAS.

Global Change Research Institute. (2023). *FLUXNET Annual Conference*. Global Change Research Institute of the CAS.

Global Change Research Institute. (2023). *Workshop of the SCERIN Network in Brno*. Global Change Research Institute of the CAS.

Global Change Research Institute. (2025). *CzechGlobe will be represented in the IPCC*. Global Change Research Institute of the CAS.

Global Change Research Institute. (n.d.). *About us*. Global Change Research Institute of the CAS.

Global Change Research Institute. (n.d.). *Climate Change / ClimRisk*. Global Change Research Institute of the CAS.

Global Change Research Institute. (n.d.). *Data CzechGlobe*. Global Change Research Institute of the CAS.

Global Change Research Institute. (n.d.). *Domain of Ecosystem Analyses*. Global Change Research Institute of the CAS.
Global Change Research Institute. (n.d.). *Global change*. Global Change Research Institute of the CAS.
Global Change Research Institute. (n.d.). *Infrastructure elements*. Global Change Research Institute of the CAS.
Global Change Research Institute. (n.d.). *Remote sensing*. Global Change Research Institute of the CAS.
HiLASE Centre. (n.d.). *About us*. HiLASE Centre, Institute of Physics of the CAS.
Institute of Analytical Chemistry. (n.d.). *History*. Institute of Analytical Chemistry of the CAS.
Institute of Analytical Chemistry. (n.d.). *Scientific activities*. Institute of Analytical Chemistry of the CAS.
Institute of Atmospheric Physics. (n.d.). *About us*. Institute of Atmospheric Physics of the CAS.
Institute of Atmospheric Physics. (n.d.). *Homepage*. Institute of Atmospheric Physics of the CAS.
Institute of Atmospheric Physics. (n.d.). *Milešovka and Research Infrastructure ACTRIS*. Institute of Atmospheric Physics of the CAS.
Institute of Botany. (2022). *High plant diversity is often found in the smallest of areas*. Institute of Botany of the CAS.
Institute of Botany. (2022). *Institute of Botany of the CAS celebrates its 60th anniversary*. Institute of Botany of the CAS.
Institute of Botany. (2024). *Plants can adapt to climate change without changing their DNA*. Institute of Botany of the CAS.
Institute of Botany. (n.d.). *Dendrochronological Laboratory*. Institute of Botany of the CAS.
Institute of Botany. (n.d.). *Plant diversity analysis and synthesis centre (PLADIAS)*. Institute of Botany of the CAS.
Institute of Chemical Process Fundamentals. (n.d.). *Department of Catalysis and Reaction Engineering*. Institute of Chemical Process Fundamentals of the CAS.
Institute of Computer Science. (n.d.). *About us*. Institute of Computer Science of the CAS.
Institute of Computer Science. (n.d.). *Artificial Intelligence for Science and Society*. Institute of Computer Science of the CAS.
Institute of Computer Science. (n.d.). *Competencies*. Institute of Computer Science of the CAS.
Institute of Computer Science. (n.d.). *Department of Artificial Intelligence*. Institute of Computer Science of the CAS.
Institute of Computer Science. (n.d.). *Department of Machine Learning*. Institute of Computer Science of the Czech Academy of Sciences.
Institute of Computer Science. (n.d.). *Machine Learning and Modelling Seminar*. Institute of Computer Science of the CAS.
Institute of Computer Science. (n.d.). *Research*. Institute of Computer Science of the CAS.
Institute of Geology. (n.d.). *Research*. Institute of Geology of the CAS.
Institute of Geophysics. (n.d.). *About*. Institute of Geophysics of the CAS.
Institute of Geophysics. (n.d.). *Czech Regional Seismic Network*. Institute of Geophysics of the CAS.
Institute of Geophysics. (n.d.). *Homepage*. Institute of Geophysics of the CAS.

Institute of Geophysics. (n.d.). *Local seismic network WEBNET*. Institute of Geophysics of the CAS.
Institute of Geophysics. (n.d.). *Seismology*. Institute of Geophysics of the CAS.
Institute of Hydrology. (n.d.). *Hydrological monitoring*. Institute of Hydrology of the CAS.
Institute of Hydrology. (n.d.). *Institute*. Institute of Hydrology of the CAS.
Institute of Hydrology. (n.d.). *Research*. Institute of Hydrology of the CAS.
Institute of Hydrology. (n.d.). *Wetland hydrology*. Institute of Hydrology of the CAS.
Institute of Information Theory and Automation. (n.d.). *About us*. Institute of Information Theory and Automation of the CAS.
Institute of Information Theory and Automation. (n.d.). *For students*. Institute of Information Theory and Automation of the CAS.
Institute of Information Theory and Automation. (n.d.). *History of the institute*. Institute of Information Theory and Automation of the CAS.
Institute of Information Theory and Automation. (n.d.). *Our experts in the media*. Institute of Information Theory and Automation of the CAS.
Institute of Information Theory and Automation. (n.d.). *Research areas*. Institute of Information Theory and Automation of the CAS.
Institute of Macromolecular Chemistry. (2019). *60 years of the Institute of Macromolecular Chemistry*. Institute of Macromolecular Chemistry of the CAS.
Institute of Macromolecular Chemistry. (n.d.). *Macroporous conducting materials for supercapacitor applications*. Institute of Macromolecular Chemistry of the CAS.
Institute of Macromolecular Chemistry. (n.d.). *Who we are*. Institute of Macromolecular Chemistry of the CAS.
Institute of Mathematics. (n.d.). *Research*. Institute of Mathematics of the CAS.
Institute of Organic Chemistry and Biochemistry. (n.d.). *History*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry. (n.d.). *IOCB Tech*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry. (n.d.). *Research*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry. (n.d.). *Successful compounds*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry. (n.d.). *Tenofovir*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Plasma Physics of the CAS. (n.d.). *COMPASS Upgrade*. Institute of Plasma Physics of the CAS.
Institute of Plasma Physics of the CAS. (n.d.). *Fusion research in the Czech Republic*. Institute of Plasma Physics of the CAS.
Institute of Plasma Physics of the CAS. (n.d.). *Research*. Institute of Plasma Physics of the CAS.
Institute of Rock Structure and Mechanics. (n.d.). *About the Institute*. Institute of Rock Structure and Mechanics of the CAS.
Integrated Carbon Observation System. (2023). *FLUXNET scientists agree to strengthen their global collaboration*. ICOS.
Integrated Carbon Observation System. (n.d.). *Czech Republic*. ICOS.
Integrated Carbon Observation System. (n.d.). *ICOS Carbon Portal*. ICOS.

Intergovernmental Panel on Climate Change. (2021). *Climate change 2021: The physical science basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

Intergovernmental Panel on Climate Change. (2023). *Climate change 2023: Synthesis report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. IPCC.

J. Heyrovský Institute of Physical Chemistry. (2023). *Material genetics will be pursued by the AMULET project, which succeeded in the Excellent Research Call*. J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *About the Institute*. J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *Brief history of the institute*. J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *Energy-X: Transformative chemistry for a sustainable energy future*. J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *Nanomaterials and nanotechnologies for environment protection and sustainable future*. J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *Research*. J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences.

Koutník, V. (n.d.). *About Eduard Čech*. Czech Digital Mathematics Library.

Materials Growth and Measurement Laboratory. (n.d.). *Materials Growth and Measurement Laboratory*. MGML.

Ministry of Education, Youth and Sports. (2024). *Roadmap of Large Research Infrastructures of the Czech Republic for the years 2023–2026*. Ministry of Education, Youth and Sports of the Czech Republic.

Nobel Prize. (n.d.). *Jaroslav Heyrovský – Facts*. NobelPrize.org.

Nuclear Physics Institute of the CAS. (n.d.). *CANAM: Centre of Accelerators and Nuclear Analytical Methods*. Nuclear Physics Institute of the CAS.

Nuclear Physics Institute of the CAS. (n.d.). *Nuclear Physics Institute of the CAS*. Nuclear Physics Institute of the CAS.

PALS Research Centre. (n.d.). *PALS laser facility*. Prague Asterix Laser System.

PLADIAS. (n.d.). *Database of the Czech flora and vegetation*. PLADIAS.

Rákosník, J., & Rozložník, M. (2021). Institute of Mathematics of the Czech Academy of Sciences. *European Mathematical Society Magazine, 121*, 40–44. doi:10.4171/MAG/36.

Research Infrastructure CTA-CZ. (n.d.). *Research infrastructure CTA-CZ*. Czech participation in the Cherenkov Telescope Array.

Schwarz, H., & Friedrich, B. (2021). Obituary for Rudolf Zahradník (1928–2020): “To do what’s right”. *Theoretical Chemistry Accounts, 140*, Article 28.

Strategy AV21. (n.d.). *Top research in the public interest*. CAS.

Strategy AV21. (n.d.). *Water for life*. CAS.

Chapter Eleven

Life Sciences, Biomedicine, and Biotechnology

Biology after 1993: Continuity and Renewal

1. Molecular biology, genetics, and cell biology

After 1993, biology within the Academy of Sciences of the Czech Republic entered a period in which continuity and renewal were not opposing tendencies but two sides of the same institutional transformation. The establishment of the Academy of Sciences of the Czech Republic after the dissolution of the Czechoslovak Academy of Sciences did not erase the older scientific schools, laboratory cultures, and disciplinary traditions that had accumulated under Czechoslovak conditions. Yet it placed them within a new political, legal, financial, and international environment. In biological research, this shift was especially visible because molecular biology, genetics, and cell biology were among the fields most strongly affected by global methodological change in the late 20th century. The Academy inherited institutes that had survived ideological control, resource limitations, interrupted international exchange, and the long consequences of normalisation. At the same time, these institutes entered a world in which publication in international journals, competitive grants, peer evaluation, European research programmes, and access to advanced instrumentation became decisive for scientific legitimacy. Biology after 1993 therefore cannot be described simply as a continuation of previous research agendas. It was a reorganisation of Czech biological science around molecular mechanisms, experimental systems, core facilities, and international standards of research performance. The change was not only intellectual but also institutional, because laboratories had to learn new forms of management, funding, collaboration, and scientific communication. The Academy's biological institutes became part of a wider transformation in which the autonomy of science had to be rebuilt not as isolation from the state, but as accountable self-government within a democratic research system. In this sense, molecular biology after 1993 became one of the most visible signs that the post-socialist Academy was not merely preserving inherited expertise, but translating it into a new European language of research (*Academy of Sciences of the Czech Republic, n.d.*; *Czech Academy of Sciences, n.d.*).

The most important background to this transformation was the peculiar strength of Czechoslovak experimental biology before 1989. Unlike some fields that had been more directly subordinated to ideological narratives, experimental biology possessed strong international roots, although these roots were often constrained by political circumstances. Genetics had suffered severely in the Stalinist period, especially under the influence of anti-Mendelian and Lysenkoist doctrines, but Czechoslovak science nevertheless produced important work in immunology, virology, microbiology, plant biology, and experimental medicine. This created a paradoxical inheritance. On the one hand, biological institutes carried the memory of ideological pressure, personal exclusions, and restricted contacts with Western science. On the other hand, they also preserved strong experimental cultures, technical skills, and individual scientific reputations that could be reactivated after the political opening of

1989. The post-1993 Academy thus inherited not a blank institutional landscape, but a dense and uneven map of laboratories, research groups, and scientific lineages. Molecular biology, genetics, and cell biology benefited from this map because they could build on earlier work in immunogenetics, retrovirology, microbial physiology, plant genetics, and developmental biology. The shift after 1993 was therefore not simply from backwardness to modernity. It was a movement from politically constrained excellence to internationally exposed excellence. This distinction is important because it prevents the history of Czech biology from being reduced to a story of Westernisation. The Academy did not merely import molecular biology from abroad; it reconnected older Czechoslovak biological schools with the global molecular revolution that had transformed life sciences since the 1970s and 1980s (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Iványi, 2003*).

The Institute of Molecular Genetics became one of the central institutions through which this continuity was carried into the post-socialist period. Its deeper origins lay in the Department of Experimental Biology and Genetics of the Institute of Biology of the Czechoslovak Academy of Sciences, associated with Milan Hašek and the Czechoslovak immunogenetic school. The foundation of the Institute of Experimental Biology and Genetics in 1962, and its later transformation into the Institute of Molecular Genetics in 1976, signalled that Czech experimental biology had already begun to move towards a molecular interpretation of living systems before the democratic transformation. The work of Hašek and his colleagues belonged to a broader international history of immunological tolerance, transplantation biology, and the study of cellular recognition. Later achievements associated with retrovirology, reverse transcriptase research, virogeny, and viral genome sequencing demonstrated that the institute had not been isolated from some of the major questions of 20th-century biology. Yet this scientific development took place in a political environment that limited mobility, damaged careers, and narrowed participation in international networks. The post-1989 and post-1993 periods therefore gave the institute a new institutional horizon. It could reinterpret its own history not only as a tradition of national excellence, but also as a resource for renewed international competitiveness. The molecular orientation that had emerged under difficult conditions became the basis for a more open, diversified, and technologically intensive research culture. The Institute of Molecular Genetics thus embodied the wider Academy problem of the 1990s: how to preserve accumulated scientific capital while changing almost every condition under which that capital was reproduced. Its later development showed that continuity was most productive when it was not conservative, but adaptive and institutionally self-critical (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Hejnar, 2017*).

The reorganisation of biology after 1993 was shaped by the general legal and institutional framework of the new Academy. The Academy of Sciences of the Czech Republic was not created as a learned society in the old 19th-century sense, nor as a ministry-like command structure inherited from the socialist period. It became a public non-university research organisation, with institutes as its principal research units and with a statutory mission covering natural, technical, social, and human sciences. This mattered for biology because the life sciences required long-term institutional stability, expensive equipment, specialised personnel, and international collaboration. The state remained the principal source of institutional funding, but the political logic of funding changed. Institutes now had to operate within a plural research system in which grant competition, evaluation, external partnerships, and European programmes acquired growing importance. Biological research was particularly

sensitive to this shift because modern molecular and cellular work depends on continually renewed technologies: sequencing platforms, imaging systems, flow cytometry, proteomics, bioinformatics, animal facilities, and controlled plant-growth environments. The Academy therefore had to combine autonomy with infrastructural responsibility. It could not leave each laboratory to survive alone, but it also could not return to a centrally planned distribution of scientific priorities. The post-1993 institutional model encouraged institutes to define their own research profiles while submitting them to periodic assessment and external comparison. This framework gradually changed the internal culture of biological research from one organised primarily around departments and senior scientific authority to one increasingly organised around research groups, project teams, services, and infrastructures (*Czech Academy of Sciences, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

The transformation was also epistemic. Molecular biology changed what counted as an explanation in the biological sciences. Earlier institutional traditions in physiology, morphology, taxonomy, microbiology, and experimental medicine did not disappear, but they increasingly had to be linked to genes, proteins, signalling pathways, cellular structures, molecular interactions, and genomic information. The living organism was no longer studied only as an anatomical, physiological, ecological, or developmental whole. It was increasingly interpreted as a system of regulated molecular processes operating across scales from DNA and RNA to cells, tissues, organs, populations, and environments. Czech Academy institutes followed this wider international movement, but they did so in a distinctive way because many older research orientations remained institutionally embedded. Plant physiology became plant molecular genetics and plant biotechnology. Microbiology became molecular and cellular microbiology, microbial genomics, host-pathogen interaction, and biotechnology. Experimental medicine became more closely linked with stem cells, tissue engineering, developmental biology, neurobiology, oncology, genetic toxicology, and nanomedicine. Animal physiology and genetics connected biomedical questions with evolutionary, developmental, and biodiversity-oriented approaches. Molecular genetics itself expanded into genomics, bioinformatics, immunology, molecular oncology, mechanobiology, and virology. The result was not the replacement of biology by molecular technique, but the molecularisation of many biological questions. This was one of the most important disciplinary shifts in the Academy's life sciences after 1993 (*Institute of Experimental Botany of the Czech Academy of Sciences, n.d.*; *Institute of Microbiology of the Czech Academy of Sciences, n.d.*; *Institute of Experimental Medicine of the CAS, n.d.*).

At the Institute of Molecular Genetics, the phrase "from genes to function" captures more than a research slogan. It reflects the historical movement from gene-centred analysis to the study of dynamic biological processes in cells, tissues, and organisms. In the post-1993 period, molecular genetics could no longer remain a narrow discipline concerned only with heredity or gene structure. It had to engage with cell signalling, differentiation, development, genome integrity, epigenetic regulation, tumour biology, immune responses, virology, and the molecular basis of disease. This expansion changed the institute's internal organisation. Research groups became increasingly specialised, but their specialisation was embedded in shared technical platforms and conceptual overlaps. Laboratories working on RNA biology, transcriptional regulation, genome dynamics, adaptive immunity, cancer biology, cell motility, tissue morphogenesis, cilia genetics, structural neurobiology, or developmental mechanobiology could be institutionally separate while depending on common

infrastructures. This created a new type of academy institute, less like a collection of disciplinary departments and more like a research ecosystem. The institute's modern profile shows how Czech biological science moved from disciplinary identity to problem-based and technology-enabled organisation. Molecular biology was no longer one field among others; it became a common language through which diverse biological problems could be discussed. Such a language supported international collaboration because it connected Czech laboratories to global research agendas. It also supported institutional renewal because younger scientists could build laboratories around internationally recognisable topics rather than around inherited administrative divisions (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

One of the major changes after 1993 was the growing importance of core facilities and shared research infrastructures. In socialist-era institutes, expensive equipment often marked the boundary between privileged and less privileged laboratories, and access could depend on administrative hierarchy or personal networks. In the post-socialist Academy, the logic gradually shifted towards service groups, shared platforms, national infrastructures, and open access to specialised technologies. This development was especially important in molecular biology and cell biology, where individual laboratories rarely possess the full range of necessary equipment. Advanced imaging, electron microscopy, flow cytometry, sequencing, proteomics, bioinformatics, chemical screening, and animal model generation became not merely technical support but part of the epistemic machinery of modern biology. The Institute of Molecular Genetics illustrates this new model through its research services and infrastructures, including Czech-BioImaging, ELIXIR CZ, CZ-OPENSCREEN, and the Czech Centre for Phenogenomics. These infrastructures connected the Academy to broader national and European networks in biological imaging, biological data, chemical biology, and model organism research. They also changed the social organisation of science. Technical specialists, facility managers, data analysts, and service scientists acquired growing importance alongside principal investigators. The modern biological institute therefore became more collective and more infrastructural than the older image of a laboratory centred on a single scientific school. This infrastructural transformation was a key condition for Czech biology's integration into the European Research Area (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

The growth of genomics and bioinformatics was among the most consequential changes in Academy biology after 1993. Earlier molecular biology had often been experimental in a relatively focused sense: a gene, a virus, a pathway, a protein, a cell line, or a model organism. By the late 1990s and especially after the completion of major genome projects, biological research increasingly became data-intensive. Sequencing technologies transformed the scale of inquiry. They made it possible to compare genomes, identify regulatory elements, study gene expression, trace evolutionary relationships, analyse pathogens, and connect molecular variation with disease, development, and adaptation. Czech biological institutes had to develop not only wet-lab capacities but also computational expertise. The rise of bioinformatics therefore linked biology to mathematics, computer science, statistics, and information theory. This connection was institutionally important because the Academy already possessed strong traditions in mathematics, cybernetics, informatics, and theoretical modelling. The post-1993 molecularisation of biology thus encouraged interdisciplinary bridges inside the Academy itself. Genomics was not only a new method but also a new institutional language, because it required data storage, software tools, databases,

international standards, and reproducible workflows. Through infrastructures such as ELIXIR CZ and through local genomics and bioinformatics groups, Czech biology participated in a broader European movement towards biological data integration. This development also made biological research more transparent and more dependent on international comparability (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Experimental Botany of the Czech Academy of Sciences, n.d.*).

Cell biology developed in parallel with molecular genetics, but its significance lay in restoring the living cell as a dynamic spatial system rather than treating it as a passive container for genes. Modern cell biology after 1993 increasingly relied on imaging, cytometry, fluorescent labelling, molecular probes, live-cell observation, ultrastructural analysis, and computational interpretation. This was a decisive change because many biological processes cannot be understood from sequence information alone. Cell division, differentiation, motility, intracellular transport, signal transduction, tissue formation, immune responses, and tumour invasion all require attention to cellular architecture and cellular dynamics. Czech Academy institutes developed these lines of research in several overlapping domains. At the Institute of Molecular Genetics, cell biology connected with cytoskeleton research, cell signalling, cell nucleus biology, cell motility, mechanobiology, developmental processes, and cancer. At the Institute of Experimental Medicine, cellular research was linked with neurobiology, stem cells, tissue replacement, and pathology. At the Institute of Experimental Botany and the Institute of Plant Molecular Biology, cell biology was inseparable from plant development, hormonal regulation, cytogenetics, epigenetics, photosynthesis, plant-virus interactions, and adaptation. This breadth shows that cell biology became a bridge between molecular detail and organismal function. It also made the Academy's biological research more visibly connected to medicine, agriculture, environmental stress, and biotechnology. The cell became one of the privileged sites where fundamental science and social relevance met (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Plant Molecular Biology of the Biology Centre CAS, n.d.*).

Plant molecular biology formed another important component of post-1993 biological renewal. Czech plant science had older roots in botany, plant physiology, cytogenetics, agriculture-related research, and experimental botany. After the political transformation, these traditions were increasingly reconfigured through molecular genetics, genomics, biotechnology, cell biology, and environmental stress research. The Institute of Experimental Botany defined its principal research fields around plant genetics, physiology, and biotechnology, including structural and functional genomics, DNA repair, pollen molecular genetics, plant development, growth regulation, plant viruses, and plant pathophysiology. The Institute of Plant Molecular Biology in České Budějovice, founded in 1990 and later incorporated into the Biology Centre CAS, represented a particularly clear example of the transition from genetically oriented teams to a specialised molecular plant research environment. This was not merely a technical shift. Plant molecular biology became increasingly important because agriculture, climate change, environmental pollution, and food security gave plant research new strategic significance. The Academy's work in this area therefore stood between basic biology and long-term societal need. Its value did not depend on immediate technological application alone, but on understanding the mechanisms by which plants develop, respond to stress, regulate growth, and adapt to changing conditions. Post-1993 plant biology thus showed the Academy's ability to preserve fundamental research while making it relevant to sustainability. It also linked Czech biology to European programmes

supporting excellence, international advisory boards, and mobility of researchers. In this respect, plant molecular biology became one of the fields in which the boundaries between molecular science, ecology, agriculture, and global environmental concern became increasingly porous (*Institute of Experimental Botany of the Czech Academy of Sciences, n.d.*; *Institute of Plant Molecular Biology of the Biology Centre CAS, n.d.*; *Academy of Sciences of the Czech Republic, 2023*).

Microbiology after 1993 likewise illustrates the broadening of molecular and cellular approaches. The Institute of Microbiology of the Czech Academy of Sciences, established as an independent institute in the Czechoslovak period, developed into one of the major centres for basic and applied microbiological research. Its research profile covered microbial physiology, molecular and cellular microbiology, immunology, biotechnology, biosynthesis of natural products, environmental and soil microbiology, microbial pathogenesis, gnotobiology, and photosynthetic microorganisms. This breadth is historically important because microbiology connects several scales of biological inquiry. It deals with molecular mechanisms inside microorganisms, with interactions between microbes and hosts, with environmental communities, and with industrial or medical applications. After 1993, these scales became increasingly integrated through molecular methods. The study of bacteria, yeasts, fungi, algae, and mammalian cell lines moved towards regulatory systems, signalling processes, metabolic pathways, genome analysis, and biotechnological exploitation. This made microbiology one of the Academy fields most naturally positioned between basic research and practical use. Yet its institutional significance should not be reduced to application. Microbiology provided a model of how fundamental research on life cycles and molecular mechanisms could generate knowledge relevant to medicine, industry, ecology, and public health. The post-socialist Academy's emphasis on strategic applied research was therefore not foreign to microbiology; it corresponded to the field's own internal structure. In this sense, microbiology helped bridge the inherited Academy tradition of basic science with the democratic state's growing expectation that public research should also contribute to society (*Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

Biomedical molecular biology became more prominent in the Academy's life sciences during the same period. The Institute of Experimental Medicine, founded in 1975, continued after 1993 as a centre for basic biomedical research, with attention to biochemistry, cell and developmental biology, pathology, molecular embryology, genetic toxicology, nanotoxicology, neurobiology, neurophysiology, neuropathology, oncology, tissue replacement, and nanomedicine. Its profile demonstrates that post-1993 biology cannot be separated from medicine even when it remains institutionally outside the university hospital system. The Academy's biomedical institutes did not simply reproduce clinical medicine; they studied mechanisms, models, cells, tissues, and molecular processes underlying disease and regeneration. This distinction mattered because it allowed long-term basic research to support future medical innovation without being subordinated to immediate clinical service. Stem cell research, tissue engineering, neurobiology, and cancer biology required exactly this type of protected but internationally connected environment. They also required ethical regulation, public accountability, and careful communication with society, especially as genetic and cellular technologies became more powerful. The Academy's biomedical biology thus participated in a broader European debate on responsible research. After 1993, the issue was no longer only whether science was free from ideological control. It was also whether science could maintain autonomy while responding to ethical expectations, patient interests, and

public concern. The life sciences made this question particularly visible because their discoveries touched the body, heredity, disease, reproduction, ageing, and human vulnerability (*Institute of Experimental Medicine of the CAS, n.d.*; *ENRIO, 2026*).

The creation of the Institute of Biotechnology of the Czech Academy of Sciences in 2008 marked a further stage in the post-1993 development of molecular biology. This institute belonged to a later institutional generation than the older ČSAV-derived institutes. It reflected the growing importance of biotechnology, structural biology, biomolecular mechanisms, translational potential, and links between basic research and biomedical or veterinary applications. Its establishment showed that the Academy's biological structure was not frozen by the early post-socialist transformation. New institutes and centres could still be created when scientific and strategic circumstances required them. The Institute of Biotechnology developed within the environment of BIOCEV, the biotechnology and biomedicine centre associated with the Academy and Charles University. This was significant because it represented a more networked model of institution-building. Rather than treating Academy institutes and universities as separate worlds, BIOCEV embodied the logic of shared infrastructure, interdisciplinary research, and regional scientific clustering near Prague. In the context of molecular biology, such centres were essential because modern research required critical mass, expensive equipment, and close interaction between biology, chemistry, medicine, informatics, and technology transfer. The Institute of Biotechnology therefore symbolised a later phase of Academy renewal: not only the survival and reform of inherited institutes, but the creation of new platforms for competitive biomedical and molecular research. It also strengthened the Academy's position in the emerging economy of knowledge transfer without abandoning the primacy of excellent basic science (*Institute of Biotechnology of the Czech Academy of Sciences, n.d.*).

BIOCEV itself represented one of the most important institutional innovations in Czech life sciences after 1993. Its significance lay not only in buildings, laboratories, or equipment, but in the kind of research culture it promoted. The centre linked Academy institutes with Charles University, concentrated expertise in biotechnology and biomedicine, and created conditions for collaboration across institutional boundaries. Such centres reflected the impact of European structural funds and the broader policy idea that research excellence could be strengthened through modern infrastructure and regional concentration. For molecular biology and cell biology, this was particularly important because the scale of equipment and the speed of methodological change made isolated laboratories less viable. BIOCEV also contributed to changing the geography of Czech science. The traditional Prague academic environment remained central, but new campuses and research complexes in Vestec and elsewhere created a more distributed map of scientific capacity. This had implications for doctoral training, international recruitment, interdisciplinary projects, and cooperation with industry. In the Academy's history, such centres also marked a departure from the older model of institutes as self-contained entities. They encouraged a layered structure in which institutes retained identity but shared facilities, projects, and strategic orientations. This model was especially suitable for molecular life sciences, where the same imaging platform, animal facility, sequencing service, or structural biology equipment may serve many research questions. The post-1993 Academy thus moved from institutional preservation to infrastructural integration (*Institute of Biotechnology of the Czech Academy of Sciences, n.d.*; *Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

Generational renewal was another essential feature of molecular biology, genetics, and cell biology after 1993. The opening of borders changed the biography of Czech scientists. Younger researchers could undertake doctoral or postdoctoral work abroad, participate in international conferences, publish more regularly in English, and join European research networks. Senior scientists who had maintained contacts despite political restrictions could renew older connections, while younger scientists could build careers in a more mobile academic world. This mobility had ambivalent consequences. On the one hand, it created risks of brain drain, especially in the 1990s when Czech salaries and research infrastructure often lagged behind Western standards. On the other hand, it produced circulation of knowledge, methods, and laboratory practices. Scientists returning from abroad, or maintaining dual collaborations, helped to introduce new experimental standards and management habits. English became increasingly important not merely as a publication language but as a daily language of seminars, grant proposals, international recruitment, and laboratory communication. The Academy's institutes therefore became more open social spaces than they had been during normalisation. Their internal cultures gradually changed from nationally bounded academic communities to multilingual and internationally networked environments. This change was crucial in molecular biology because access to cutting-edge methods often travels through people before it is stabilised in equipment. The renewal of Czech biology was therefore as much a renewal of scientific careers and laboratory sociability as it was a renewal of institutional statutes (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

The role of doctoral education also changed. Although the Academy did not become a university, its institutes increasingly participated in doctoral training through cooperation with universities. This cooperation was particularly important in molecular biology, genetics, and cell biology because doctoral students require access to advanced laboratories, model systems, equipment, and internationally visible research topics. The Academy's role in doctoral education helped bridge the old institutional division between university teaching and academy research. During the socialist period, this division had often been rigid, with the Academy functioning as a powerful research sector and universities bearing the primary burden of education. After 1993, cooperation became more necessary and more productive. University students entered Academy laboratories; Academy scientists supervised or co-supervised doctoral research; joint centres created more integrated training environments. This had consequences for the reproduction of scientific elites. Young biologists no longer inherited a closed institute culture; they entered a competitive and networked field where career progression depended on publications, grants, international experience, and technical competence. In this sense, the molecular life sciences became one of the fields in which the Academy's modernisation and the university system's reform overlapped most strongly. Doctoral education also helped connect Czech research to European standards of training, mentoring, mobility, and evaluation. The Academy's biological institutes thus became both research organisations and formative environments for the next generation of Czech and international scientists (*Czech Academy of Sciences, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

Research evaluation and competitive funding reshaped the internal life of biological institutes. In molecular biology and cell biology, evaluation could not rely only on institutional prestige or historical reputation. It increasingly depended on publications in international journals, citation impact, grants, patents, infrastructure use, international cooperation, and participation in European projects. This created pressure, but it also offered opportunities.

Laboratories that could formulate strong research questions and connect them to international debates were able to compete for resources beyond the basic institutional budget. The changing funding environment encouraged project-based organisation, strategic planning, and professional grant administration. It also altered the relationship between seniority and authority. Older scientific prestige remained important, but younger group leaders with international publications and grant success could gain institutional visibility more rapidly than in the past. At the same time, evaluation introduced tensions familiar across European science: pressure to publish, dependence on metrics, administrative burden, and the risk that short-term grant cycles might weaken long-term exploratory research. The Academy's challenge was to use evaluation as a tool of renewal without allowing it to destroy the patient temporality that fundamental biology often requires. Molecular biology is fast-moving in method, but many biological questions require years of cumulative experimentation. The post-1993 Academy therefore had to balance speed and continuity, competition and institutional memory, international standards and local scientific cultures (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *ENRIO, 2026*).

Internationalisation was not only a matter of travel or publication. It changed the substance of research questions. Czech molecular biologists increasingly participated in projects where problems were defined at a European or global scale: cancer biology, immune regulation, developmental mechanisms, host-pathogen interactions, genome stability, plant adaptation, biodiversity genomics, biological imaging, chemical biology, and biological data infrastructures. This meant that national science became less provincial not because it abandoned national institutions, but because those institutions became nodes in transnational networks. The Academy's biological institutes retained Czech historical identities, Czech public funding, and Czech educational responsibilities. Yet their scientific legitimacy increasingly depended on their ability to contribute to research conversations that were not bounded by national borders. This was especially true in genomics and cell biology, where data, standards, protocols, and equipment are inherently international. A sequencing result, an imaging dataset, a cell line, or a mouse model becomes valuable when it can be interpreted and reproduced within a wider scientific community. The Academy therefore had to cultivate compatibility: methodological compatibility, ethical compatibility, data compatibility, and institutional compatibility. This did not make national research traditions irrelevant. Rather, it allowed Czech biological schools to speak in a language that others could recognise. The post-1993 renewal of biology was thus a process of translation between inherited expertise and global scientific infrastructures (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, n.d.*).

The relationship between basic and applied research became increasingly nuanced in the life sciences. The older Academy tradition had often defended basic science as a protected space of long-term knowledge production, and this defence remained necessary after 1993. However, molecular biology, genetics, and cell biology made the boundary between basic and applied research more permeable. A study of signalling pathways could inform cancer research. Work on genome integrity could become relevant to ageing, disease, or toxicology. Plant molecular genetics could support breeding, agriculture, and adaptation to environmental stress. Microbial physiology could lead to biotechnology, natural products, or medical applications. Chemical biology infrastructures could identify molecular probes and drug candidates. Yet these applied possibilities depended precisely on the strength of basic research. The Academy's biological institutes therefore operated within a model of "strategic

basic research", even when this phrase was not always used explicitly. They pursued fundamental mechanisms while remaining attentive to medicine, industry, agriculture, environment, and public health. This model suited the post-socialist Czech state, which increasingly expected public research to contribute to competitiveness and societal problem-solving. It also suited the internal logic of modern biology, where mechanistic knowledge often becomes applicable unpredictably. The history of Academy biology after 1993 therefore shows that innovation does not arise by replacing basic research with applied projects, but by creating institutional conditions in which deep biological knowledge can move towards application when the time is right (*Institute of Biotechnology of the Czech Academy of Sciences, n.d.*; *Institute of Microbiology of the Czech Academy of Sciences, n.d.*; *Institute of Experimental Botany of the Czech Academy of Sciences, n.d.*).

The post-1993 development of biological research also strengthened the importance of scientific integrity and ethical governance. Molecular genetics, biomedical research, animal models, stem cells, genetic toxicology, human-related samples, and data-intensive biology all raise questions that go beyond laboratory technique. They require rules for responsible conduct, reproducibility, authorship, data management, animal welfare, human health relevance, and public communication. The Academy's democratic transformation therefore had an ethical dimension. Freedom from political ideology did not mean freedom from norms. On the contrary, the credibility of autonomous science depended on transparent standards of good scientific practice. The Commission for Scientific Integrity of the Czech Academy of Sciences, established in the early 2000s, reflected this broader institutional shift. In the life sciences, such frameworks were especially important because errors, misconduct, or irresponsible communication could have consequences for medicine, environment, and public trust. Molecular biology's authority rests partly on its technical power, but that power must be socially accountable. The Academy had to cultivate a culture in which scientific ambition was disciplined by ethical responsibility. This was another difference from the socialist past: the problem was no longer ideological conformity, but professional integrity in a competitive, international, and publicly visible research environment. Biological research after 1993 thus became part of the Academy's broader movement from controlled science to responsible science (*ENRIO, 2026*; *Czech Academy of Sciences, n.d.*).

The history of Czech molecular biology after 1993 also reveals how institutional memory can be used constructively. The Academy's biological institutes did not simply celebrate their predecessors; they reinterpreted them. Milan Hašek, Jan Svoboda, Václav Pačes, and other figures from Czechoslovak experimental biology became part of a narrative in which Czech science had contributed to international developments despite political adversity. Such narratives mattered for institutional identity. They gave younger scientists a sense that they were not working in a peripheral or derivative environment. They also helped institutes explain their mission to the public, to policymakers, and to international partners. Yet memory could not substitute for contemporary excellence. The post-1993 Academy had to show that historical achievement could be followed by current research quality. The strongest institutes were those able to connect legacy with renewal: to preserve names, schools, and themes while changing methods, evaluation standards, and organisational forms. This balance was particularly visible at the Institute of Molecular Genetics, whose history from immunogenetics and retrovirology to genomics and cell biology made continuity itself a dynamic concept. The past was not a museum of achievements; it was a reservoir of scientific confidence. In the broader institutional history of the Academy, this ability to transform memory into future-

oriented research was one of the most important signs of successful modernisation (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Iványi, 2003*; *Weiss, 2018*).

The biological institutes of the Academy also participated in the broader redefinition of Czech science's public image. During the socialist period, science was often publicly represented as a state achievement, tied to industrial modernity, planned development, and ideological progress. After 1993, the public legitimacy of science had to be reconstructed in a democratic, media-oriented, and increasingly European society. Biology played a major role in this reconstruction because it dealt with themes that citizens could understand as directly relevant: health, cancer, infectious disease, environment, food, agriculture, biodiversity, ageing, and biotechnology. At the same time, molecular biology could appear abstract, expensive, and technically opaque. The Academy therefore had to communicate not only results but also the value of long-term fundamental research. Public outreach, institutional websites, science festivals, popularisation activities, and media communication became increasingly important. The life sciences were well suited to this public role because images of cells, plants, microbes, embryos, tissues, and model organisms can make invisible processes visible. Yet communication also carried risks of simplification and excessive promises. The Academy's task was to show that molecular biology matters without turning every discovery into immediate medical or commercial salvation. This required a more mature public language of science than the old rhetoric of progress. In this sense, biological research after 1993 contributed to a new civic understanding of the Academy as a public institution producing knowledge, expertise, and long-term capacity for society (*Czech Academy of Sciences, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

The regional dimension of biological research should not be underestimated. Prague remained a major centre, especially through the Krč campus, Dejvice traditions, Charles University connections, and later the Vestec/BIOCEV environment. However, Academy biology was not limited to Prague. České Budějovice became especially important through the Biology Centre CAS and its institutes in entomology, hydrobiology, parasitology, plant molecular biology, and soil biology. The inclusion of plant molecular biology within this wider biological and ecological environment encouraged connections between molecular mechanisms and ecological questions. This regional distribution mattered because it prevented the post-1993 Academy from becoming a purely metropolitan institution. It also linked biological research to local ecosystems, field stations, environmental monitoring, agricultural landscapes, and regional universities. In life sciences, place is not simply an administrative fact. Laboratories depend on campuses and infrastructures, but ecological and evolutionary research also depends on landscapes, species, water systems, soils, and long-term observation. Even molecular biology can benefit from proximity to ecological and organismal research because genes and cells ultimately operate in organisms and environments. The Czech Academy's biological geography therefore supported a layered research culture, from molecules in Prague and Vestec to plants, parasites, insects, soils, and waters in South Bohemia and beyond. This geography will become even more visible in discussions of ecology, evolutionary biology, and biodiversity, but it already mattered for molecular biology because modern life science increasingly moves across scales (*Biology Centre CAS, n.d.*; *Institute of Plant Molecular Biology of the Biology Centre CAS, n.d.*).

The post-1993 transformation also changed the relation between biological research and academic elites. Under socialism, scientific elites were shaped by a combination of intellectual authority, party politics, institutional hierarchy, and access to resources. After

1989, legitimacy had to be reconstructed through scientific reputation, democratic governance, international recognition, and managerial competence. In molecular biology, this created new forms of leadership. A successful institute director or group leader had to understand not only the science itself, but also grant strategy, international recruitment, infrastructure planning, intellectual property, ethical rules, and communication with the Academy leadership and state authorities. The rise of research groups placed more responsibility on principal investigators. At the same time, the increasing complexity of biology made leadership more distributed. Facility heads, data specialists, project managers, doctoral supervisors, and international advisory boards all became part of scientific governance. This did not eliminate hierarchy, but it changed its basis. Authority depended less on administrative seniority alone and more on the ability to sustain a productive research environment. The Academy's biological institutes thus became laboratories not only of molecular processes but also of new institutional forms. Their internal evolution reflected the broader post-socialist movement from bureaucratic control to accountable, performance-oriented, and internationally visible research leadership (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, n.d.*).

The international reputation of Czech molecular and cellular biology after 1993 cannot be understood only through institutional reform. It also depended on specific scientific achievements and the ability of Czech laboratories to contribute to global debates. Some achievements built directly on older traditions, such as retrovirology, immunology, plant genetics, and microbial research. Others emerged from newer infrastructures and collaborations. The move into genomics, imaging, phenogenomics, structural biology, biotechnology, and molecular medicine allowed Czech researchers to participate in research areas where international visibility depends on both conceptual contribution and technical capacity. This was a demanding transition. It required investment, but also a change in scientific ambition. Laboratories could no longer be satisfied with national recognition or regional relevance. They had to frame their questions in a way that mattered to international communities. The Academy's strength lay in giving some of these laboratories the stable institutional base needed for ambitious research. Unlike short-term project organisations, Academy institutes could maintain expertise, equipment, collections, models, and long-term research programmes across decades. This stability was especially valuable in biology, where cumulative work on model systems, organisms, pathways, and technologies often produces results slowly. The post-1993 story of biological research is therefore not a simple triumph of competition over institutional continuity. It is a story of how competition became productive when anchored in durable institutions capable of sustaining research depth (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

The COVID-19 pandemic, although belonging to a later phase of the period, revealed the strategic importance of molecular biology and genetics for the state and society. The pandemic made visible to the public what had long been true inside laboratories: molecular detection, sequencing, bioinformatics, virology, immunology, and biomedical infrastructures are not luxuries but components of national resilience. Czech scientific institutions participated in testing, genomic surveillance, data interpretation, and expert communication. This experience should not be read narrowly as a public health episode. It demonstrated the long-term value of investment in molecular life sciences. Laboratories trained in molecular techniques could respond to a crisis because they had accumulated personnel, equipment, protocols, and

collaborative habits before the crisis arrived. The pandemic also showed that the boundary between fundamental research and emergency application can collapse rapidly. A scientist studying viral genomes, immune responses, or molecular diagnostics may suddenly become part of a national response system. For the Academy, this reinforced the argument that public research institutions must maintain capacities that are not always immediately profitable or politically visible. Biological research after 1993 thus acquired a new form of public legitimacy in the 21st century. It was no longer only a matter of excellence and publication, but of preparedness, expertise, and the ability to mobilise knowledge under conditions of uncertainty (*Šúri et al., 2025*).

The development of molecular biology, genetics, and cell biology after 1993 also complicates the distinction between national and European science. Czech Academy institutes remained national institutions, funded largely by the Czech public sector and embedded in Czech legal structures. Yet their everyday scientific life became increasingly European. They participated in European infrastructures, Horizon programmes, mobility schemes, advisory boards, collaborative projects, and common standards of research assessment. This Europeanisation did not mean the loss of national identity. Instead, it made national research more capable of acting beyond the national frame. The Academy's biological institutes could represent Czech science internationally precisely because they were institutionally stable at home. European integration also encouraged comparison with other small and medium-sized research systems. Czech biology had to ask how a country of limited size could sustain excellence in expensive fields. The answer lay in specialisation, infrastructure sharing, international recruitment, cooperation with universities, and selective concentration of resources. Molecular biology after 1993 therefore became part of the broader European problem of how to organise excellence outside the largest scientific powers. The Academy's experience shows that institutional continuity, if combined with reform, can give smaller systems a durable place in global science. This was one of the most important lessons of the post-socialist transformation (*Czech Academy of Sciences, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Biotechnology of the Czech Academy of Sciences, n.d.*).

The history of this field also reveals the changing relationship between science and innovation policy. In the 1990s, the immediate task was survival and reform: preserving institutes, renewing personnel, re-establishing international contacts, and adapting to democratic governance. By the 2000s and 2010s, the language of innovation, competitiveness, technology transfer, and applied impact became more prominent. Molecular biology was naturally drawn into this language because its discoveries could lead to diagnostics, therapeutics, biotechnology, agricultural tools, or industrial processes. However, the Academy's biological institutes had to resist a simplified innovation narrative that measures value only through quick commercialisation. Many life-science discoveries become useful only after long periods of basic research, replication, refinement, and collaboration. The institute model allowed such long horizons to survive. Technology transfer, commercial licences, cooperation with companies, and applied projects were important, but they worked best when grounded in high-quality fundamental science. The Academy's biological research therefore illustrates a mature understanding of innovation: not a linear pipeline from laboratory to market, but a complex ecology of knowledge, skills, infrastructures, public funding, and unpredictable discovery. This ecology was one of the major achievements of the post-1993 transformation. It allowed the Academy to speak to policymakers about societal benefit without abandoning the intellectual autonomy on which its strongest contributions depended (*Institute of Molecular Genetics of*

the Czech Academy of Sciences, n.d.; *Institute of Biotechnology of the Czech Academy of Sciences, n.d.*).

By the 2020s, molecular biology, genetics, and cell biology had become deeply embedded in the Academy's self-understanding as a modern research organisation. The field showed how the Academy could combine historical depth with methodological modernity. It drew on Czechoslovak schools of immunogenetics, retrovirology, microbiology, plant research, and experimental medicine, but it operated through research groups, infrastructures, European networks, international publications, doctoral training, and ethical frameworks. Its development also showed that post-socialist transformation was not a single event completed in the early 1990s. It was a long process of institutional learning. Laboratories had to learn to compete, cooperate, publish, evaluate, internationalise, communicate, and innovate under changing conditions. The Academy leadership had to learn how to support expensive research without recreating centralised control. The Czech state had to learn that public research institutions require autonomy, stability, and accountability at the same time. Biology made all these lessons visible because it was one of the most rapidly changing and resource-intensive areas of science. Its history after 1993 is therefore a key chapter in the broader institutional history of the Academy. It shows how a post-socialist research organisation could become part of contemporary European science without dissolving its own institutional memory. It also shows that the renewal of science depends not only on laws and budgets, but on laboratories, people, instruments, standards, and narratives of purpose.

Thus, molecular biology, genetics, and cell biology after 1993 became one of the clearest expressions of the Czech Academy's transformation from a post-socialist successor institution into a modern European research organisation. The field preserved important Czechoslovak scientific lineages, especially in immunogenetics, virology, microbiology, plant biology, and experimental medicine, but it reworked them through molecular methods, cell-based analysis, genomics, bioinformatics, imaging, research infrastructures, and competitive international collaboration. Its development demonstrates the central tension of the post-1993 Academy: scientific autonomy had to be defended, but autonomy now required accountability, evaluation, ethical standards, cooperation with universities, and openness to society. Biological research showed that continuity is strongest when it is capable of renewal, and that institutional memory becomes historically productive only when it supports new questions, new generations, and new forms of scientific organisation. In this sense, the post-1993 history of molecular biology within the Academy is not a specialised disciplinary episode, but a condensed example of the whole Academy's modernisation.

2. Ecology, Evolutionary Biology, and Biodiversity

After 1993, ecology, evolutionary biology, and biodiversity research within the Academy of Sciences of the Czech Republic developed under conditions rather different from those that shaped molecular biology and cell biology. These fields were not driven only by laboratories, instruments, or molecular platforms, although they increasingly used them. They also depended on landscapes, long-term observation, collections, field stations, taxonomic expertise, experimental plots, animal populations, forests, rivers, ponds, soils, wetlands, and historical memory of the natural environment. This gave them a particular institutional character. They carried forward older Czechoslovak traditions of botany, zoology, hydrobiology, entomology, parasitology, soil biology, vegetation science, and nature

conservation. At the same time, they had to respond to a new global agenda in which biodiversity loss, climate change, biological invasions, ecosystem services, habitat fragmentation, and environmental policy became central scientific and political questions. The post-socialist transformation therefore did not simply modernise these fields by making them more international or more technologically advanced. It also changed their public meaning. Ecology was no longer a specialised biological discipline concerned only with organisms and environments; it became a form of long-term national expertise and a bridge between science, conservation, agriculture, forestry, water management, climate policy, and public responsibility. Evolutionary biology, meanwhile, gained new strength from genetics, genomics, phylogeography, mathematical modelling, and comparative methods. Biodiversity research became both an empirical science and a political necessity, because the Czech state, the European Union, and global organisations increasingly required reliable knowledge about species, habitats, ecological change, and conservation priorities (*Biology Centre CAS, n.d.*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

The continuity of ecological and evolutionary research after 1993 was rooted in the older structure of Czechoslovak biological science. Unlike some areas of the humanities and social sciences, ecology was not always politically central, but it was never politically neutral either. The socialist state needed knowledge of forests, soils, water, agriculture, pests, fisheries, and landscape management. At the same time, environmental damage under state socialism created urgent questions that could not be solved by ideological declarations. Pollution, industrial agriculture, acidification, forest decline, river regulation, wetland transformation, and habitat degradation all placed ecological knowledge in a difficult position. Scientists had to produce expertise for a state that was often responsible for the very damage they were studying. After 1989 and 1993, this relationship changed. Ecological knowledge could be more openly connected with public criticism, environmental legislation, conservation, and international environmental debates. The Academy's ecological institutes therefore entered the democratic period with both scientific capital and moral relevance. They were not merely preserving collections or continuing field surveys; they were helping Czech society understand the environmental consequences of the previous century. The renewal of ecological biology after 1993 was therefore also part of the wider civic transformation after the Velvet Revolution. It made nature, landscape, and biodiversity part of the Academy's broader public mission (*Czech Academy of Sciences, n.d.*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

The Institute of Botany became one of the central institutions in this post-1993 ecological landscape. Its roots go back to the Geobotanical Laboratory of the biological institutions of the Czechoslovak Academy of Sciences in the 1950s and to the foundation of the Institute of Botany in the early 1960s. The location at Průhonice Castle and the connection with the park and botanical garden gave the institute an unusual symbolic profile, linking modern research with cultivated landscape, historical garden culture, and Central European botanical tradition. After 1993, this inheritance did not become antiquarian. The institute continued to work on taxonomy, biosystematics, plant evolution, ecology, ecophysiology, phytogeography, vegetation mapping, dendrochronology, palaeoecology, karyology, and population genetics. This breadth is important because it shows that ecological and biodiversity research were not reduced to one fashionable topic. They required the coexistence of classical taxonomy, field botany, long-term vegetation science, experimental methods, spatial analysis, and molecular tools. The institute also preserved the importance of expert knowledge that cannot be generated quickly by short-term projects. A vegetation scientist, taxonomist, lichenologist,

mycologist, or palaeoecologist needs years of accumulated experience, local knowledge, and familiarity with collections and landscapes. In this respect, the Institute of Botany defended a form of scientific continuity that was essential for biodiversity science. Without such continuity, biodiversity would become an abstract policy slogan rather than a precisely documented reality (*Institute of Botany of the Czech Academy of Sciences, n.d.*; *Chytrý, 2012*).

The Czech lands have always offered a particularly rich setting for vegetation research because they lie at a biogeographical crossroads. The country contains lowlands, uplands, mountain systems, river valleys, wetlands, forest-steppe fragments, karst areas, sandstone landscapes, glacial cirques, serpentine habitats, anthropogenic grasslands, ponds, forests, agricultural mosaics, and urban ecosystems. This diversity made Czech vegetation science unusually sensitive to history and spatial pattern. The present landscape cannot be understood without the last glacial period, Holocene forest development, medieval settlement, agriculture, grazing, forestry, industrialisation, collectivisation, and post-socialist land-use change. After 1993, this historical dimension became even more important because conservation policy required not only lists of species but also knowledge of how communities had formed and how they were changing. Vegetation ecology therefore linked natural history with human history. It asked how plant communities responded to management, abandonment, eutrophication, drainage, succession, invasion, climate shifts, and fragmentation. In this sense, ecology within the Academy had a cultural dimension as well as a biological one. It studied nature not as an untouched realm separate from society, but as a layered landscape produced by long interactions between climate, organisms, geology, land use, and political economy. This perspective fitted the broader institutional history of the Academy, where science repeatedly stood at the boundary between national knowledge and universal research (*Chytrý, 2012*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

The post-1993 period also strengthened the relationship between ecology and data. Traditional field observation remained essential, but it was increasingly organised through databases, georeferenced records, digital maps, statistical modelling, remote sensing, and open-access platforms. The Czech botanical and vegetation tradition was especially well suited to this transformation because it had accumulated large quantities of floristic and phytosociological information over many decades. Projects such as national vegetation classification, distribution mapping, and plant trait databases turned this accumulated knowledge into modern research infrastructure. The development of the Pladias database of the Czech flora and vegetation is particularly significant in this respect. It shows how biodiversity expertise moved from printed floras and local inventories into dynamic digital systems that combine occurrence records, traits, ecological indicators, distribution maps, threat categories, and taxonomic information. Such databases changed the scale of ecological research. They allowed scientists to ask broader questions about plant distribution, habitat preferences, invasions, climate sensitivity, conservation status, and functional ecology. They also made ecological knowledge more accessible to conservation agencies, students, policymakers, and international partners. This was a major institutional change because it transformed biodiversity knowledge into a shared public and scientific resource. The Academy's contribution to such data systems strengthened its role as a long-term custodian of national natural knowledge (*Danihelka et al., 2021*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

Evolutionary plant biology became one of the fields in which classical botany and modern evolutionary science most visibly converged. The study of plant diversity was no longer limited

to description, classification, and distribution. It increasingly asked how species originate, how genomes change, how polyploid complexes evolve, how hybridisation shapes plant lineages, how ecological differentiation appears among closely related taxa, and how microevolutionary processes operate at the population level. The Department of Evolutionary Plant Biology at the Institute of Botany illustrates this shift through its focus on genome processes, horizontal gene transfer, DNA endoreduplication, cytogenetics, phylogeography, diploid-polyploid complexes, hybrid speciation, molecular systematics, and broader evolutionary forces. These themes show that post-1993 evolutionary biology was neither purely molecular nor purely field-based. It required herbarium work, field sampling, cytogenetic analysis, molecular data, ecological interpretation, and comparative thinking. It also required an institutional environment where long-term organismal expertise could interact with newer genetic methods. This interaction was historically important because it prevented the separation of “old” natural history from “new” molecular biology. In Czech Academy botany, taxonomy and evolution remained connected. This connection gave biodiversity research greater explanatory power, because species were studied not only as names in a catalogue but as dynamic evolutionary entities. The result was a more integrated biology, capable of moving from chromosome and genome to population, species, community, and landscape (*Institute of Botany of the Czech Academy of Sciences, n.d.*).

Invasion ecology became another internationally visible part of Czech post-1993 ecological research. Biological invasions were a particularly suitable theme for a transformed Europe because they linked globalisation, trade, agriculture, urbanisation, landscape disturbance, conservation, and environmental risk. Czech researchers, especially those associated with the Institute of Botany, contributed substantially to the study of alien plants, invasiveness, habitat invasibility, impact assessment, and global databases of naturalised alien floras. This field was important institutionally because it combined basic ecological theory with practical relevance. It asked why some species become invasive while others do not, why some habitats are more vulnerable than others, and how the impacts of alien species should be classified and managed. After 1993, such questions gained importance because Czech conservation policy became increasingly linked to European directives, international conventions, and global biodiversity debates. Invasion ecology also helped Czech science become more visible internationally because the problem was inherently transnational. Alien species do not respect political borders, and their study requires comparative datasets across countries and continents. The Academy’s strength lay in combining Central European field knowledge with global conceptual frameworks. This made invasion ecology a model case of how a small country’s research community could influence an international field by producing high-quality data, concepts, and classification tools (*Institute of Botany of the Czech Academy of Sciences, n.d.*; *Pyšek et al., 2020*).

The Biology Centre CAS in České Budějovice became one of the most important institutional innovations in the ecological and biodiversity sciences after 1993. Created in 2006 by the Czech Academy of Sciences, it brought together five institutes: Entomology, Hydrobiology, Parasitology, Plant Molecular Biology, and Soil Biology and Biogeochemistry. This structure itself expresses a distinctive understanding of biology. It does not divide life simply into plants, animals, microbes, and molecules. Instead, it concentrates on interactions: insects and plants, hosts and parasites, aquatic communities and water quality, soil organisms and biogeochemical cycles, plant genomes and environmental adaptation. The Biology Centre’s location in South Bohemia also mattered. It connected research to the University of South

Bohemia, to pond landscapes, wetlands, forests, agricultural environments, and the wider Central European ecological setting. It made České Budějovice a major centre of biological research rather than a peripheral regional site. In the institutional history of the Academy, the Biology Centre shows how post-1993 reform could create new organisational forms without abandoning older scientific traditions. It gathered inherited institutes and research groups into a larger centre capable of competing internationally and supporting interdisciplinary work. This was renewal by integration rather than renewal by demolition (*Biology Centre CAS, n.d.*).

The Institute of Entomology illustrates especially well the combination of continuity, specialisation, and international expansion. Founded within the Czechoslovak Academy of Sciences in 1962, it inherited earlier work in entomology and insect pathology. Its research after 1993 continued to cover taxonomy, genetics, physiology, molecular biology, ecology, insect development, biorhythms, biodiversity, population genetics, molecular evolution, and ecosystem functioning. This breadth is not accidental. Insects are the most species-rich group of animals and are central to pollination, herbivory, decomposition, food webs, pest dynamics, disease transmission, and biodiversity monitoring. An institute devoted to insects therefore stands at the crossroads of fundamental biology and practical concerns. Its older applied work in pest control, pheromones, juvenile hormone analogues, biological agents, agriculture, and forestry did not disappear. Rather, it was complemented by evolutionary ecology, molecular approaches, tropical biodiversity studies, and ecosystem-level analysis. After 1993, the institute became part of an increasingly global entomology, while still retaining Central European expertise. Its role in maintaining research connected with Papua New Guinea shows how a Czech Academy institute could extend far beyond the Czech landscape without losing its institutional base at home. Entomology thus became one of the Academy's strongest examples of biodiversity science as both local and global (*Biology Centre CAS, 2013*; *Academy of Sciences of the Czech Republic, 2022*).

The work of Vojtěch Novotný and his colleagues in Papua New Guinea is particularly revealing for the history of post-1993 Czech ecology. It demonstrates that the transformation of Czech science was not only a return to Europe but also an opening towards global field science. Long-term ecological research in tropical rainforests required much more than occasional expeditions. It required local partnerships, field stations, trained collaborators, trust with Indigenous communities, logistical resilience, and sustained funding. The Binatang Research Centre became a rare example of a research base that connected Czech ecology with one of the richest biodiversity regions on Earth. This work contributed to debates about tropical insect diversity, plant-herbivore interactions, elevational gradients, rainforest ecology, and the global estimation of species richness. It also showed that high-quality ecological research could be conducted through long-term cooperation rather than extractive scientific tourism. In institutional terms, this mattered because it expanded the imagined geography of the Czech Academy. A national academy based in Central Europe could become a serious actor in tropical biodiversity science. The result was not a loss of national scientific identity, but its enlargement. Czech ecology became global by building durable scientific relationships in places where biodiversity itself posed questions that Central Europe alone could not answer (*Academy of Sciences of the Czech Republic, 2022*; *Novotný & Toko, 2015*).

Hydrobiology and aquatic ecology formed another major strand of post-1993 biodiversity research. Czech lands possess a historically dense network of ponds, reservoirs, rivers, wetlands, and managed aquatic landscapes. South Bohemia in particular has long been associated with fishponds, wetland systems, and water-management traditions. After 1993,

these older regional realities acquired new scientific significance because water ecosystems became central to debates about eutrophication, climate change, invasive species, fisheries, ecosystem functioning, and biodiversity conservation. The Institute of Hydrobiology within the Biology Centre contributed to this field by combining limnology, fish ecology, microbial processes, trophic interactions, and modern tracking or modelling techniques. The rise of movement ecology shows how aquatic research became increasingly data-intensive. Animal tracking technologies, telemetry, high-resolution spatial data, and international data-sharing networks made it possible to study fish movement and behaviour at scales that earlier field biology could not reach. Such research linked ecology with informatics, engineering, statistics, and management. It also showed how biodiversity science could become predictive rather than merely descriptive. For the Academy, hydrobiology strengthened the long-term role of scientific expertise in water policy and ecosystem management. It connected field biology with one of the most strategic environmental issues of the 21st century: the future of freshwater systems (*Biology Centre CAS, 2022*).

Soil biology and biogeochemistry added another layer to the Academy's ecological profile. Soil is one of the least visible but most fundamental components of biodiversity. It contains microorganisms, fungi, invertebrates, roots, organic matter, nutrient cycles, and complex interactions that support terrestrial ecosystems and agriculture. Under state socialism, soil was often treated primarily as a productive agricultural resource, subject to intensification and chemical management. After 1993, soil biology could be placed more explicitly within biodiversity, ecosystem functioning, sustainability, and climate debates. The Institute of Soil Biology and Biogeochemistry, as part of the Biology Centre, worked within this wider shift. Its scientific importance lay in making visible the hidden biological systems beneath the surface of landscapes. Soil research linked ecological theory with agriculture, forestry, carbon cycling, restoration, and environmental monitoring. It also required a strongly interdisciplinary approach, because soil processes involve organisms, chemistry, hydrology, climate, plant communities, and land use. In the broader institutional history of the Academy, soil biology demonstrates how life sciences contributed to a more integrated understanding of the environment. Biodiversity was no longer only what could be seen, counted, photographed, or mapped above ground. It also included subterranean systems whose disturbance could transform whole ecosystems (*Biology Centre CAS, n.d.*).

The Institute of Vertebrate Biology represented a further important centre of ecological and evolutionary research. Its work on vertebrates connected field zoology, evolutionary ecology, population biology, behavioural research, genetics, medical zoology, and biodiversity. The institute's development after 1993 also illustrates the reorganisation of scientific elites and research sites outside Prague. Associated with Brno and Studenec, it contributed to the decentralised geography of Academy biology. Its research on wild-derived mouse strains is a particularly striking example of the connection between ecology, evolution, genetics, and biomedical relevance. Wild-derived strains preserve genetic variation that standard laboratory strains cannot fully represent. They allow scientists to study speciation, hybrid sterility, genome conflict, adaptation, and the evolutionary basis of reproductive isolation. This work shows how evolutionary biology after 1993 moved across boundaries that older disciplinary classifications would have kept separate. A mouse could be an ecological organism, an evolutionary model, a genetic resource, and a biomedical tool at the same time. The Institute of Vertebrate Biology therefore contributed to a wider transformation in which organismal biology became methodologically modern without losing its field-based foundations. Its work

also demonstrated that evolutionary biology could generate knowledge relevant to medicine without becoming subordinate to medical application (*Academy of Sciences of the Czech Republic, n.d.*).

The Institute of Animal Physiology and Genetics also belongs to this wider ecology-evolution-biodiversity constellation. Its profile explicitly combines physiology, genetics, ecology, and evolution, and it studies domestic, wild, and laboratory animals across topics ranging from biomedical models to biodiversity-oriented research. This combination is historically significant because it resists a narrow division between animal production, laboratory biology, and wildlife biology. The institute's work on physiological functions, genetic structures, genome interactions, animal-environment relations, model species, protected species, livestock, food quality, and safety reveals how post-1993 animal biology connected basic research with medicine, ecology, and agriculture. It also shows how inherited research traditions in farm-animal reproduction and physiology could be reinterpreted in a modern Academy context. The institute did not remain locked in an agricultural or veterinary framework. It became part of broader biological questions concerning adaptation, reproduction, development, genome function, and species survival under changing environmental conditions. In this sense, it bridged older state-oriented practical biology and newer evolutionary and ecological biology. Its development also reflects the Academy's broader capacity to renew specialised institutes by expanding their conceptual scope. Animal biology after 1993 thus moved from production-centred expertise towards integrative organismal science (*Institute of Animal Physiology and Genetics CAS, n.d.*).

Parasitology deserves special attention because it links biodiversity, evolution, ecology, medicine, and global change in a particularly direct way. Parasites are not marginal organisms; they are central components of ecosystems, evolutionary pressures, food webs, and disease dynamics. The Institute of Parasitology within the Biology Centre continued a strong Czechoslovak tradition while developing within a more international and interdisciplinary environment after 1993. Parasitological research is important for institutional history because it shows that biodiversity includes forms of life that public culture may perceive negatively or invisibly. Parasites reveal the intimacy of ecological relationships: host specificity, coevolution, immune response, transmission, vector ecology, environmental change, and emerging diseases. After 1993, such research became increasingly relevant because globalisation, climate change, land-use alteration, animal movement, and human mobility all affected parasite distributions and disease risk. Parasitology also created links between Czech Academy biology and tropical research, veterinary science, public health, molecular biology, and evolutionary theory. It therefore resisted any simple distinction between pure and applied research. Like microbiology and entomology, it showed that fundamental knowledge of organisms and life cycles can become crucial when society faces new risks. In the Academy's post-socialist development, parasitology contributed to the transition from national biological expertise to globally relevant life science (*Biology Centre CAS, n.d.*).

Ecology after 1993 was also transformed by climate change. Earlier ecological research had certainly studied environmental gradients, disturbance, succession, and long-term change, but the 21st century placed these questions within a planetary framework. Climate change altered the meaning of local ecological data. A long-term record from a Czech forest, wetland, meadow, pond, or mountain slope could now contribute to understanding global processes. The Institute of Botany's work on microclimate, species distribution modelling, forest disturbances, plant community responses to global change, and remote sensing reflects this

shift. Ecology became more predictive, more spatially explicit, and more closely linked to modelling. It also became more urgent. Scientists were no longer describing stable communities; they were studying systems under pressure. This changed the relationship between ecological research and public policy. Conservation could no longer be based only on preserving selected sites in their existing condition, because climate change itself was altering the ecological conditions under which species and habitats persisted. Czech ecological biology therefore had to connect long-term field knowledge with scenarios, risk assessment, and adaptive management. This was a new form of expertise, suited to an age in which the natural baseline itself was becoming unstable (*Institute of Botany of the Czech Academy of Sciences, n.d.*).

Biodiversity research also became closely connected with the problem of biological invasions and the uncertainty of ecological impact. Invasive species are historically revealing because they expose the ecological consequences of mobility, commerce, colonial histories, horticulture, agriculture, fisheries, forestry, and accidental transport. They are not simply natural phenomena; they are biological signatures of human movement. Czech Academy researchers participated in international work showing how difficult it can be to predict the consequences of alien species introductions. Some species remain apparently harmless for long periods, while others become transformative only under specific ecological conditions. The concept of crypticity in invasions is important because it shows that ecological damage may be delayed, hidden, or misread. This has major implications for management and conservation, since late detection often makes control more difficult. After 1993, Czech invasion ecology became part of a global conversation about uncertainty, risk, and precaution. This field also strengthened the Academy's role in policy-relevant science. It showed that biodiversity expertise is not only about documenting rare species; it is also about understanding dynamic processes that can reorganise ecosystems. Invasion ecology thus connected the Czech Academy to one of the most practical and theoretically challenging areas of contemporary ecology (*Biology Centre CAS, 2019*; *Pyšek et al., 2020*).

The public and political role of biodiversity science expanded significantly in the post-1993 period. The Czech Republic joined international agreements, adapted to European Union environmental frameworks, and participated in broader debates about nature conservation and ecosystem services. Academy researchers were increasingly expected to provide expertise not only for academic journals but also for ministries, conservation agencies, environmental assessments, public debates, and international platforms. The election of Petr Petřík from the Institute of Botany to the Multidisciplinary Expert Panel of IPBES in 2026 is a telling sign of this development. It demonstrates that Czech ecological expertise had become visible within global science-policy structures. IPBES matters because it translates biodiversity research into assessments that influence conservation priorities and political decisions. Participation in such bodies does not mean that science becomes politics. Rather, it means that science must learn to communicate uncertainty, evidence, and long-term ecological knowledge in forms usable by decision-makers. For the Academy, this created a new mode of public responsibility. Ecologists and biodiversity researchers were not merely observers of nature; they became mediators between ecosystems, data, public policy, and society. This role strengthened the Academy's position as a national centre of long-term expertise with international reach (*Institute of Botany of the Czech Academy of Sciences, 2026*).

Taxonomy remained a foundational discipline in this new environment, even though it often received less public attention than genetics, climate science, or conservation policy. The

importance of taxonomy lies in a simple but profound fact: biodiversity cannot be protected, monitored, or understood if organisms cannot be identified, described, and classified. The post-1993 Academy therefore had to maintain taxonomic competence at a time when some research systems were tempted to treat it as old-fashioned. In reality, taxonomy became more important, not less, because biodiversity crisis and global change created urgent demands for reliable species knowledge. The Institute of Botany's emphasis on plant diversity, fungi, lichens, systematics, monographs, phylogenetic relationships, reproductive systems, microevolution, and genome-size variation shows how taxonomy itself was modernised. It was no longer only descriptive morphology. It incorporated molecular systematics, cytogenetics, ecological differentiation, distribution data, and evolutionary interpretation. The same applies to entomology, parasitology, and vertebrate biology, where species identification and systematics remain indispensable. Taxonomy also has a cultural dimension in the Czech context because natural history was historically connected with national education, museums, field clubs, and the mapping of the homeland. After 1993, this older civic tradition was incorporated into a modern biodiversity science that served both national and global needs (*Institute of Botany of the Czech Academy of Sciences, n.d.*; *Biology Centre CAS, 2013*).

Long-term monitoring became one of the Academy's most valuable contributions to ecological knowledge. Many environmental processes become visible only across decades: vegetation change, forest disturbance, wetland dynamics, pond eutrophication, species decline, invasion spread, climate-driven range shifts, soil degradation, and changes in animal movement. Short grant cycles are poorly suited to such processes. Academy institutes, by contrast, have the institutional durability needed to sustain monitoring, collections, field sites, and long-term data series. This is one of the strongest arguments for the Academy model in the ecological sciences. Universities, ministries, and private consultancies all contribute to environmental knowledge, but a public academy can preserve scientific continuity beyond immediate administrative demands. After 1993, this capacity became even more important because environmental change accelerated and policy required evidence. Long-term monitoring also connected generations of scientists. Data collected by one generation could become analytically powerful for the next, especially when combined with digital tools, modelling, and international comparison. In ecology, institutional memory is not merely symbolic; it is often embedded in datasets, plots, collections, and field protocols. The Czech Academy's ecological institutes therefore preserved not only knowledge about the past but also the conditions for understanding future change (*Institute of Botany of the Czech Academy of Sciences, n.d.*; *Biology Centre CAS, n.d.*).

The relationship between ecology and molecular biology became increasingly close after 1993. Earlier disciplinary boundaries had often separated field naturalists from laboratory biologists. In the post-socialist period, that separation gradually weakened. Population genetics, molecular ecology, environmental DNA, genomics, phylogeography, microbiome research, molecular systematics, and evolutionary developmental perspectives gave ecologists new tools. At the same time, field systems gave molecular biologists access to natural variation, adaptation, speciation, and ecological realism. This mutual exchange was especially visible in evolutionary plant biology, vertebrate biology, animal physiology and genetics, entomology, parasitology, and soil biology. It changed the meaning of biodiversity research. Biodiversity was no longer only the number of species in a place; it included genetic variation, functional traits, interactions, evolutionary history, and ecological processes. This shift also encouraged collaboration across Academy institutes. Molecular biologists, botanists, zoologists,

microbiologists, bioinformaticians, and modellers increasingly worked on overlapping questions. The Academy's structure, with multiple specialised institutes under one institutional umbrella, made such connections possible, though not automatic. The development of ecology after 1993 therefore belongs to the same broader transformation as molecular biology: both fields became more interdisciplinary, infrastructural, and internationally comparable (*Institute of Botany of the Czech Academy of Sciences, n.d.*; *Institute of Animal Physiology and Genetics CAS, n.d.*).

The European Union framework changed the conditions under which ecological and biodiversity research operated. After the Czech Republic's accession to the EU in 2004, environmental legislation, conservation directives, research funding, infrastructure policy, and cross-border cooperation became increasingly important. Natura 2000, habitat assessment, water policy, invasive species regulation, climate adaptation, and biodiversity strategies all required reliable scientific expertise. Academy institutes were well positioned to contribute because they combined fundamental research with long-term national knowledge. European research programmes also encouraged collaboration beyond national borders. Czech ecologists worked with partners in Germany, Austria, Slovakia, Poland, France, the United Kingdom, Scandinavia, and many other regions. These collaborations changed the scale of Czech ecological research. Central European data could be compared with pan-European datasets; local questions could be placed within continental gradients; Czech field sites could become part of international networks. At the same time, Europeanisation created pressures: competition for grants, administrative demands, project-based funding, and the need to publish in high-impact international journals. The Academy's ecological institutes had to balance these demands with the slower work of taxonomy, monitoring, collections, and regional expertise. Their success depended on making long-term local knowledge legible within European science (*Czech Academy of Sciences, n.d.*; *Institute of Botany of the Czech Academy of Sciences, 2026*).

The social meaning of ecology also changed after 1993 because Czech society itself became more environmentally conscious. The environmental damage of the late socialist period had been one of the moral and political arguments against the old regime. In the democratic period, environmental issues became part of civil society, education, media, local activism, and public debate. Academy ecologists worked in this environment, even when their primary task remained research. Their expertise could support conservation conflicts, land-use debates, restoration projects, water management, forest policy, agricultural questions, and invasive species control. This created a delicate position. Scientists had to maintain analytical independence while engaging with public concerns. They had to distinguish evidence from advocacy, but they could not pretend that ecological knowledge had no social implications. The Academy's authority depended on exactly this balance. It was trusted not because it was politically silent, but because it could provide long-term evidence and careful interpretation. Ecology thus became one of the fields in which the Academy's democratic public role was most visible. It showed that scientific autonomy after 1993 meant the capacity to speak responsibly within society, not withdrawal from society (*Biology Centre CAS, 2019*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

The geographic structure of Academy ecological research contributed to the decentralisation of Czech science. Prague remained important, but ecology could not be concentrated only in the capital. Průhonice, Brno, Třeboň, České Budějovice, Studenec, Liběchov, and other sites formed a distributed research landscape. This distribution reflected the logic of the disciplines

themselves. Botanists needed gardens, parks, herbaria, field sites, wetlands, and regional vegetation gradients. Hydrobiologists needed ponds, reservoirs, and water systems. Entomologists and tropical ecologists needed field stations and collections. Vertebrate biologists needed animal facilities and natural populations. Soil biologists needed experimental and natural landscapes. The Academy's ecology therefore had a spatial form very different from that of a purely laboratory-centred science. It was embedded in places. This embeddedness strengthened the Academy's national role because it connected research to the Czech territory in a literal sense. At the same time, these places were not provincial. They became nodes in international networks, hosting conferences, training doctoral students, contributing to European projects, and producing globally relevant research. The post-1993 Academy thus demonstrated that decentralised scientific geography could be a strength rather than a weakness (*Biology Centre CAS, n.d.*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

Ecology, evolutionary biology, and biodiversity research also contributed to the renewal of academic generations. Field sciences depend strongly on mentorship, because many skills cannot be learned only from textbooks or databases. Species recognition, field sampling, experimental design, ecological judgement, taxonomic caution, and interpretation of landscapes require apprenticeship. After 1993, this traditional mode of transmission was combined with new expectations: international mobility, English-language publication, grant competition, statistical competence, molecular methods, remote sensing, and data management. Young Czech ecologists therefore entered a hybrid professional world. They had to be at once field researchers, analysts, international collaborators, and often public communicators. Academy institutes provided an important environment for this training, especially through cooperation with universities and doctoral programmes. The Biology Centre's connection with the University of South Bohemia and the Institute of Botany's links with universities in Prague, Brno, and elsewhere helped integrate research and education. This was institutionally significant because it softened the older divide between Academy research and university teaching. It also ensured that specialised ecological knowledge did not remain confined to ageing expert communities. Generational renewal was essential for the survival of taxonomy, field ecology, and biodiversity monitoring, all of which are vulnerable when expertise is not deliberately transmitted (*Biology Centre CAS, n.d.*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

The rise of big data changed ecology in ways comparable to the transformation of genetics by genomics. Movement ecology provides a particularly clear example. Earlier animal movement studies were constrained by the difficulty of observing animals across long periods and large areas. New technologies such as GPS, radar, telemetry, computer vision, and automated detection systems made it possible to collect high-resolution data on movement, behaviour, habitat use, and interaction. Czech researchers from the Biology Centre participated in international work on this big-data revolution and in initiatives involving lake fish telemetry. Such work illustrates the new methodological profile of ecology after 1993. Field biology did not disappear; it became instrumented, digital, collaborative, and computational. The resulting datasets required advanced statistics, interoperability, data sharing, and international standardisation. This pushed ecology closer to informatics and systems science. It also opened new possibilities for conservation and management, because movement data can reveal migration corridors, habitat fragmentation, behavioural responses, and species vulnerability. For the Academy, this transformation strengthened the argument that ecological

research must be supported as advanced science, not treated as a low-technology remnant of natural history (*Biology Centre CAS, 2022*).

Global biodiversity research also forced Czech scientists to confront inequalities within science itself. Participation in tropical, conservation, and global ecological studies raised questions about who produces data, who receives authorship, who controls research agendas, and how local expertise is recognised. Recent work involving researchers from the Biology Centre has drawn attention to persistent geographical disparities in global ecology and conservation science. This issue is historically important because post-1993 Czech science itself had experienced a transition from semi-peripheral status to European integration. Czech researchers understood the importance of visibility, partnership, and access to networks. In global biodiversity research, similar problems appear on a wider scale. Scientists from biodiversity-rich but economically marginalised regions may contribute essential knowledge while remaining underrepresented in publications and decision-making. A mature ecological science cannot ignore this imbalance. The Academy's involvement in such debates shows that biodiversity research is not only about organisms and ecosystems; it is also about the social organisation of scientific knowledge. This represents a further stage in the Academy's internationalisation. Czech ecology did not merely join global networks; it also began to reflect critically on how those networks function (*Biology Centre CAS, 2025*).

The relation between biodiversity and culture became another emerging dimension of ecological research. Conservation is not only a biological problem, because human values, memory, aesthetics, livelihoods, local identities, and public imagination shape how societies respond to nature loss. Academy-related discussions on biodiversity conservation and the arts point to a broader recognition that ecological crisis cannot be solved by data alone. This does not diminish the importance of rigorous science. Rather, it acknowledges that evidence must enter social worlds where decisions are made through emotion, politics, economics, education, and cultural meaning. In the Czech context, this point has particular resonance because landscape has long been connected with national culture, literature, local identity, tourism, and historical memory. The Academy's ecological research therefore indirectly contributed to cultural self-understanding. It helped society see meadows, forests, ponds, wetlands, insects, fungi, and plant communities not as decorative backgrounds but as living systems with histories and futures. Such a perspective fits the wider narrative of the Academy's institutional history. The Academy was never only a producer of technical knowledge; it was also a national institution shaping the way society understood itself and its place in the world. Biodiversity research after 1993 continued this role under the conditions of environmental crisis (*Biology Centre CAS, 2025*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

The development of ecology and biodiversity research after 1993 also reveals a specific form of scientific autonomy. In molecular biology, autonomy often depended on equipment, funding, peer review, and international laboratory standards. In ecology, autonomy also depended on the ability to maintain inconvenient truths about environmental change. Ecological research may show that land-use practices are damaging, that conservation policies are insufficient, that invasive species are underestimated, that forests are vulnerable, that water systems are stressed, or that agricultural landscapes are losing biodiversity. Such findings can conflict with economic interests or political comfort. A democratic Academy must therefore protect ecological expertise even when it complicates policy. At the same time, autonomy cannot mean isolation from practice. Ecologists must work with conservation authorities, ministries, land managers, municipalities, farmers, foresters, and international

bodies. This creates a productive tension between independence and engagement. The post-1993 Academy's ecological institutes operated within this tension and helped define what responsible public science meant in a democratic state. They showed that autonomy is not the absence of social relevance, but the freedom to produce reliable knowledge for society even when that knowledge is difficult (*Czech Academy of Sciences, n.d.*; *Institute of Botany of the Czech Academy of Sciences, 2026*).

By the 2020s, ecology, evolutionary biology, and biodiversity had become central to the Academy's identity as a long-term research institution. They were no longer peripheral fields beside molecular biology or applied biomedicine. They addressed some of the most urgent questions facing Czech society and the world: climate change, biodiversity loss, invasive species, freshwater vulnerability, soil degradation, forest disturbance, species extinction, ecological monitoring, and the future of conservation. Their institutional strength came from a combination of old and new elements. The old elements included field stations, taxonomic traditions, collections, botanical and zoological expertise, long-term observation, and knowledge of Czech landscapes. The new elements included molecular ecology, databases, remote sensing, modelling, telemetry, global collaborations, European policy frameworks, and science-policy platforms. This combination made the Academy's ecological research particularly valuable. It could speak to local conservation problems while contributing to global theoretical and practical debates. It also demonstrated that the modernisation of science does not always mean replacing older forms of knowledge. Sometimes modernisation means preserving them under new conditions, connecting them to new methods, and giving them renewed public significance. In this sense, ecology and biodiversity research after 1993 became a profound example of continuity transformed into renewal.

Thus, ecology, evolutionary biology, and biodiversity research after 1993 show that the Academy of Sciences of the Czech Republic did not modernise biology only by moving towards molecules, genomes, and biomedical platforms. It also renewed the organismal, field-based, environmental, and evolutionary traditions that had long been part of Czech and Czechoslovak science. The Institute of Botany, the Biology Centre CAS, the Institute of Vertebrate Biology, the Institute of Animal Physiology and Genetics, and related research groups preserved deep expertise in plants, animals, insects, parasites, soils, waters, vegetation, and landscapes, while integrating this expertise with modern data systems, molecular tools, modelling, remote sensing, European research networks, and global conservation agendas. These fields made the Academy a guardian of long-term ecological memory and a participant in contemporary debates about biodiversity crisis, climate change, invasive species, ecosystem services, and science-policy responsibility. Their history demonstrates that institutional continuity can be creative when it is open to methodological renewal and public accountability. It also shows that the Academy's post-1993 transformation was not only a matter of governance and funding, but a redefinition of how Czech science understood life, nature, landscape, and its responsibility to society.

3. Biological Research in European and Global Networks

After 1993, biological research in the Academy of Sciences of the Czech Republic was transformed not only by new methods, institutes, and funding rules, but also by a profound change in its scientific geography. Czech biology ceased to operate within the semi-closed space inherited from the late socialist research system and gradually became embedded in

European and global networks of knowledge production. This did not mean that national institutions lost their significance. On the contrary, the Academy's institutes became more important precisely because they provided the stable institutional bases from which Czech researchers could enter international consortia, European infrastructures, global field projects, and competitive grant systems. The post-1993 history of Academy biology is therefore also a history of scientific networking. Molecular biologists, ecologists, botanists, parasitologists, microbiologists, plant scientists, cell biologists, and evolutionary researchers increasingly worked in environments where research questions, data standards, equipment, publications, doctoral training, and evaluation were transnational. Internationalisation was not a decorative addition to Czech science, nor simply a matter of travelling abroad after decades of restriction. It became one of the basic conditions under which scientific authority was produced. A laboratory, institute, or research group could be nationally funded and institutionally Czech, but its credibility increasingly depended on whether it could speak the methodological and conceptual language of European and global science. This development was especially important in biology, because the life sciences after the late 20th century became highly dependent on shared infrastructures, international databases, model organisms, comparative field sites, global biodiversity data, and cross-border responses to health and environmental risks. In this sense, biological research after 1993 reveals how the Academy entered the European Research Area not as an abstract policy framework, but as a daily reality of laboratories, datasets, conferences, review panels, doctoral mobility, and collaborative publications (*European Commission, 2026*; *Czech Academy of Sciences, n.d.*).

The break with the pre-1989 order should not be exaggerated into a simple story of isolation followed by openness. Czechoslovak biologists had maintained important international contacts even under socialism, although these contacts were uneven, politically filtered, and often dependent on individual courage or institutional privilege. Some scientists travelled, published abroad, corresponded with foreign colleagues, and participated in international debates in virology, immunology, botany, microbiology, parasitology, and ecology. Yet the system as a whole limited mobility, restricted access to equipment and literature, and made international collaboration vulnerable to political judgement. After 1989 and especially after the formation of the Czech Academy in 1993, internationalisation acquired a different institutional meaning. It was no longer an exception granted to selected individuals; it became a strategic expectation for institutes. This change affected the everyday practice of science. English became the dominant language of publication, seminars, grant writing, and project administration. International peer review became a key mechanism of legitimacy. Research careers increasingly required postdoctoral mobility, international co-authorship, and participation in grant competitions beyond the national system. The Academy's biological institutes had to learn how to operate in this new world without losing their inherited strengths. The problem was not simply to "catch up" with Western Europe, but to translate the experience of Czech and Czechoslovak biological schools into a research environment governed by openness, competition, and transnational standards (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Leydesdorff, Wagner, Park, & Adams, 2013*).

The European Research Area became one of the major frameworks through which this transformation was articulated. For Czech biology, the European Research Area was not merely a Brussels policy phrase; it affected grant opportunities, research assessment, mobility schemes, doctoral training, infrastructure planning, data standards, and institutional self-presentation. The Czech Republic's accession to the European Union in 2004 intensified this

process, but it had begun earlier through Framework Programmes, bilateral collaborations, and the post-1989 reintegration of Czech science into European organisations. The Academy had to position itself within a system where excellence, mobility, knowledge circulation, and access to shared infrastructure were repeatedly emphasised as European goals. The establishment of a dedicated European Research Area Section within the Academy's international cooperation structures illustrates how seriously CAS treated this policy environment. Biology was one of the fields most directly affected by it because its contemporary forms require equipment and data systems that individual national institutions cannot easily sustain alone. The Europeanisation of Czech biological research therefore involved both intellectual integration and institutional adaptation. Institutes had to develop project departments, support offices, international advisory mechanisms, and professional grant management. This changed the internal sociology of the Academy. Research was still done by scientists, but successful international science increasingly depended on administrators, project officers, data stewards, technology-transfer specialists, and infrastructure managers. In this sense, the European Research Area helped transform the Academy from a collection of national research institutes into a more networked and professionally managed research organisation (*Czech Academy of Sciences, n.d.*; *European Commission, 2026*).

Framework Programmes, Horizon 2020, Horizon Europe, ERC grants, Interreg, and structural funds created new opportunities, but also new disciplines of institutional behaviour. Biological institutes had to formulate projects in ways legible to international panels. They had to demonstrate excellence, feasibility, impact, training capacity, gender and ethics awareness, data-management plans, and sometimes innovation potential. These requirements could feel bureaucratic, but they also pushed the institutes into stronger strategic thinking. The Biology Centre CAS explicitly benefited from programmes including Interreg, Horizon Europe, and ERC, and its project department became part of the institutional machinery through which ecological, evolutionary, molecular, and biomedical projects could be supported. The same logic applied to Prague-based molecular and biomedical institutes, which increasingly operated through international consortia and shared research infrastructures. Competitive European funding did not replace national support, but it reshaped what national support meant. Stable institutional funding became the platform from which researchers could compete internationally, not a substitute for international competition. This was a major change from the socialist research model, where state allocation had often defined the horizon of institutional possibility. After 1993, the Academy's biological institutes had to operate in a mixed economy of institutional resources, national grants, European projects, infrastructure funding, and collaborative networks. Their success depended on combining scientific imagination with administrative competence (*Biology Centre CAS, n.d.*; *Czech Academy of Sciences, n.d.*).

The European Research Council had particular symbolic value because it represented individual scientific ambition judged by international excellence rather than institutional loyalty or national distribution. For Czech Academy biology, ERC success mattered not only because of money, but because it signalled that Czech laboratories could compete in the most demanding European arenas. ERC projects encouraged high-risk, conceptually ambitious research, and they helped attract or retain talented researchers in Czech institutes. The Biology Centre's presence among CAS institutes with ERC achievements is therefore historically meaningful. It shows that post-1993 biological research did not remain confined to rebuilding

basic capacity; it reached a stage where some groups could define frontier questions on equal terms with leading European laboratories. ERC culture also changed expectations inside institutes. Young group leaders began to imagine careers organised around ambitious international proposals, not only around slow advancement within inherited institutional hierarchies. This did not eliminate inequalities between older and newer member states of the European Union, nor did it solve all problems of salaries, infrastructure, or administrative load. Yet it created a visible route by which scientific excellence could be recognised beyond national boundaries. In the institutional history of the Academy, ERC grants became part of a broader redefinition of prestige: from prestige conferred by position to prestige demonstrated through international peer competition (*Czech Academy of Sciences, 2026*; *European Research Council, n.d.*).

Large research infrastructures became perhaps the clearest material expression of biological internationalisation. Modern biology is not sustained only by brilliant individuals or strong institutes; it also requires platforms that provide services across institutions and national borders. ELIXIR CZ, Czech-BioImaging, CZ-OPENSCREEN, and the Czech Centre for Phenogenomics demonstrate how Academy biology entered this infrastructural age. ELIXIR CZ positioned Czech life science within the European landscape of biological data, bioinformatics tools, specialised databases, storage, and computational capacities. Czech-BioImaging connected Academy institutes, universities, and specialised facilities in a distributed infrastructure for biological and biomedical imaging. CZ-OPENSCREEN provided open access to chemical biology and genetics tools, linking cell biology, molecular biology, structural biology, biochemistry, organic chemistry, and chemoinformatics. The Czech Centre for Phenogenomics, hosted by the Institute of Molecular Genetics, integrated genetic engineering in mice and rats, phenotyping, imaging, metabolomics, data analysis, animal facilities, cryopreservation, and preclinical services at the BIOCEV campus. These infrastructures changed the meaning of collaboration. Cooperation was no longer only a personal relationship between scientists; it became a technical and institutional system through which users could access equipment, expertise, data, protocols, and training. The Academy's biological institutes thus became both producers of research and providers of national and European scientific capacity (*ELIXIR CZ, n.d.*; *Czech-BioImaging, n.d.*; *CZ-OPENSCREEN, n.d.*; *INFRAFRONTIER, n.d.*).

ELIXIR CZ illustrates the new centrality of data in biological networks. In earlier decades, collaboration often meant sharing specimens, letters, reprints, field observations, or laboratory protocols. In contemporary biology, it increasingly means sharing datasets, computational workflows, metadata standards, databases, storage capacities, and analytical tools. This transformation affected molecular biology, genomics, ecology, plant science, microbiology, and biomedical research. Biological data became too large, complex, and valuable to remain inside individual laboratories. Czech participation in ELIXIR therefore had institutional significance beyond bioinformatics as a technical service. It placed Czech life science within a European regime of data interoperability, open science, FAIR principles, and reproducible research. Such systems made Czech biological results more visible and reusable, but they also imposed new standards of documentation, curation, and responsibility. Data became part of the Academy's public and international accountability. For ecology and biodiversity, this shift complemented national databases of flora, vegetation, species distribution, and environmental observations. For molecular biology, it connected sequencing, expression profiles, protein data, phenotyping, and disease-related information.

ELIXIR CZ thus linked the Academy's biological research to one of the defining features of 21st-century science: the transformation of knowledge into networked, standardised, and computationally accessible data (*ELIXIR CZ, n.d.*; *Antol, Marek, Capandová, Juráček, & Matyska, 2024*).

Bioimaging offers another example of how infrastructures created new scientific networks. The Czech-BioImaging network included facilities at the Institute of Molecular Genetics, Institute of Physiology, Institute of Experimental Medicine, Institute of Experimental Botany, Charles University, Masaryk University, Palacký University, Brno University of Technology, the Institute of Scientific Instruments, and the Biology Centre. Such a network reveals the institutional ecology of contemporary biology. No single institute could cover all imaging needs, from light microscopy and electron microscopy to medical imaging, image analysis, and specialised biophysical instrumentation. By connecting facilities across Prague, Brno, Olomouc, České Budějovice, and other sites, Czech-BioImaging created a distributed national capacity with European relevance. This changed the geography of Czech life science. Excellence was not concentrated only in one campus or one institute; it was organised through nodes, services, training, and shared standards. Imaging also created conceptual bridges between molecular biology, cell biology, developmental biology, neuroscience, plant science, microbiology, parasitology, and biomedical research. The image became a scientific object that could move between disciplines. It made cellular and organismal processes visible, measurable, and comparable. Czech-BioImaging therefore helped transform biological observation from an individual laboratory practice into a networked infrastructure of seeing (*Czech-BioImaging, n.d.*).

CZ-OPENSCREEN represents the chemical-biology dimension of this same transformation. Its mission to identify molecular probes and develop tools for research on chemical compounds connected Czech biology with early-stage therapeutic exploration, molecular mechanisms, and interdisciplinary drug-discovery environments. For the Academy, this was important because it linked basic research to potential application without reducing the life sciences to commercial product development. Chemical probes can illuminate biological processes, reveal pathways, validate targets, and create opportunities for biomedical innovation. Yet they depend on highly organised screening capacity, compound libraries, assay development, informatics, and collaboration between chemists and biologists. CZ-OPENSCREEN therefore demonstrates how post-1993 biological research moved into a zone where disciplinary boundaries became increasingly porous. Molecular biologists, cell biologists, structural biologists, biochemists, organic chemists, and computational specialists had to work together. Such an infrastructure also connected Czech research to the wider European OPENSCREEN environment, where access, standardisation, and shared expertise are central principles. The Academy's role in this area shows that internationalisation did not only involve publishing abroad; it involved building national nodes capable of participating in European scientific systems. Czech biology became European partly by becoming infrastructurally compatible with Europe (*CZ-OPENSCREEN, n.d.*; *Research Infrastructures of the Czech Republic, n.d.*).

The Czech Centre for Phenogenomics similarly connected Czech molecular genetics with European and global model-organism research. Mouse and rat models are central to biomedical research, but their use requires high levels of technical standardisation, animal welfare, genetic engineering, phenotyping, imaging, cryopreservation, data management, and preclinical expertise. A centre that combines these capacities becomes more than a service

facility. It becomes a point of entry into international research on gene function, disease models, developmental processes, metabolism, immunity, cancer, neurological disorders, and therapeutic testing. Hosted at the Institute of Molecular Genetics and located at the BIOCEV campus, the Czech Centre for Phenogenomics also embodied the spatial and institutional integration of Academy biology after 1993. It linked an older institute with a newer campus, national infrastructure with European networks, and basic genetics with biomedical relevance. Its participation in INFRAFRONTIER-type environments placed Czech biology within the international system of mouse functional genomics and phenotyping. This changed the scale of what Czech laboratories could do. They could contribute not only isolated experiments, but standardised resources and models usable by wider scientific communities. In the history of the Academy, this marks the transition from institute-based excellence to infrastructure-based international capacity (*INFRAFRONTIER, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

BIOCEV became one of the most visible spatial symbols of the new networked biology. The centre connected Academy institutes with Charles University and concentrated biotechnology, biomedicine, structural biology, molecular biology, and related fields in a modern research environment near Prague. Its significance was not only architectural or financial. BIOCEV expressed a new institutional philosophy in which Academy institutes and universities could share research infrastructures, doctoral training, technical platforms, and interdisciplinary programmes. This represented a major shift from the older separation between academy research and university education. In molecular and biomedical life sciences, such separation had become increasingly impractical because doctoral students, postdoctoral researchers, advanced equipment, clinical knowledge, and basic biology all needed to interact. BIOCEV also showed how European structural and investment logic affected Czech science. New facilities were expected to increase competitiveness, support regional development, strengthen international recruitment, and improve the translation of research into practice. Yet the most important historical point is that BIOCEV did not replace older institutes. It reorganised their possibilities. The Academy's biological institutes could retain their identities while participating in a shared scientific campus oriented towards European standards of excellence, infrastructure, and collaboration (*Institute of Biotechnology of the Czech Academy of Sciences, n.d.*; *BIOCEV, n.d.*).

The Institute of Biotechnology CAS, established in 2008, belongs to this later generation of Academy biological institutions shaped by European and global scientific networks from the outset. Unlike older institutes that had to adapt from a ČSAV inheritance to a post-socialist environment, the Institute of Biotechnology emerged within a research world already defined by international competition, biomedical molecular biology, technology transfer, and infrastructural cooperation. Its orientation towards basic research in biomedical molecular biology with prospective transfer to human and veterinary medicine shows the changing expectations placed on Academy biology. Research was to remain fundamental, but it was also expected to generate methods, tools, and knowledge capable of moving into broader fields of human activity. This was consistent with European research policy, where excellence and impact increasingly appeared together. The institute's location in BIOCEV reinforced this logic by embedding it in a campus designed for interaction between institutes, university faculties, infrastructure platforms, and potential application. In the institutional history of CAS, the Institute of Biotechnology therefore demonstrates that post-1993 renewal was not only about reforming inherited structures. It also involved creating new biological institutions suited

to the Europeanised knowledge economy. This makes it an important bridge between the Academy's older public-research mission and the newer language of biotechnology, innovation, and translational potential (*Institute of Biotechnology of the Czech Academy of Sciences, n.d.*).

European and global networks also reshaped ecology, evolutionary biology, and biodiversity research. These fields became international not only through grants and publications, but through comparative field systems, global datasets, science-policy platforms, and long-term ecological networks. The Biology Centre CAS, with its institutes in entomology, hydrobiology, parasitology, plant molecular biology, and soil biology, was particularly well positioned for this type of networked science. Its research on freshwater ecosystems, insects, parasites, soils, plants, and biodiversity naturally connected local field knowledge with international questions. A Czech pond, reservoir, forest, meadow, soil system, or insect community could become part of a broader comparative framework. In hydrobiology, the Institute of Hydrobiology was recognised within European ecosystem research networks as a principal Czech institution for complex freshwater research, combining long-term ecological study with methods ranging from chemistry to molecular and isotopic techniques. This shows how field-based biological research became increasingly infrastructural and international in its own way. It did not need only microscopes or sequencing machines; it needed long-term sites, harmonised methods, comparative data, and cross-border ecological interpretation. The Academy's contribution lay in preserving the long-term continuity required for such work while connecting it to European research networks (*Biology Centre CAS, n.d.*; *ALTER-Net, n.d.*).

The globalisation of biodiversity research is especially visible in tropical ecology. Czech entomologists and ecologists associated with the Biology Centre developed long-term research in Papua New Guinea, creating one of the most important examples of Czech biological science operating at a genuinely global scale. This work was not simply a series of expeditions by European scientists to a biodiverse region. It involved long-term field stations, collaboration with local communities, training, ecological monitoring, and sustained research on rainforest insects, plants, food webs, and biodiversity patterns. The significance of this work for the Academy's institutional history is considerable. It shows that a national research institution from Central Europe could become a serious actor in tropical biodiversity science, a field traditionally dominated by larger scientific powers and colonial or postcolonial networks. Czech biology thus moved beyond the narrow idea of reintegration into Europe. It entered global field science through durable partnerships and specialised expertise. Such work also raised questions of ethics, reciprocity, authorship, and the social organisation of biodiversity research. The Academy's global role depended not only on scientific excellence, but on the capacity to build responsible and respectful international collaborations. Tropical ecology therefore expanded both the scientific and moral geography of Czech Academy biology (*Academy of Sciences of the Czech Republic, 2022*; *Novotný & Toko, 2015*).

Biodiversity networks also increasingly involved global consortia based on harmonised data collection. The DarkDivNet project, in which Czech researchers from the Institute of Botany and other institutions contributed data and methodology, is a clear example. By studying "dark diversity", or the native species that could potentially occur in a community but are absent, the project moved beyond simple species counts. It required sampling across thousands of sites and many regions, using comparable methods that could reveal hidden effects of human disturbance. The participation of Czech botanists in such work demonstrates the international value of long-established local expertise. Czech vegetation science, with its strong taxonomic

and phytosociological traditions, could contribute to a global network precisely because it had preserved detailed knowledge of plants, communities, and landscapes. At the same time, global projects changed the meaning of local data. A plot in the Krkonoše Mountains, Šumava, Podyjí, Ralsko, or the Novohradské Mountains became part of a worldwide analysis of vegetation impoverishment. This is one of the defining features of contemporary biodiversity science: local observation becomes globally meaningful when placed in a standardised comparative network. The Academy's botanical tradition therefore entered global ecology not by abandoning field specificity, but by making it comparable (*Pärtel et al., 2025*; *Masaryk University, 2025*).

Science-policy networks became another important arena for Academy biology. Ecology and biodiversity research increasingly had to inform public decision-making at national, European, and global levels. The representation of the Institute of Botany in the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services illustrates this development. IPBES is not a conventional academic society. It is a science-policy body that assesses biodiversity and ecosystem services for governments and international organisations. Participation in such a platform requires a different form of scientific communication. Researchers must present evidence, uncertainty, scenarios, and policy implications without surrendering scientific independence. For the Academy, this role was historically significant because it extended the old function of expert advice into the global environmental governance system. Czech ecological knowledge became part of international assessments that could influence conservation priorities and policy frameworks. This also changed the public responsibility of ecological research. It was no longer enough to publish excellent papers on plant communities, invasions, or biodiversity loss. Scientists increasingly had to help society interpret what such findings meant for land use, protected areas, restoration, agriculture, forestry, and climate adaptation (*Institute of Botany of the Czech Academy of Sciences, 2026*; *IPBES, n.d.*).

Strategy AV21 added a specifically Academy-wide dimension to this science-policy orientation. Its declared emphasis on top research in the public interest placed biological research within a broader institutional strategy that connected CAS institutes, universities, industry, state bodies, and public-sector partners. The 2026 launch of the programme "Global Biodiversity Crisis: Risks and Opportunities for Human Society" showed that biodiversity had become one of the strategic themes through which the Academy addressed contemporary societal challenges. This was important because it moved biodiversity from the margins of natural history to the centre of public research policy. The programme's framing recognised that habitat destruction, intensive agriculture, and the decline of wild plants and animals are not merely scientific concerns but risks for human society. Such a framing did not turn the Academy into a political advocacy organisation. Rather, it acknowledged that high-quality science can and should inform public action when society faces long-term risks. Strategy AV21 thus provided an institutional bridge between fundamental biological research and science for policymaking. It also helped integrate institutes that might otherwise remain separated by discipline, geography, or method. In the context of post-1993 history, this shows how the Academy's autonomy gradually became linked with its capacity to organise knowledge around public problems (*Academy of Sciences of the Czech Republic, 2026*; *Strategy AV21, n.d.*).

International networks also transformed doctoral training and early-career development. Biology after 1993 increasingly depended on young scientists who could move across countries, learn advanced methods abroad, return with new expertise, or maintain

international collaborations from Czech laboratories. Doctoral students and postdoctoral researchers became carriers of internationalisation. They brought new techniques, publication habits, ethical norms, data practices, and expectations of laboratory culture. European mobility schemes, Marie Skłodowska-Curie networks, Erasmus-related cooperation, and bilateral projects all contributed to this circulation. Academy institutes, although not universities in the formal sense, became central training environments through their cooperation with universities and their participation in international projects. BIOCEV's postgraduate environment, the Biology Centre's links with the University of South Bohemia, and the research groups of the Institute of Molecular Genetics, Institute of Botany, Institute of Microbiology, Institute of Experimental Botany, and other institutes all participated in this transformation. The consequence was a gradual change in scientific identity. A Czech biologist trained after 1993 increasingly belonged not only to a national academic tradition but also to an international cohort shaped by shared conferences, methods, software, journals, and grant cultures. This generational dimension was crucial because networks survive only when they are reproduced through people, not only through institutions (*BIOCEV, n.d.*; *Czech Academy of Sciences, n.d.*).

International advisory boards and external evaluation formed another layer of biological internationalisation. After 1993, the Academy had to develop mechanisms for assessing institutes according to standards that were not merely national or administrative. International peer review became one of the tools through which institutional quality could be measured and improved. For biology, this mattered because the pace of methodological change was rapid and local judgement alone could easily become self-protective. External evaluators could compare Czech laboratories with European and global standards in publication output, infrastructure use, doctoral training, recruitment, project success, and strategic direction. Such evaluation was not always comfortable. It exposed weaknesses, encouraged restructuring, and sometimes placed pressure on inherited research groups. Yet it also protected institutes from provincialism and helped justify public investment in expensive fields. Evaluation thus became a form of international communication. The Academy showed the state and the scientific community that its biological institutes could be assessed by peers from abroad. This reinforced autonomy because it grounded institutional legitimacy in scientific quality rather than political patronage. The post-1993 Academy therefore learned to defend itself not by claiming historical prestige alone, but by subjecting that prestige to international judgement (*Czech Academy of Sciences, n.d.*).

Publication practices changed in parallel with these institutional mechanisms. International co-authorship, English-language journals, open-access publishing, citation networks, and journal-based evaluation all became part of everyday biological science. This shift was not merely linguistic. It altered the scale at which research questions were formulated. A study of a Czech plant community, freshwater reservoir, parasite, microbial process, gene, or cellular pathway had to be framed in ways that could matter to an international readership. This encouraged abstraction, comparison, and theoretical ambition. It also created pressure to produce results quickly and visibly, sometimes at the expense of slower descriptive or long-term work. The Academy's biological institutes had to manage this tension carefully. Taxonomy, long-term monitoring, and regional ecological expertise remained essential, even when they were less easily rewarded by high-impact publication metrics. Molecular biology, by contrast, could often fit more readily into global journal cultures, but it too risked metric-driven fragmentation. International publication thus brought both liberation and discipline. It allowed

Czech biology to be seen, but it also subjected it to global competition and changing editorial fashions. The history of Academy biology after 1993 must therefore recognise publication not only as output, but as a networked social system shaping what scientists considered publishable, important, and fundable (*Leydesdorff et al., 2013*; *Czech Academy of Sciences, n.d.*).

Open science and FAIR data principles added a further dimension to this transformation. In the life sciences, openness concerns not only articles but also datasets, code, metadata, protocols, images, biological resources, and research materials. European policy increasingly encouraged researchers to make data accessible, interoperable, and reusable, while respecting ethical and legal constraints. For Czech Academy biology, this created both opportunities and responsibilities. Open data could make Czech datasets more visible and valuable, especially in biodiversity, genomics, imaging, phenotyping, and environmental monitoring. At the same time, it required infrastructure, training, curation, and careful governance. Not all biological data can be opened without restriction: human-related biomedical data, sensitive species locations, animal research, and preclinical information require protective rules. The phrase “as open as possible, as closed as necessary” captures this balancing act. Academy institutes had to become data-governing institutions as well as knowledge-producing institutions. This was a major change from earlier research cultures in which data often remained inside notebooks, collections, or local files. The Europeanisation of Czech biology therefore involved a new ethics of data stewardship (*Antol et al., 2024*; *European Research Council, 2022*).

International networks also intensified the relationship between biology and innovation. Biotechnology, biomedical molecular biology, chemical screening, plant biotechnology, microbial applications, diagnostics, and preclinical research all connected Academy institutes with potential users beyond the academic world. European projects often required attention to impact, dissemination, exploitation, and stakeholder engagement. This did not mean that the Academy abandoned basic science. Rather, it learned to articulate basic research within broader innovation ecosystems. The Institute of Biotechnology, CZ-OPENSCREEN, BIOCEV, the Czech Centre for Phenogenomics, and technology-transfer structures exemplify this shift. Biological knowledge could move towards diagnostics, therapeutics, veterinary medicine, agriculture, environmental applications, or industrial processes. Yet the strongest innovation potential usually rested on long-term fundamental competence. A probe, model organism, diagnostic method, plant variety, microbial product, or imaging technique cannot emerge from policy rhetoric alone. It requires laboratories, trained people, infrastructures, and freedom to pursue mechanisms whose application may not be immediately obvious. International networks helped by connecting Czech institutes with partners, standards, and markets, but they did not replace the Academy’s central task: sustained public research. Innovation became one possible trajectory of biological knowledge, not its only justification (*Institute of Biotechnology of the Czech Academy of Sciences, n.d.*; *CZ-OPENSCREEN, n.d.*).

Health crises revealed the practical importance of such networked biology. The COVID-19 pandemic made molecular diagnostics, sequencing, epidemiological expertise, data sharing, and biomedical infrastructures visible to the public. Although pandemic response involved universities, hospitals, public-health authorities, and private laboratories as well as Academy institutes, it showed why a country needs strong biological research capacity before a crisis arrives. Laboratories that had been built for fundamental molecular, microbial, biomedical, or genomic work could be mobilised for testing, surveillance, method development, and expert

advice. The crisis also showed that national capacity and international networking are inseparable. Viruses move globally, variants are tracked through international data systems, and public-health interpretation depends on comparative evidence. Czech biological research therefore became part of a wider global knowledge infrastructure responding to uncertainty. This was historically important because it reinforced the public legitimacy of the Academy's life sciences. Decades of investment in molecular and biomedical competence were suddenly seen not as abstract academic spending, but as part of societal resilience. The pandemic thus revealed a broader truth about post-1993 Academy biology: international networks are not external ornaments of science, but conditions of preparedness in a connected world (*Šúri et al., 2025*).

The same logic applies to environmental crisis. Biodiversity loss, invasive species, climate change, freshwater degradation, soil transformation, and ecosystem collapse cannot be understood within national borders alone. Czech ecological data matter because they are part of continental and global patterns. European biodiversity strategies, IPBES assessments, global plant-diversity studies, invasion-science networks, and comparative ecosystem research all require national expertise organised internationally. The Institute of Botany, Biology Centre, Institute of Vertebrate Biology, Institute of Animal Physiology and Genetics, and related Academy groups contributed to this system through field observations, databases, taxonomic knowledge, ecological theory, and policy-relevant interpretation. Here again, networks did not erase locality. A Czech meadow, forest, river, pond, or soil community has its own history, but it also participates in larger processes: climate warming, nitrogen deposition, land-use change, fragmentation, alien species movement, and regional species decline. The Academy's ecological institutes were valuable because they could connect these scales. They preserved knowledge of the Czech landscape while making it meaningful for Europe and the world. This ability to move between local specificity and global interpretation became one of the defining strengths of post-1993 biological research (*Pärtel et al., 2025*; *Institute of Botany of the Czech Academy of Sciences, 2026*).

The globalisation of science also brought new inequalities and ethical questions. Czech biology after 1993 was itself shaped by the experience of entering networks historically dominated by older Western European and North American institutions. This gave Czech researchers a particular position: they were no longer isolated, but they still worked within asymmetrical structures of funding, prestige, salaries, and access. In global biodiversity research, similar asymmetries are even more visible. Research in tropical regions, biodiversity-rich countries, or economically less powerful scientific systems raises questions about local participation, authorship, benefit sharing, and scientific sovereignty. Czech Academy researchers involved in global fieldwork had to navigate these issues carefully. Responsible internationalisation requires more than extracting data from distant places and publishing them in European journals. It requires long-term partnerships, local training, respect for communities, and recognition of knowledge produced outside traditional centres of power. This ethical dimension became increasingly important in 21st-century biodiversity science. For the Academy, global networks therefore meant not only opportunity and prestige, but also responsibility. Czech biology's international maturity can be measured partly by its capacity to participate in global science without reproducing the most problematic habits of unequal knowledge extraction (*Novotný & Toko, 2015*; *Biology Centre CAS, 2025*).

The relationship between national scientific identity and international integration was not simple. Some observers might assume that the more Czech biology became European and

global, the less distinctly Czech it became. The institutional history of the Academy suggests the opposite. Internationalisation strengthened the value of national traditions when those traditions could contribute something distinctive. Czech vegetation science, entomology, hydrobiology, parasitology, immunology, molecular genetics, plant biology, microbiology, and experimental medicine became internationally visible because they had accumulated specific forms of expertise. The Academy's role was to provide continuity, infrastructure, and public legitimacy for this expertise while allowing it to enter broader networks. National identity therefore did not mean isolation or self-celebration. It meant the capacity to contribute from a historically formed position. In this sense, Czech biological research after 1993 became both less provincial and more self-aware. It no longer needed to prove itself by imitation alone. It could participate in global science through fields where Czech expertise had depth, data, collections, field experience, or technical strength. The Academy's institutional memory became more valuable when it was opened to international exchange (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

The cultural change inside biological institutes was equally important. International networks altered seminar culture, laboratory management, recruitment, authorship practices, mentoring, and expectations of scientific communication. Foreign postdoctoral researchers and doctoral students became more common in strong institutes and centres. Czech scientists returning from abroad often brought with them different habits of group leadership, peer discussion, grant planning, and publication strategy. International advisory boards and reviewers encouraged institutes to compare themselves with research environments in Germany, Austria, France, the United Kingdom, the Netherlands, Scandinavia, Switzerland, and the United States. This comparison could be demanding, but it also helped loosen older hierarchical habits inherited from socialist-era science. Younger researchers could gain authority through publications, grants, and international recognition rather than only through seniority. At the same time, internationalisation created pressures: precarious careers, grant dependence, publication stress, and competition for talent. The Academy's biological institutes had to reconcile openness with stability. They needed to be attractive to international researchers while remaining responsible to Czech public science and domestic training. This balancing act became a central feature of post-1993 institutional life (*Czech Academy of Sciences, n.d.*).

The Academy's biological networks also depended on cooperation with Czech universities. European and global integration strengthened, rather than weakened, the need for domestic partnerships. Charles University, Masaryk University, the University of South Bohemia, Palacký University, Czech University of Life Sciences, and other institutions formed overlapping networks with Academy institutes. This was visible in BIOCEV, Czech-BioImaging, doctoral programmes, biodiversity projects, plant research, biomedical science, and regional ecological studies. The older institutional distinction between academy research and university teaching did not disappear, but it became more permeable. This mattered for internationalisation because European projects often require training capacity, interdisciplinary teams, and institutional critical mass. Academy institutes alone could not carry the full burden of education, while universities alone often lacked specialised long-term infrastructures. Together, they could create stronger research environments. This domestic networking was a precondition for international networking. Czech biology entered European and global science more effectively when national institutions cooperated rather than

competed defensively. The post-1993 Academy thus helped reshape the Czech research system as a networked ecology of institutes, universities, infrastructures, and public agencies (*BIOCEV, n.d.*; *Czech-BioImaging, n.d.*).

International biological networks also affected the Academy's relationship with the state. Under socialism, international cooperation could be politically controlled and symbolically used by the regime. After 1993, the state's role changed but did not disappear. The Czech state remained a major funder and policy actor, while European participation required national coordination, co-financing, legal adaptation, and diplomatic representation in research policy. CAS therefore had to communicate with ministries, the Technology Centre Prague, European offices, and international policy structures. The Academy's European Research Area activities show that internationalisation became part of institutional strategy, not merely the sum of individual collaborations. Biology benefited from this because life-science infrastructures often require state-level decisions and long-term investment. A sequencing or imaging platform, phenogenomics centre, or biodiversity monitoring network cannot be sustained by a single grant alone. The state had to recognise that participation in European science required stable domestic institutions. At the same time, the Academy had to show that public investment produced scientific value, international visibility, and societal benefit. This changed the old autonomy-state relationship. Scientific autonomy survived not by withdrawing from policy, but by proving its value within a democratic and Europeanised research system (*Czech Academy of Sciences, n.d.*; *Horizon Europe Portal, 2026*).

By the 2020s, Czech Academy biology had become a multi-layered networked system. At one layer stood the institutes themselves, with their histories, research groups, infrastructures, and disciplinary cultures. At another layer stood national platforms linking Academy institutes with universities, hospitals, public agencies, and technology-transfer bodies. At a third layer stood European infrastructures, Framework Programme projects, ERC grants, mobility schemes, and policy agendas. At a 4th layer stood global research communities concerned with biodiversity, tropical ecology, infectious diseases, genomics, data, climate change, and biological resources. The important historical point is that these layers did not replace one another. They interacted. A plant ecologist might work in a Czech landscape, use a national database, publish within a global consortium, and contribute to European conservation policy. A molecular biologist might work in an Academy laboratory, use a Czech infrastructure node, collaborate with a European project, and deposit data in international repositories. A parasitologist might study local host systems while participating in global debates on disease ecology and evolution. This layered structure became the normal condition of biological research after 1993. The Academy's achievement was to make such layering institutionally sustainable (*ELIXIR CZ, n.d.*; *Biology Centre CAS, n.d.*; *Institute of Botany of the Czech Academy of Sciences, 2026*).

This networked development also changed the historical meaning of "Czech biology". In the 19th century and the period of national revival, scientific work was often tied to building cultural and national self-knowledge. In the Czechoslovak Academy, science became part of a state-socialist project of planned modernity, even when individual scientists pursued more universal aims. After 1993, Czech biology became a national science operating through transnational forms. Its Czech character lay in institutions, personnel, field sites, public funding, language of domestic communication, and responsibility to Czech society. Its scientific character, however, increasingly depended on international standards, English-language publication, European infrastructures, and global comparison. This duality was not a weakness. It reflected

the normal condition of science in a small European country. The Academy's biological institutes could not and did not aim for self-sufficiency. Their task was to become strong nodes in wider networks while preserving the continuity necessary for serious research. In this sense, biological research after 1993 offers a condensed picture of the Academy's modern identity: nationally rooted, institutionally autonomous, internationally evaluated, infrastructurally connected, and publicly responsible (*European Commission, 2026*; *Czech Academy of Sciences, n.d.*).

Thus, biological research in European and global networks after 1993 became one of the most important expressions of the Czech Academy's post-socialist transformation. Internationalisation was not limited to more travel, more English-language articles, or more foreign partners. It reshaped the institutional architecture of Czech biology through European Research Area policies, Framework Programmes, ERC competition, research infrastructures, open data, doctoral mobility, science-policy platforms, biodiversity consortia, global fieldwork, and cooperation between Academy institutes and universities. Molecular biology, genetics, cell biology, ecology, evolutionary biology, parasitology, microbiology, plant science, and biomedical research all entered networked environments, but they did so in different ways: through genomics and imaging, through phenogenomics and chemical biology, through freshwater and tropical field systems, through global biodiversity datasets, and through policy bodies such as IPBES. The result was a new form of institutional autonomy. The Academy remained a Czech public research institution, but its biological sciences became credible and productive because they were internationally embedded. This history shows that continuity and renewal were joined by a third principle: connectivity. Without networks, the Academy's biological institutes would have preserved expertise but risked provincialism. Through networks, they transformed inherited Czechoslovak strengths into contemporary European and global scientific capacity.

Biomedicine and Public Health Relevance

1. Biomedical Institutes and Translational Potential

After 1993, biomedical research within the Academy of Sciences of the Czech Republic developed at the intersection of continuity, reform, and changing social expectation. The Academy did not become a clinical hospital system, nor did it try to replace universities, medical faculties, or specialised medical centres. Its distinctive role was different: it provided a public institutional space for basic biomedical research, where mechanisms of disease, cellular processes, physiological regulation, molecular pathology, biomaterials, microbiology, pharmacology, genetics, toxicology, neuroscience, and biotechnology could be studied before they became clinical routines. This distinction is central to understanding the Academy's post-socialist biomedical profile. Translational potential did not mean a simple administrative command to "apply" science as quickly as possible. It meant that fundamental research was increasingly organised in such a way that its results could, under appropriate conditions, move towards diagnostics, therapeutic strategies, regenerative medicine, pharmacological

development, medical materials, disease models, or clinical cooperation. The post-1993 period therefore required a new vocabulary for the life sciences. Older terms such as physiology, pathology, microbiology, biochemistry, and experimental medicine remained important, but they were increasingly joined by molecular medicine, biomedical molecular biology, translational medicine, preclinical models, biomarkers, tissue engineering, phenogenomics, bioimaging, and technology transfer. This vocabulary reflected more than scientific fashion. It marked a transformation in the social contract between the Academy, the state, and society. Biomedical institutes were expected to produce knowledge of high international quality, but also to show why such knowledge mattered for health, ageing, disease prevention, diagnosis, and future treatment. The Academy's biomedical sector thus became one of the places where scientific autonomy and public usefulness had to be held together without reducing one to the other (*Czech Academy of Sciences, 2026*; *Institute of Experimental Medicine of the CAS, n.d.*).

The formation of the Czech Academy after the dissolution of the Czechoslovak Academy of Sciences gave biomedical research a new institutional framework. Under ČSAV, many biomedical and life-science institutes had been embedded in a state-socialist system that valued scientific modernisation but also shaped research through political priorities, central planning, and limited international exchange. After 1993, these institutes entered a more plural and competitive research environment. Their legitimacy could no longer rely on inherited prestige alone. It had to be demonstrated through peer-reviewed publications, international cooperation, grant success, infrastructure development, doctoral training, and relevance to national and European research strategies. Biomedical research was particularly affected because medicine itself was changing rapidly. Molecular biology, imaging, genomics, pharmacology, cell therapy, biomaterials, and computational analysis were transforming the boundaries between laboratory and clinic. The Academy's institutes had to adapt to this environment while preserving the long-term exploratory work that hospitals and short-term applied projects often cannot sustain. This produced a distinctive institutional arrangement. The Academy's biomedical institutes worked upstream from clinical practice, but not outside the biomedical world. They studied mechanisms, models, and technologies that might later enter prevention, diagnostics, or therapy through collaboration with universities, hospitals, companies, and European infrastructures. In this sense, the post-1993 biomedical Academy was neither purely theoretical nor narrowly applied. It was a mechanism-producing system, and its translational potential depended precisely on the depth of its basic research (*Czech Academy of Sciences, n.d.*; *EATRIS, n.d.*).

The Section of Biological and Medical Sciences became the main organisational home for this profile. Its institutes included the Institute of Biophysics, the Institute of Biotechnology, the Institute of Physiology, the Institute of Microbiology, the Institute of Experimental Botany, the Institute of Experimental Medicine, the Institute of Molecular Genetics, and the Institute of Animal Physiology and Genetics. This list is historically revealing because it does not map neatly onto the structure of clinical medicine. Instead, it represents a broad experimental biology of health and disease. Biophysics links physical methods with DNA, chromatin, radiation, molecular mechanisms, and cancer-related questions. Biotechnology works at the level of biomedical molecular biology and technological transfer. Physiology studies normal and pathological functions, especially where mechanisms of disease can be clarified. Microbiology connects microbial life, immunity, infection, biotechnology, and host-environment relations. Experimental medicine provides a wide biomedical spectrum, from

neurobiology and stem cells to cancer, toxicology, pathology, and regenerative approaches. Molecular genetics contributes to gene regulation, genome integrity, immunology, developmental mechanisms, and disease models. Animal physiology and genetics connects organismal models, reproduction, genome function, and comparative biology. The result is not a medical faculty under another name, but a distributed system of experimental biomedical knowledge inside a national academy. Its strength lies in its capacity to move between molecule, cell, tissue, organism, model, material, and potential application (*Czech Academy of Sciences, 2026*).

The Institute of Experimental Medicine occupies a particularly important position in this biomedical constellation. Founded in 1975 and later transformed under the public research institution framework, it became one of the Academy's principal centres for complex biomedical research. Its present profile includes diagnostic markers, treatment of serious diseases associated with ageing, neurodegeneration, trauma, ischaemia, musculoskeletal disorders, cancer, degenerative changes in vision and hearing, and the impact of environmental pollution on human health. This range is significant because it shows how experimental medicine after 1993 moved beyond any single disease category. It became a platform for studying the biological vulnerability of the human body under conditions of ageing, injury, toxic exposure, and chronic degeneration. The institute's biomedical orientation therefore corresponded closely to the demographic and social challenges of late 20th- and early 21st-century Europe. Ageing societies require knowledge about neurodegeneration, tissue damage, sensory decline, cancer, and chronic disease. They also require understanding of environmental determinants of health, because disease cannot be fully explained by genes and cells alone. The Institute of Experimental Medicine's translational potential lay in this broad mechanistic engagement with medical problems. It did not provide routine treatment, but it produced the kinds of experimental knowledge without which new treatments and diagnostic approaches would remain shallow or speculative (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Experimental Medicine of the CAS, n.d.*).

The institutional history of the Institute of Experimental Medicine also illustrates the change in biomedical governance after 1993. The institute became a public research institution under the Act on Public Research Institutions, and its internal organisation developed around research departments rather than a single monolithic programme. This organisational form mattered because biomedical research had become too complex to be directed by one disciplinary language. Neurobiology, molecular embryology, cancer research, genetic toxicology, nanotoxicology, tissue replacement, stem cells, pathology, developmental biology, and environmental health require different methods and professional cultures. Their coexistence inside one institute created opportunities for interaction but also required managerial flexibility. Translational potential often emerges at exactly these boundaries. A stem-cell project may need imaging, biomaterials, animal models, molecular markers, and clinical consultation. A neurodegeneration project may depend on cellular pathology, molecular signalling, toxicology, and electrophysiology. A cancer project may require genomics, cell biology, pharmacology, and tissue analysis. The institute therefore became a microcosm of modern biomedical research: multidisciplinary, infrastructural, ethically regulated, and increasingly connected to national and European networks. Its importance in the Academy's institutional history lies not only in particular research results, but in its demonstration that public non-university institutes could host sophisticated biomedical

environments with long-term continuity (*Institute of Experimental Medicine of the CAS, n.d.*; *EATRIS-CZ, n.d.*).

The Institute of Physiology represented another major pillar of Academy biomedicine. Its mission after 1993 can be understood through the study of normal and pathological physiological mechanisms. This phrase may sound traditional, but it became highly modern in the post-socialist period. Physiology was no longer limited to organ-level description or classical functional measurements. It increasingly included molecular, cellular, systemic, and integrative approaches to disease mechanisms. The Institute of Physiology described its work in relation to improving prevention, diagnosis, and treatment of serious non-infectious diseases. This positioned the institute within one of the central biomedical problems of contemporary Europe. Non-infectious diseases, including cardiovascular, metabolic, neurological, and other chronic disorders, became major burdens for health systems and ageing societies. The Academy's contribution was not to manage hospitals, but to clarify mechanisms: how cells, tissues, organs, and regulatory systems operate under normal and pathological conditions. Such knowledge is a precondition for rational diagnostics and therapy. The Institute of Physiology thus preserved an older Academy tradition of experimental physiology while adapting it to molecular medicine, imaging, bioenergetics, neurophysiology, cardiovascular research, metabolism, and translational cooperation (*Institute of Physiology of the Czech Academy of Sciences, n.d.*; *Kopecký, 2015*).

Physiology also had special institutional value because it bridged scales more explicitly than many other disciplines. Molecular biology may sometimes focus intensely on genes or pathways, while clinical medicine may focus on the patient and disease category. Physiology asks how functions are organised across cells, tissues, organs, and whole organisms. This makes it particularly important for translational research, because many promising molecular findings fail when they are not understood at the level of organismal function. The Institute of Physiology's research on normal and pathological mechanisms therefore occupied a strategic middle ground. It could connect molecular findings with systemic consequences. It could use experimental models to clarify disease processes before clinical application. It could provide expertise relevant to prevention and diagnosis without being absorbed into routine clinical service. After 1993, this bridging role became more important as biomedicine moved towards systems thinking, personalised medicine, and complex disease models. The Academy's physiological research thus contributed to a broader rebalancing of biomedical science: from isolated molecular targets to integrated mechanisms of health and disease. Its translational potential was not a late addition to physiology, but an intrinsic consequence of studying living functions in their organised complexity (*Institute of Physiology of the Czech Academy of Sciences, n.d.*).

The Institute of Biotechnology, established in 2008, marked a different phase of Academy biomedical development. Unlike older institutes that carried strong ČSAV inheritances into the post-1993 period, the Institute of Biotechnology was born in an already Europeanised and infrastructure-oriented research landscape. Its declared focus on excellent basic research in biomedical molecular biology with prospective transfer of biotechnological methods and tools to human and veterinary medicine expressed the new language of 21st-century life science. The institute was not created merely to preserve an inherited discipline. It was designed to operate in a zone where molecular biology, biotechnology, structural biology, medicine, and innovation policy overlapped. Its location within the BIOCEV environment further reinforced this role. Biotechnology after 1993 was not simply industrial biology. It involved protein

engineering, structural studies, molecular mechanisms, disease models, cell-based systems, and the development of tools that could later support diagnosis or therapy. The Institute of Biotechnology thus represented the Academy's ability to create new institutional forms when older structures were insufficient for emerging scientific fields. Its significance lies in the fact that it placed translational potential into the institute's founding identity, while still grounding that potential in basic research. This is an important distinction because the Academy's strongest biomedical contribution has usually come from research that was fundamental in method but open to future application in purpose (*Institute of Biotechnology of the Czech Academy of Sciences, n.d.*).

BIOCEV, the Biotechnology and Biomedicine Centre of the Academy of Sciences and Charles University, became one of the most visible symbols of this new stage. The centre brought together Academy institutes and Charles University faculties in a shared environment oriented towards biotechnology, biomedicine, structural biology, and advanced facilities. Its completion and transition to full operation in 2015–2016 marked the institutional consolidation of a long post-1993 process: the movement from separated research islands towards interdisciplinary campuses. BIOCEV mattered not only because it provided laboratories and infrastructure, but because it altered the relationship between the Academy and the university sector. Biomedical research requires doctoral students, medical knowledge, molecular expertise, technical platforms, animal models, imaging, proteomics, genomics, structural biology, and potential links to clinical questions. No single institution can easily provide all these elements alone. BIOCEV therefore created a shared space where the Academy's long-term research culture could interact with Charles University's educational and medical capacities. It was a practical answer to a structural problem inherited from the socialist period, when academy research and university education had often been institutionally separated. In the biomedical field, this separation became increasingly counterproductive after 1993. BIOCEV helped overcome it by offering a model of integrated research, training, and translational infrastructure (*BIOCEV, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, 2015*).

The Institute of Molecular Genetics remained central to translational potential, even when its identity was not primarily clinical. Its history from Czechoslovak immunogenetics, retrovirology, and molecular biology gave it a strong foundation for modern biomedical research. After 1993, its work in genome regulation, cell biology, immunology, cancer biology, developmental mechanisms, virology, and phenogenomics made it one of the Academy's most important biomedical nodes. Its significance lay in the fact that many translational trajectories begin with molecular understanding. Cancer diagnostics, immune therapies, gene function analysis, disease modelling, and pharmacological exploration all require knowledge of how genes, cells, and regulatory networks operate. The Institute of Molecular Genetics also hosted or participated in major infrastructures such as the Czech Centre for Phenogenomics, Czech-BioImaging, ELIXIR CZ, and CZ-OPENSCREEN. These infrastructures turned molecular biology into a shared national capacity. They also made translational work more realistic because diagnostic and therapeutic development requires standardised models, imaging, data, screening, and reproducible experimental systems. The institute therefore illustrates a crucial point: translational potential is not located only in institutes labelled "medical". It often lies in basic biological institutes whose mechanisms, tools, and models later become indispensable for medicine (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

The Czech Centre for Phenogenomics deserves particular attention in this context. Modern biomedicine depends heavily on model organisms, especially genetically modified mice and rats, to understand gene function, disease mechanisms, and therapeutic effects. Yet model-organism research is no longer a matter of small animal rooms attached to individual laboratories. It requires genetic engineering, phenotyping pipelines, imaging, pathology, metabolism, behavioural tests, data analysis, cryopreservation, animal welfare regulation, and international standardisation. The Czech Centre for Phenogenomics, located at BIOCEV and linked with the Institute of Molecular Genetics, provided precisely this type of infrastructural capacity. Its translational importance is clear. Before a therapy can move towards human use, researchers need robust preclinical models. Before a gene can be interpreted medically, researchers need evidence of its functional role in living organisms. Phenogenomics therefore bridges molecular genetics and medical interpretation. It also links national research capacity to European model-organism networks. In the Academy's institutional history, such a centre marks the passage from traditional institute laboratories to infrastructural platforms capable of serving many users and many disease-related questions (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *INFRAFRONTIER, n.d.*).

The Institute of Microbiology also contributed to biomedical and translational potential, although its research identity extended beyond medicine into ecology, biotechnology, and microbial systems. Microbiology is inherently translational because microorganisms are at once experimental models, sources of bioactive compounds, agents of disease, components of the microbiome, tools of biotechnology, and participants in environmental processes. After 1993, the Institute of Microbiology's work connected microbial physiology, molecular microbiology, immunology, biotechnology, biosynthesis of natural products, environmental microbiology, and host-microbe relations. This breadth made it valuable in several translational directions. It could contribute to understanding infection, immunity, microbial metabolites, natural products, antibiotics, biotechnology, and microbial interactions relevant to health. It also occupied a strategic position during periods when infectious disease and antimicrobial resistance became global concerns. The institute's biomedical relevance therefore did not depend solely on direct clinical projects. It lay in sustaining fundamental knowledge of microorganisms and their interactions with hosts and environments. In a period when microbiome research, immunology, pathogen surveillance, and biotechnology were all becoming more important, the Academy's microbiological capacity became part of the Czech Republic's long-term biomedical resilience (*Institute of Microbiology of the Czech Academy of Sciences, n.d.*; *EATRIS-CZ, n.d.*).

The Institute of Biophysics in Brno added another important dimension to Academy biomedicine. Biophysics brings physical concepts and methods into the study of biological systems, and in the biomedical context it is especially relevant to DNA damage, chromatin organisation, radiation biology, molecular pharmacology, cellular responses, cancer mechanisms, and imaging. Its location in Brno also strengthened the decentralised geography of biomedical research within the Academy. Prague was important, but Academy biomedicine was not exclusively Prague-based. Brno, with its universities, hospitals, and scientific institutes, provided another environment for biomedical interaction. The biophysical approach mattered because many disease processes are not only chemical or genetic; they are spatial, mechanical, energetic, structural, and dynamic. DNA repair, chromatin architecture, protein interactions, radiation response, and cellular organisation all require methods drawn from physics, chemistry, biology, and computational analysis. The Institute of Biophysics therefore

exemplified the Academy's interdisciplinary character. Its translational potential was not immediate in the sense of producing a clinical service, but it was deep in the sense of clarifying mechanisms relevant to cancer, genome stability, and pharmacological action. Such work belongs to the preclinical foundation on which more visible medical applications later depend (*Institute of Biophysics of the Czech Academy of Sciences, n.d.*).

The Institute of Organic Chemistry and Biochemistry represents perhaps the most famous Czech example of the long path from basic research to medical application. Although it belongs formally to the chemical sciences rather than the biological and medical section, its relevance to biomedical translational potential is impossible to ignore. The work of Antonín Holý on modified nucleosides and nucleotides, and the subsequent development of antiviral drugs in cooperation with Gilead Sciences, became one of the most striking success stories in the history of Czech research. Its historical significance is twofold. First, it shows that major medical applications may arise from basic chemical and biochemical research pursued over many years. Second, it demonstrates that successful translation requires international industrial partnership, patent strategy, licensing, and institutional support. After 1993, IOCB's experience influenced the Academy's understanding of technology transfer. It showed that public research could generate discoveries of global medical importance without abandoning academic science. The institute's collaboration with Gilead, including the Gilead Sciences Research Centre at IOCB Prague, became a model of how Czech Academy research could enter the international biomedical innovation system. This example also gave the Academy a powerful argument in public debates about the value of basic research: one cannot always predict which fundamental investigations will later become medically transformative (*Institute of Organic Chemistry and Biochemistry of the CAS, n.d.*; *Institute of Organic Chemistry and Biochemistry of the CAS, n.d.*).

The establishment of i&i Prague by IOCB in 2017 further institutionalised this lesson. Technology transfer had long been one of the weaker elements in many post-socialist research systems. Scientists could produce valuable results, but they often lacked the legal, financial, managerial, and commercial support needed to protect inventions, find partners, develop companies, or negotiate licensing. i&i Prague was created to support the commercialisation of Czech research results and to help academic institutions identify and protect inventions with commercial potential. Its significance extended beyond IOCB itself. It suggested that technology transfer could become a professionalised service for the wider Czech research environment. In the biomedical field, this mattered because translation is especially complex. A potential therapy, diagnostic method, compound, biomaterial, or device must move through intellectual-property protection, validation, regulation, investment, industrial development, and often clinical trials. Individual scientists cannot manage this process alone. The creation of dedicated transfer structures therefore marked an institutional maturation of the Academy's translational potential. It also reflected a broader post-1993 shift: public research institutions were increasingly expected to take responsibility not only for discovery, but also for pathways by which discovery might benefit society (*Institute of Organic Chemistry and Biochemistry of the CAS, 2017*).

The opening of an IOCB presence in Boston in 2024 added a further international dimension to this story. Boston is one of the world's major centres of biotechnology, medicinal chemistry, venture capital, and biomedical entrepreneurship. By establishing an outpost there through its technology-transfer structures, IOCB signalled that Czech Academy science could seek direct engagement with one of the central global ecosystems of biomedical innovation. This was

historically significant because it showed how far the Academy had moved from the late socialist condition of restricted international circulation. A Czech institute was no longer only trying to enter European networks; it was placing itself in a global biomedical marketplace of ideas, partnerships, investors, and start-up trajectories. Such a move also reveals the changing scale of translational ambition. Medical application is rarely national in scope. A compound, platform, diagnostic tool, or therapeutic strategy must often connect with global industry, regulation, capital, and expertise. The Boston initiative therefore represented a new kind of institutional diplomacy for Czech science. It extended the Academy's biomedical horizon beyond publication and cooperation towards active positioning within international innovation systems (*Academy of Sciences of the Czech Republic, 2024*).

The Institute of Macromolecular Chemistry contributed to biomedical potential through polymers, hydrogels, biomaterials, and tissue-engineering concepts. Its primary identity lay in polymer science, but its research ranged from biomacromolecular systems for medical purposes to environmentally relevant polymer questions. The biomedical importance of polymer research is considerable. Drug delivery, wound healing, tissue scaffolds, injectable hydrogels, implants, regenerative medicine, and bioresponsive materials all depend on sophisticated macromolecular design. The institute's work on injectable biodegradable hydrogels for minimally invasive tissue repair shows how materials science can enter medical thinking. Such research is translational in a distinctive way. It does not begin with a disease mechanism alone, but with the design of materials that can interact with biological systems. This requires cooperation between chemists, biologists, physicians, engineers, and regulatory specialists. The Institute of Macromolecular Chemistry therefore broadened the Academy's biomedical profile beyond genes, cells, and drugs. It showed that medical innovation may also arise from materials capable of supporting, replacing, repairing, or modulating living tissues (*Institute of Macromolecular Chemistry of the CAS, n.d.*; *Institute of Macromolecular Chemistry of the CAS, n.d.*).

The emergence of European translational infrastructures gave these national developments a wider framework. EATRIS, the European infrastructure for translational medicine, defines its mission through helping research communities translate scientific discoveries into benefits for patients. EATRIS-CZ connected Czech biomedical, chemical, clinical, and academic institutions in a national node embedded in the wider European infrastructure. Its purpose was to support movement along the translational value chain, including technologies, services, patient cohorts, clinical expertise, and multidisciplinary development. For the Academy, participation in such environments was highly significant. It placed CAS institutes within a European system that recognised the gap between discovery and clinical application as an institutional problem, not merely a scientific one. Many promising findings fail not because they are intellectually weak, but because they lack validation, regulatory strategy, clinical connection, reproducibility, or development support. EATRIS-type infrastructures therefore helped define translation as an organised process. Academy institutes could contribute basic discoveries, platforms, models, imaging, chemistry, biomaterials, or disease mechanisms, while the wider infrastructure linked these contributions to clinical and developmental pathways. This was a mature form of translational thinking, far beyond the simplistic idea that application follows automatically from discovery (*EATRIS, n.d.*; *EATRIS-CZ, n.d.*; *Research Infrastructures of the Czech Republic, n.d.*).

Research infrastructures also changed the internal social organisation of biomedical science. In earlier periods, an institute's prestige might have centred mainly on leading scientists,

departments, and publications. After 1993, and especially after the 2000s, facilities, platforms, and service units became central to biomedical productivity. Imaging, flow cytometry, mass spectrometry, sequencing, phenotyping, animal models, structural biology, bioinformatics, chemical screening, and biomaterial characterisation require specialised personnel and professional management. These infrastructures are not secondary to science; they shape what questions can be asked. A laboratory with access to advanced imaging can study cellular processes differently from one without such access. A group with phenogenomics capacity can move from gene association to functional organismal evidence. A chemist with screening support can develop biological probes more systematically. The Academy's biomedical institutes therefore became more collective and more technically layered. The rise of infrastructures also changed careers. Facility scientists, technicians, data experts, animal-care specialists, imaging specialists, and project managers became indispensable actors in translational potential. This transformation made biomedical research less dependent on isolated laboratory heroism and more dependent on institutional ecosystems (*Czech-BioImaging, n.d.*; *INFRAFRONTIER, n.d.*; *CZ-OPENSCREEN, n.d.*).

The relationship between Academy biomedical institutes and universities became increasingly important in this context. Under the older Czechoslovak model, the Academy and universities had often been separated functionally: the Academy was oriented towards research, while universities carried the primary educational mission. After 1993, especially in biomedicine, this separation became less sustainable. Doctoral students needed access to advanced facilities and research groups. Academy scientists needed links to medical faculties, hospitals, and clinical questions. Universities needed strong research environments in which students could be trained at international levels. BIOCEV, EATRIS-CZ, Czech-BioImaging, and many doctoral collaborations all reflected this convergence. The Academy's biomedical institutes did not become teaching universities, but they became deeply involved in the formation of scientific careers. This was essential for translational potential because translation depends on people who can move between disciplines and institutions. A young researcher trained in an Academy laboratory and linked to a medical faculty may understand both molecular mechanisms and clinical relevance. Such hybrid training was one of the most important forms of renewal after 1993. It helped create a biomedical community that was not confined to inherited institutional borders (*BIOCEV, n.d.*; *Institute of Experimental Medicine of the CAS, n.d.*).

The Academy's biomedical institutes also had to navigate a changing ethical environment. Biomedical research touches the body, disease, ageing, disability, reproduction, animal experimentation, environmental exposure, genetic information, and potential human intervention. After 1993, the question of scientific freedom could not be understood only as liberation from political ideology. It also required responsible conduct, ethical review, data protection, animal welfare, informed consent where relevant, and careful public communication. Translational potential increases ethical responsibility because the closer research moves to diagnosis or therapy, the more directly it concerns patients and society. Preclinical models, stem-cell research, tissue engineering, toxicology, and genetic studies all require clear norms. The Academy's democratic legitimacy depended partly on its ability to sustain this responsible research culture. International integration reinforced this process because European projects and infrastructures impose standards for ethics, data, reproducibility, and governance. Biomedical autonomy therefore became conditional on accountability. This was not a contradiction. It was one of the defining features of modern public science: the freedom to pursue difficult questions within a framework that protects

human dignity, animal welfare, scientific integrity, and public trust (*EATRIS, n.d.*; *Czech Academy of Sciences, n.d.*).

The translational potential of Academy biomedicine must be distinguished from immediate medical delivery. This distinction is often misunderstood in public debates. A hospital treats patients; a biomedical institute may study the mechanisms that make future treatment possible. A company develops products; an Academy institute may discover the molecular target, model the disease, design the material, or validate the experimental system from which a product might eventually emerge. A ministry needs policy-relevant advice; researchers may provide evidence, but they cannot replace political decision-making. The Academy's role after 1993 was therefore intermediate and foundational. It occupied the difficult space between curiosity-driven research and potential social use. This position sometimes made its value less visible than that of hospitals or companies. Yet it was precisely this position that allowed long-term biomedical capacity to grow. If every project had been forced to promise immediate clinical outcomes, many of the strongest discoveries would never have begun. Conversely, if biomedical research had ignored application entirely, it would have lost contact with the health challenges of society. The Academy's post-1993 biomedical history is the history of maintaining this productive middle ground (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Biotechnology of the Czech Academy of Sciences, n.d.*).

Ageing became one of the central themes linking biomedical institutes to public need. The Czech Republic, like most European societies, faced demographic ageing and the growing burden of chronic, degenerative, and non-infectious diseases. This context gave special importance to research on neurodegeneration, sensory loss, musculoskeletal disorders, cancer, metabolism, cardiovascular disease, tissue degeneration, and regenerative approaches. The Institute of Experimental Medicine's focus on diseases associated with ageing and the Institute of Physiology's emphasis on non-infectious diseases reflected this societal background. Ageing is not a single disease, but a biological and social condition that transforms medical systems. It requires research on cells, tissues, organs, inflammation, metabolism, environment, genetics, and repair mechanisms. The Academy's biomedical institutes could contribute because they were not restricted to one clinical specialty. They could study ageing as a set of mechanisms crossing neuroscience, toxicology, cancer biology, tissue engineering, physiology, and molecular genetics. This integrative capacity was one of the advantages of the Academy model. It made possible long-term research on conditions whose causes and consequences are distributed across biological scales (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Physiology of the Czech Academy of Sciences, n.d.*).

Cancer research formed another field in which Academy biomedical institutes had strong translational potential. Cancer is a molecular, cellular, tissue-level, systemic, and environmental problem at once. It involves genome instability, DNA repair, cell-cycle control, signalling, metabolism, immune response, tissue microenvironment, environmental carcinogens, and therapeutic resistance. Academy institutes contributed to cancer-related research from several directions. Molecular genetics provided insight into cell-cycle checkpoints, DNA damage responses, tumour suppressors, and genome regulation. Biophysics contributed to DNA and chromatin mechanisms, radiation response, and molecular pharmacology. Experimental medicine addressed cancer biology, toxicology, pathology, and biomarkers. Organic chemistry and biochemistry contributed medicinal chemistry, bioactive compounds, and drug-discovery traditions. Biotechnology and screening

infrastructures supported molecular tools and potential therapeutic strategies. This distributed structure shows why the Academy's biomedical contribution cannot be reduced to a single cancer institute. Instead, cancer research emerged from a network of institutes whose different competencies converged on disease mechanisms. Such convergence is typical of modern translational biomedicine (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Organic Chemistry and Biochemistry of the CAS, n.d.*).

Neuroscience and regenerative medicine also became important areas of biomedical promise. The Institute of Experimental Medicine's work in neurobiology, neurophysiology, neuropathology, stem cells, nervous tissue regeneration, and tissue replacement connected Czech Academy research to international debates about trauma, degeneration, repair, and functional recovery. These topics are medically urgent but scientifically difficult. The nervous system is complex, developmentally specialised, and limited in its regenerative capacity. Promising therapeutic strategies often require cell biology, biomaterials, animal models, electrophysiology, imaging, molecular markers, and careful preclinical validation. The Academy's strength lay in providing a research environment where such interdisciplinary work could be sustained without immediate clinical pressure. Regenerative medicine also connected the Institute of Experimental Medicine with materials science, including hydrogels and scaffolds developed in polymer research. This illustrates the wider Academy pattern: translational potential often appears when institutes outside a narrow biomedical category interact. A biological question may require a chemical material; a medical problem may require a physical imaging method; a therapeutic idea may require a genetic model. The Academy's institutional diversity therefore became a translational advantage (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Macromolecular Chemistry of the CAS, n.d.*).

Environmental health formed a further bridge between biomedical and ecological thinking. The Institute of Experimental Medicine's attention to environmental pollution and human health demonstrates that biomedicine after 1993 was not limited to internal mechanisms of the body. It also had to address the biological consequences of external exposures. This was historically important in the Czech context because the late socialist period left severe environmental burdens, and the democratic period brought more open discussion of pollution, risk, and public health. Genetic toxicology, nanotoxicology, molecular epidemiology, and environmental medicine connected laboratory research with societal conditions. They showed that disease cannot be understood only as a private biological event. It may reflect air quality, chemicals, occupational exposure, food, water, nanoparticles, lifestyle, and regulatory choices. This broadened the Academy's biomedical mission. It made biomedical research part of a larger public-health ecology, linking cells and molecules to environmental policy. Translational potential in this area does not necessarily mean a drug. It may mean biomarkers of exposure, risk assessment, diagnostic markers, safer materials, or evidence supporting preventive policy. Such forms of translation are less spectacular than new therapies, but they are essential for public health (*Institute of Experimental Medicine of the CAS, n.d.*).

The post-1993 biomedical Academy also increasingly interacted with industry, but this interaction was selective and mediated by institutional safeguards. The most successful cases, such as IOCB's cooperation with Gilead, demonstrated the value of long-term partnership between excellent public research and a capable pharmaceutical company. Yet industry collaboration also raised questions about intellectual property, public interest, academic freedom, conflicts of interest, and distribution of benefits. The Academy had to

develop professional technology-transfer capacity precisely because informal arrangements were insufficient for modern biomedical innovation. Licensing agreements, start-up support, patent protection, and investor relations require expertise that scientists themselves often do not possess. At the same time, the Academy's public character meant that commercialisation could not become its sole mission. The goal was not to turn institutes into companies, but to create pathways through which socially valuable discoveries could move beyond the laboratory when appropriate. This balance was one of the most delicate aspects of post-1993 biomedical renewal. Too little transfer would waste potential; too much commercial pressure could distort scientific priorities. The Academy's evolving transfer structures attempted to hold these pressures in a workable equilibrium (*Institute of Organic Chemistry and Biochemistry of the CAS, 2017*; *Academy of Sciences of the Czech Republic, 2024*).

Internationalisation strengthened biomedical translational potential in several ways. It gave Czech researchers access to European projects, shared infrastructures, expert networks, mobility, industrial contacts, and international standards of validation. It also exposed institutes to competition and comparison. A biomedical discovery is rarely judged only within national borders. Diagnostic markers, therapeutic targets, disease models, biomaterials, and compounds must be credible to international peer communities. European infrastructures such as EATRIS, Euro-BioImaging, Czech-BioImaging, Instruct-ERIC-related structural biology, and INFRAFRONTIER-style model-organism systems helped align Czech biomedical research with this wider environment. This international embedding was essential for translation because medical innovation requires compatibility: data, protocols, models, ethics, regulation, and quality control must be understandable beyond one institute. The Academy's participation in these networks therefore increased the credibility and usability of Czech biomedical results. It also helped prevent isolation. In a small research system, the danger is not only lack of money, but lack of scale. International networks expanded the scale on which Czech biomedical institutes could operate (*EATRIS, n.d.*; *Czech-BioImaging, n.d.*; *INFRAFRONTIER, n.d.*).

The development of biomedical institutes after 1993 also changed the Academy's public image. Earlier public perceptions of an academy of sciences often centred on abstract scholarship, national prestige, or elite intellectual culture. Biomedical research gave the Academy a more direct connection with everyday concerns: ageing parents, cancer, neurodegeneration, infertility, environmental exposure, diabetes, viral disease, chronic illness, tissue damage, and future therapies. This public visibility was valuable, but it also required caution. Biomedical research can easily generate exaggerated hope, especially when media language turns early experimental findings into implied cures. Academy institutes therefore had to communicate both promise and uncertainty. Translational potential is not the same as guaranteed treatment. A biomarker may fail validation; a model may not predict human response; a compound may be toxic; a material may require years of testing. Responsible communication became part of biomedical professionalism. The Academy's authority depended on explaining why long-term research matters without overstating what it can immediately deliver. This communicative maturity was a significant element of post-socialist public science (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Physiology of the Czech Academy of Sciences, n.d.*).

By the 2020s, the Academy's biomedical institutes had become embedded in a multi-centre national ecosystem. Prague-Krč, Dejvice, Vestec, Brno, Liběchov, Třeboň, České Budějovice, and other locations all contributed to the wider biomedical and life-science map. This

geography mattered because translational potential rarely emerges from one building. It grows from interactions among institutes, universities, hospitals, infrastructures, companies, and public agencies. The Academy's biomedical sector was therefore not a vertical hierarchy but a network. Some institutes focused on mechanisms of disease; others on molecules, microbes, materials, animals, physiology, or technologies. Some were deeply involved in European infrastructures; others maintained specialised expertise with long-term value. Together, they formed a biomedical capacity that was more diverse than any single institute could be. This diversity also protected the Academy from excessive dependence on one fashionable field. Biomedical science changes rapidly, and not every promising direction succeeds. A broad institutional ecology allows risk to be distributed and creativity to emerge from unexpected intersections. The Academy's post-1993 biomedical strength lay precisely in this diversity of methods, scales, and institutional histories (*Czech Academy of Sciences, 2026*).

The broader historical meaning of biomedical research after 1993 lies in its demonstration that the Academy could respond to societal needs without surrendering its identity as a fundamental research institution. This was not self-evident. In many post-socialist countries, research institutions faced pressure either to commercialise rapidly or to defend old structures without sufficient reform. The Czech Academy's biomedical institutes followed a more complex path. They restructured governance, entered competitive funding systems, built infrastructures, cooperated with universities, strengthened technology transfer, and joined European networks. Yet they also preserved the long-term logic of basic research. This combination allowed them to produce translational potential rather than only short-term application. The distinction is important. Application is a result; potential is a capacity. The Academy built capacity: people, laboratories, models, technologies, knowledge, intellectual property structures, and partnerships. Such capacity cannot be created overnight during a crisis or after a policy decision. It must be cultivated over decades. Biomedical research after 1993 therefore became one of the clearest arguments for why a democratic state needs a strong public academy (*Czech Academy of Sciences, n.d.*; *EATRIS-CZ, n.d.*).

Thus, biomedical institutes and translational potential after 1993 reveal one of the most important dimensions of the Czech Academy's modernisation. The Academy did not transform itself into a clinical provider or an industrial research corporation, but it created and renewed institutes capable of producing the mechanisms, models, materials, compounds, infrastructures, and expertise from which future diagnostics and therapies may arise. The Institute of Experimental Medicine, Institute of Physiology, Institute of Biotechnology, Institute of Molecular Genetics, Institute of Microbiology, Institute of Biophysics, Institute of Macromolecular Chemistry, Institute of Organic Chemistry and Biochemistry, and related centres such as BIOCEV, EATRIS-CZ, Czech-BioImaging, CZ-OPENSCREEN, and the Czech Centre for Phenogenomics together formed a network of fundamental biomedical capacity with translational horizons. Their history shows that the boundary between basic and applied research became more permeable but did not disappear. The Academy's strength lay in maintaining the autonomy required for deep discovery while building the partnerships, infrastructures, and transfer mechanisms needed for social usefulness. In this sense, biomedical research after 1993 became a condensed expression of the Academy's post-socialist institutional identity: historically continuous, scientifically ambitious, publicly accountable, internationally connected, and open to the long and uncertain path from knowledge to medical benefit.

2. Disease Research, Diagnostics, and Therapeutic Perspectives

After 1993, disease research within the Academy of Sciences of the Czech Republic developed as one of the most important bridges between fundamental biology and the practical expectations of a democratic society. The Academy did not become a hospital system, and its biomedical institutes did not replace clinical departments, medical faculties, or public-health authorities. Yet they increasingly worked on questions without which modern diagnostics and therapy cannot advance: how diseases begin, how cells respond to damage, how tissues degenerate or repair themselves, how pathogens interact with hosts, how genetic variation affects function, how environmental exposure leaves molecular traces, and how chemical compounds or biomaterials might intervene in pathological processes. This gave Academy biomedical research a distinctive position. It was upstream from treatment, but not detached from medical reality. Its task was to produce mechanisms, models, markers, tools, and experimental systems that could later be used by clinicians, hospitals, companies, or translational infrastructures. Disease research after 1993 therefore became a field in which scientific autonomy and social responsibility were constantly negotiated. On the one hand, the Academy had to protect slow, curiosity-driven research into basic biological mechanisms. On the other hand, public expectations increasingly asked why such research mattered for cancer, neurodegeneration, cardiovascular disease, infection, metabolic disorders, tissue injury, environmental health, and ageing. The answer lay not in a simple promise of rapid cures, but in the creation of a sustained biomedical capacity able to connect molecular knowledge with diagnostic and therapeutic horizons (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Physiology of the Czech Academy of Sciences, n.d.*).

The post-1993 period changed the meaning of disease research because medicine itself was being transformed by molecular biology, genomics, imaging, bioinformatics, pharmacology, biomaterials, and preclinical modelling. Older medical research could often be organised around organs, symptoms, pathogens, or clinical categories. Modern biomedical research increasingly asked what molecular pathways, cellular states, regulatory circuits, immune responses, metabolic processes, and environmental exposures stood behind those categories. This shift suited the Academy's institutional profile. Its institutes were not designed for routine treatment, but they were well equipped to explore mechanisms. The Institute of Molecular Genetics could study genome integrity, immune regulation, cancer biology, cell signalling, and disease models. The Institute of Physiology could analyse normal and pathological functions across cells, tissues, organs, and whole organisms. The Institute of Experimental Medicine could connect neurobiology, cancer, stem cells, toxicology, tissue replacement, environmental health, and diagnostic markers. The Institute of Microbiology could address infection, immunity, microbial metabolites, and host-microbe interactions. The Institute of Biophysics could study DNA, chromatin, radiation effects, molecular structures, and cellular responses. The Institute of Organic Chemistry and Biochemistry could contribute medicinal chemistry and antiviral compounds. Disease research therefore emerged not from one single medical institute, but from a distributed Academy ecology of biological, chemical, physical, and biomedical expertise (*Czech Academy of Sciences, 2026*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

Diagnostics became one of the areas in which the Academy's basic research could acquire visible medical relevance. A diagnostic marker is not merely a laboratory measurement. It is a bridge between hidden biological processes and clinical decision-making. To identify a useful marker, researchers must understand the disease mechanism, detect a measurable signal,

test its specificity and sensitivity, compare it with existing tools, and place it within a broader diagnostic workflow. The Institute of Experimental Medicine explicitly framed part of its biomedical mission around finding effective diagnostic markers and treatment strategies for serious diseases associated with ageing. This emphasis reflected a wider European problem. Ageing societies need earlier and more accurate detection of neurodegenerative disorders, cancer, musculoskeletal degeneration, sensory decline, ischaemic damage, and environmental injury. The Academy's contribution lay in studying the molecular and cellular events that precede visible clinical deterioration. Such work is not always spectacular because diagnostic research often advances through painstaking validation rather than dramatic discovery. Yet it is essential. Without reliable markers, medicine sees disease too late, treats it too generally, or misunderstands its progression. In this sense, the diagnostic dimension of Academy research placed fundamental biology directly inside the temporality of prevention and early intervention (*Institute of Experimental Medicine of the CAS, n.d.*).

The Institute of Physiology added another diagnostic dimension by focusing on the mechanisms of serious non-infectious diseases. This term includes some of the most important burdens of contemporary medicine: cardiovascular, metabolic, neurological, renal, and other chronic disorders. These diseases are often not caused by one pathogen or one simple genetic defect. They emerge from long interactions among physiology, metabolism, environment, behaviour, ageing, inflammation, and inherited predisposition. Such complexity makes them especially suitable for Academy research, because they require integrative biological thinking. The Institute of Physiology's work on basic mechanisms could contribute to prevention, diagnosis, and treatment precisely because chronic disease cannot be solved only at the bedside. It must be understood at the level of cellular energy, tissue regulation, signalling systems, organ communication, vascular function, neural control, and metabolic adaptation. This kind of research has translational potential, but its path to application is indirect. It clarifies what should be measured, which processes are causal, which are compensatory, and where intervention may be possible. The historical significance of physiology after 1993 lies in this bridging function. It preserved a classical discipline but turned it into a modern platform for understanding complex disease (*Institute of Physiology of the Czech Academy of Sciences, n.d.*; *Kopecký, 2015*).

Cancer research became one of the most important disease-oriented fields across Academy institutes. Cancer is not a single disease, but a family of pathological processes involving genome instability, cell-cycle control, DNA repair, oncogenes, tumour suppressors, metabolism, inflammation, immune surveillance, tissue microenvironment, and therapeutic resistance. This complexity made cancer research a natural meeting point for molecular genetics, biophysics, experimental medicine, organic chemistry, chemical biology, imaging, and preclinical modelling. The Institute of Molecular Genetics studied the molecular bases of serious diseases, including cancer and leukaemia, alongside immune mechanisms, DNA repair, cellular senescence, and the biology of normal and transformed cells. The Institute of Experimental Medicine contributed through molecular cancer biology, genetic toxicology, environmental health, and diagnostic markers. The Institute of Biophysics contributed through DNA and chromatin research, radiation biology, and cellular responses to damage. The Institute of Organic Chemistry and Biochemistry contributed through medicinal chemistry and compounds with therapeutic relevance. This distributed structure is historically important. It shows that modern cancer research inside the Academy did not develop as an isolated programme, but as a convergence of multiple disciplinary lineages. Such convergence

reflected the wider post-1993 transformation of Czech science from inherited institutes into networked biomedical capacity (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Biophysics of the Czech Academy of Sciences, n.d.*).

DNA damage and repair became one of the conceptual bridges connecting cancer, ageing, immunological disease, neurodegeneration, and environmental exposure. Cells constantly encounter DNA damage from replication errors, radiation, chemical agents, oxidative stress, and other insults. If the damage is not repaired correctly, the consequences may include mutation, genome instability, cell death, senescence, malignancy, or tissue dysfunction. Academy institutes were well placed to study these processes because they possessed expertise in molecular genetics, biophysics, toxicology, cell biology, and cancer research. The significance of this work goes beyond oncology. Defective DNA repair can be understood as a biological crossroads where several disease processes meet. It helps explain why ageing tissues become more vulnerable, why cancer arises, why immune and neurological disorders may share molecular mechanisms, and why environmental exposures matter. In diagnostic terms, DNA damage and repair pathways may produce biomarkers of risk, exposure, or disease progression. In therapeutic terms, they may reveal vulnerabilities in tumour cells or guide strategies based on synthetic lethality. The Academy's research in this area therefore demonstrates how fundamental investigation of cellular maintenance can open multiple medical perspectives without being reducible to one clinical speciality (*Institute of Experimental Medicine of the CAS, 2025*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

Neurodegenerative disease became another field in which Academy research connected mechanisms, diagnostics, and therapeutic hopes. Neurodegeneration is medically urgent because it affects ageing societies, family life, social care, and the economic sustainability of health systems. It is also scientifically difficult because neurons, glial cells, synapses, blood vessels, immune responses, protein aggregation, mitochondrial function, inflammation, and genetic background all interact over long periods. The Institute of Experimental Medicine's work on serious diseases associated with ageing included neurodegeneration, trauma, ischaemia, and sensory degeneration. The Institute of Animal Physiology and Genetics also contributed through animal models and biomarker-oriented research, including work relevant to neurodegenerative Huntington's disease. This field illustrates the Academy's distinctive biomedical role. It can develop models, study cellular and tissue mechanisms, test molecular hypotheses, investigate biomarkers, and explore regenerative or protective strategies. Yet it must also accept the slow and uncertain nature of translation. Neurodegenerative diseases have repeatedly disappointed premature therapeutic hopes. For that reason, the Academy's long-term mechanistic research is especially valuable. It provides the patient accumulation of knowledge needed before diagnostic and therapeutic breakthroughs become plausible (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Animal Physiology and Genetics CAS, n.d.*).

Trauma, ischaemia, and tissue damage formed another important disease cluster. These conditions differ from chronic degeneration, but they also involve cellular stress, inflammation, vascular dysfunction, repair mechanisms, and limits of regeneration. Academy research in experimental medicine, physiology, biomaterials, and imaging contributed to understanding how tissues respond to injury and how repair might be supported. Ischaemia, for example, is not only a clinical event such as stroke or myocardial infarction. It is a biological

process involving oxygen deprivation, energy failure, oxidative stress, immune activation, cell death, and tissue remodelling. Trauma similarly requires understanding of neural, musculoskeletal, vascular, and cellular responses. The Academy's strength lay in studying these processes experimentally, often through models and controlled laboratory systems that make mechanism visible. Therapeutic perspectives in this area included neuroprotection, tissue replacement, biomaterials, stem-cell approaches, and improved diagnostic monitoring. These fields show why disease research cannot be separated from technologies of observation. Imaging, histology, molecular markers, electrophysiology, and animal models make injury and repair analysable. Without such tools, clinical medicine would see only the outcome, not the process (*Institute of Experimental Medicine of the CAS, n.d.*; *Czech-BioImaging, n.d.*).

Regenerative medicine and tissue engineering became especially important because they promised not only to treat symptoms but to repair or replace damaged biological structures. This promise required caution. Regenerative medicine is not a magical field of instant healing; it is a difficult intersection of cell biology, developmental biology, biomaterials, immunology, physiology, animal models, and clinical validation. The Institute of Experimental Medicine contributed through stem-cell research, tissue replacement, neurobiology, and pathology. The Institute of Macromolecular Chemistry contributed through biomaterials, polymer scaffolds, hydrogels, and bioanalogous systems for regenerative medicine and tissue engineering. These contributions show the interdisciplinary character of therapeutic perspectives inside the Academy. A cell-based strategy may fail without an appropriate material environment. A biomaterial may fail without understanding of cell behaviour, immune reaction, degradation, mechanical properties, and tissue integration. The Academy's institutional diversity allowed such problems to be approached from several directions. The historical significance of regenerative research lies less in immediate clinical success than in the creation of a research culture where biology and materials science could collaborate on repair as a scientific problem (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Macromolecular Chemistry of the CAS, n.d.*).

Biomaterials broadened the meaning of therapy beyond drugs and genes. Modern medicine increasingly depends on materials that can support tissues, deliver compounds, modulate cell behaviour, replace damaged structures, or interact safely with the body. Hydrogels, polymer scaffolds, bioactive surfaces, injectable systems, and biodegradable materials belong to this world. The Institute of Macromolecular Chemistry's work on polymer biomaterials and functional interfaces aimed at supporting structures for regenerative medicine and tissue engineering demonstrates how a chemical institute could become part of biomedical innovation. This is important for the institutional history of the Academy because it shows that disease research was not confined to institutes formally labelled biomedical. Therapeutic perspectives could arise from chemistry, physics, materials science, and engineering-like approaches inside the Academy. Such work also reveals why translation is often non-linear. A material developed through polymer chemistry may become relevant to cartilage repair, wound healing, neural regeneration, drug delivery, or cell culture. Its clinical future depends on many steps, but without the initial materials science, the medical possibility would not exist. The Academy's biomedical potential was therefore distributed across disciplinary borders (*Institute of Macromolecular Chemistry of the CAS, n.d.*).

Infectious disease research and antiviral therapy represented a different but historically powerful line of Academy contribution. The work of Antonín Holý at the Institute of Organic

Chemistry and Biochemistry became one of the most internationally recognised examples of Czech science producing clinically important therapeutics. His research on acyclic nucleoside phosphonates, developed in cooperation with Erik De Clercq and later with Gilead Sciences, led to compounds including cidofovir, adefovir, and tenofovir, with major importance for antiviral treatment, especially HIV and hepatitis B therapy. This achievement is often celebrated as a success story of applied science, but historically it is more accurate to see it as a triumph of long-term basic synthetic and medicinal chemistry. The medically useful drugs emerged because fundamental work on modified nucleosides and nucleotides was pursued with persistence, creativity, and international collaboration. After 1993, this legacy shaped the Academy's understanding of therapeutic perspectives. It showed that public research can generate discoveries of global medical importance, but only when basic research, intellectual property, industrial partnership, and clinical development are connected over long periods. It also provided a powerful argument against reducing research value to short-term application. The path from compound to therapy was long, uncertain, and internationally networked (*Institute of Organic Chemistry and Biochemistry of the CAS, n.d.*; *Institute of Organic Chemistry and Biochemistry of the CAS, n.d.*).

The antiviral tradition also linked disease research to public-health preparedness. Viral diseases are biologically dynamic and socially disruptive. They require understanding of viral replication, host-cell interaction, immunity, molecular diagnostics, drug resistance, and epidemiological movement. The Institute of Microbiology, Institute of Molecular Genetics, Institute of Organic Chemistry and Biochemistry, and related infrastructures all contributed different capacities relevant to infection and antiviral response. This distributed knowledge became especially visible during the COVID-19 period, but its roots were older. Antiviral compounds, molecular virology, microbial immunology, and preclinical models existed before any particular crisis. That is precisely why they could become useful when a crisis came. In historical terms, infectious disease research shows that preparedness is not created during an emergency. It is the accumulated outcome of long-term investment in basic mechanisms, compounds, platforms, and trained personnel. The Academy's antiviral and microbiological research therefore belonged both to therapeutic science and to national resilience (*Institute of Organic Chemistry and Biochemistry of the CAS, n.d.*; *Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

Microbiology contributed to disease research not only through pathogens, but also through immunity, microbiomes, microbial products, and biotechnology. Modern medicine increasingly recognises that microorganisms are not simply enemies. They may cause disease, protect against disease, produce useful molecules, shape immune development, influence metabolism, and participate in environmental exposure. The Institute of Microbiology's research profile, including microbial physiology, molecular and cellular microbiology, immunology, biotechnology, biosynthesis of natural products, and host-microbe interactions, therefore had broad diagnostic and therapeutic relevance. Natural products and microbial metabolites are especially important because many antibiotics, immunomodulators, and pharmacological tools have microbial origins. At the same time, understanding microbial pathogenesis and immune response can guide diagnostics, vaccines, and treatment strategies. The Academy's microbiological research after 1993 thus moved between fundamental organismal knowledge and future medical use. It also helped integrate infectious disease research with biotechnology and ecology. Microbes inhabit bodies, soils, waters, laboratories, and industrial systems. This made microbiology one of the most naturally

translational biological disciplines inside the Academy (*Institute of Microbiology of the Czech Academy of Sciences, n.d.*; *EATRIS-CZ, n.d.*).

Immunology formed another central bridge between disease mechanisms and therapeutic perspectives. The Academy's immunological traditions reached back to Czechoslovak experimental biology and immunogenetics, but after 1993 they operated within a much wider molecular and biomedical context. Immunology became relevant not only to infection, but also to cancer, transplantation, autoimmunity, allergy, inflammation, ageing, and regenerative medicine. The Institute of Molecular Genetics, Institute of Microbiology, Institute of Experimental Medicine, and other centres contributed to immune-related research from different directions. The therapeutic significance of immunology increased dramatically in the 21st century with the rise of immunotherapies, checkpoint inhibitors, monoclonal antibodies, and cell-based immune approaches. Academy research was not necessarily the clinical endpoint of these developments, but it contributed to the mechanistic knowledge from which such developments depend. Understanding immune recognition, tumour models, host defence, inflammatory regulation, and cellular communication is essential for future diagnostics and therapy. Immunology also illustrates a broader historical point. Fields that once belonged to basic experimental biology can later become central to medicine when technological and clinical circumstances change (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*; *Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

Preclinical modelling became one of the most important conditions for moving from mechanism to therapy. A disease mechanism identified in cells or tissues often needs validation in living organisms before it can inform medical development. The Czech Centre for Phenogenomics provided a major national and European platform for this purpose, offering standardised assays, rodent disease models, phenotyping, imaging, metabolomics, genetic engineering, and other capacities. This changed the practical possibilities of Czech biomedical research. Individual laboratories no longer had to rely only on limited in-house animal models or improvised phenotyping. They could access professionalised infrastructures with quality control and international standards. Disease models are not perfect replicas of human conditions, and responsible scientists know their limits. Yet they remain indispensable for understanding gene function, testing hypotheses, studying systemic effects, and assessing potential interventions. Phenogenomics therefore created a bridge between molecular genetics and medical interpretation. In institutional terms, it also shifted the Academy towards a shared-service model in which specialised facilities support wider research communities. This was a major part of post-1993 biomedical modernisation (*Czech Centre for Phenogenomics, n.d.*; *INFRAFRONTIER, n.d.*).

Animal models also mattered beyond rodents. The Institute of Animal Physiology and Genetics studied domestic, wild, and laboratory animals across biomedical and biodiversity-oriented topics, including animal models of human disease, biomarkers, and therapeutic validation. Its work demonstrates that disease research can benefit from comparative biology. Different animal systems offer different insights into physiology, reproduction, development, neurodegeneration, immunity, and tissue function. Large animal models may sometimes approximate human physiology better than small rodents, while wild-derived or genetically diverse animals may reveal variation hidden by standard laboratory strains. This comparative perspective is institutionally important because it resists the narrowing of biomedicine to a few standardised models. Modern disease research needs standardisation, but it also needs biological diversity. The Institute of Animal Physiology and Genetics contributed to this balance

by connecting physiology, genetics, ecology, evolution, and biomedical modelling. Its position inside the Academy's biological-medical section thus broadened the meaning of translational research beyond human-centred laboratory systems alone (*Institute of Animal Physiology and Genetics CAS, n.d.*; *Institute of Animal Physiology and Genetics CAS, n.d.*).

Chemical biology and drug discovery infrastructures added another route from disease mechanism to therapeutic perspective. CZ-OPENSCREEN, hosted at the Institute of Molecular Genetics, provided open access to chemical biology and genetics tools, molecular probes, compound libraries, screening technologies, and candidates for potential therapeutic development. This infrastructure was important because early drug discovery is not simply the search for a medicine in the narrow sense. It begins with probes that help researchers understand biological pathways, validate targets, and manipulate cellular processes. A useful probe may never become a drug, but it can transform understanding of a disease mechanism. Conversely, some compounds may become proof-of-concept candidates for later therapeutic development. CZ-OPENSCREEN therefore occupied the early, exploratory end of the therapeutic pipeline. Its value lay in bringing chemistry, biology, informatics, assay design, and screening into a shared research environment. This was another sign that the Academy's post-1993 disease research was becoming infrastructural, interdisciplinary, and internationally compatible (*CZ-OPENSCREEN, n.d.*; *CZ-OPENSCREEN, 2026*).

Imaging technologies became essential for diagnosis-oriented and therapy-oriented research. Czech-BioImaging, as a distributed national infrastructure for biological and medical imaging, provided access to advanced imaging expertise, resources, services, image analysis, and training. The importance of imaging lies in its ability to visualise disease processes at multiple scales: molecules, organelles, cells, tissues, organs, animals, and sometimes humans. Imaging can reveal tumour growth, tissue damage, cellular migration, neural degeneration, vascular changes, protein localisation, organelle dynamics, and therapeutic responses. For Academy institutes, advanced imaging changed the epistemology of disease research. It allowed researchers to see processes that would otherwise remain inferred from indirect biochemical measurements. It also supported diagnostic development because many medical diagnostics depend on visualisation, contrast, resolution, and interpretation of images. The open-access character of Czech-BioImaging made such technologies available beyond one laboratory or institute. In this sense, imaging infrastructures turned observation into a national biomedical capacity. They also connected Czech disease research to European imaging standards and data practices (*Czech-BioImaging, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, 2025*).

Bioinformatics and biological data systems similarly became indispensable for disease research. Genomics, transcriptomics, proteomics, metabolomics, imaging, phenotyping, and clinical-adjacent datasets generate quantities of information that cannot be interpreted by traditional laboratory intuition alone. Disease research after 1993 increasingly required computational expertise to identify patterns, biomarkers, variants, pathways, and correlations. The Institute of Molecular Genetics and related infrastructures such as ELIXIR CZ supported this transition. Bioinformatics helped move diagnosis from single markers towards multi-parameter signatures and systems-level interpretation. It also made research more reproducible and comparable when data standards were properly applied. In therapeutic research, computational analysis can help identify targets, predict compound effects, interpret model-organism phenotypes, and integrate molecular layers. The Academy's engagement with data-intensive biology therefore changed the practical meaning of

biomedical expertise. A modern disease researcher had to understand not only cells and tissues, but also datasets, algorithms, statistical uncertainty, and data stewardship. This was one of the clearest signs that biomedical research had entered the age of networked knowledge (*ELIXIR CZ, n.d.*; *Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

Environmental health research added a preventive dimension to diagnostics and therapy. The Institute of Experimental Medicine explicitly considered the impact of environmental pollution on human health, which placed disease research within a broader ecological and social frame. This was particularly relevant in the Czech lands, where industrial pollution, air quality, occupational exposure, and environmental transformation had long been important public concerns. Biomedical research on environmental exposure can produce diagnostic markers of damage, identify vulnerable populations, clarify mechanisms of toxicity, and support preventive policy. Nanotoxicology and genetic toxicology are important here because new materials and old pollutants alike may affect cells, DNA, immune systems, and organs in subtle ways. Prevention is sometimes less visible than therapy, but it may be more socially powerful. A diagnostic marker that reveals harmful exposure, or a mechanistic study that leads to safer regulation, may prevent disease before treatment is needed. The Academy's environmental biomedical research therefore broadened the meaning of medical benefit. It showed that disease research is not only about curing individuals after illness appears, but also about understanding and reducing the conditions that produce disease (*Institute of Experimental Medicine of the CAS, n.d.*).

Ageing provided a unifying framework for many disease areas. Cancer, neurodegeneration, musculoskeletal decline, sensory impairment, metabolic dysfunction, cardiovascular disease, and reduced regenerative capacity all become more common with age. The Institute of Experimental Medicine and Institute of Physiology both placed major emphasis on diseases associated with ageing or non-communicable disorders connected with ageing and obesity. This focus reflected both scientific and demographic realities. Ageing is not simply the passage of time. It is a biological process involving DNA damage, cellular senescence, mitochondrial dysfunction, inflammation, proteostasis, stem-cell exhaustion, tissue remodelling, and environmental interaction. Understanding ageing therefore requires the combined efforts of molecular biology, physiology, toxicology, neuroscience, oncology, and regenerative medicine. Diagnostic and therapeutic perspectives in this field include biomarkers of biological age, early detection of degeneration, interventions in inflammation or metabolism, tissue-repair strategies, and improved disease models. The Academy's strength lay in approaching ageing not as one disease, but as a biological context in which many diseases become possible. This integrative perspective made ageing one of the most important biomedical themes after 1993 (*Institute of Experimental Medicine of the CAS, n.d.*; *Institute of Physiology of the Czech Academy of Sciences, n.d.*).

The Academy's disease research also interacted with European translational infrastructures. EATRIS-CZ connected Czech biomedical, chemical, and clinical research with the aim of accelerating transfer into clinical practice. This mattered because the path from discovery to patient benefit is difficult and often fails between laboratory proof and clinical validation. Translational infrastructures help by providing access to preclinical and clinical expertise, development platforms, patient cohorts, regulatory knowledge, and multidisciplinary networks. For Academy institutes, EATRIS-CZ offered a framework in which basic discoveries could be positioned within a broader value chain. This did not mean that every Academy project

had to become a therapy. Rather, it meant that promising findings could be supported more systematically when they had translational potential. Such infrastructures also encouraged researchers to think earlier about validation, reproducibility, clinical relevance, and development pathways. In the institutional history of the Academy, this represented a maturation of the relationship between basic research and medicine. Translation was no longer left to chance or individual contacts; it became a recognised organisational problem requiring infrastructure (*EATRIS-CZ, n.d.*; *EATRIS, n.d.*).

Therapeutic perspectives also required intellectual-property management and professional technology transfer. The success of antiviral compounds from IOCB showed the importance of patents, licensing, and industrial development. After 1993, the Academy increasingly recognised that medical benefit often depends on arrangements outside the laboratory. A promising compound or biomaterial may disappear without legal protection, development funding, regulatory strategy, or industrial partner. The creation of technology-transfer structures, including i&i Prague, showed that Czech research institutions were learning to handle this complex terrain more professionally. This was especially important in disease research because therapies are expensive and risky to develop. Academic institutes can discover targets, compounds, materials, or mechanisms, but they usually cannot complete clinical development alone. Professional transfer structures therefore became part of the therapeutic ecosystem. At the same time, the Academy had to preserve its public mission. Commercialisation could support social benefit, but it could not become the only measure of scientific value. The historical challenge was to create pathways from discovery to application without distorting the exploratory character of Academy research (*Institute of Organic Chemistry and Biochemistry of the CAS, 2017*; *Academy of Sciences of the Czech Republic, 2024*).

The relation between diagnostics and therapy became increasingly intertwined. Earlier medical thinking often treated diagnosis as a preliminary step and therapy as a separate intervention. Modern biomedical research increasingly sees them as connected through mechanisms and biomarkers. A diagnostic marker may define a patient subgroup that responds to a particular therapy. A molecular pathway may serve both as a disease indicator and as a therapeutic target. Imaging may diagnose damage and monitor treatment response. Genetic models may reveal both disease cause and possible intervention point. Chemical probes may clarify a mechanism while suggesting drug candidates. Academy research after 1993 developed in exactly this interconnected environment. The Institute of Molecular Genetics, Czech Centre for Phenogenomics, Czech-BioImaging, CZ-OPENSCREEN, Institute of Experimental Medicine, Institute of Physiology, and IOCB all contributed to different points along this continuum. This is why the phrase “diagnostics and therapeutic perspectives” should be read as one historical development rather than two separate topics. The post-socialist biomedical Academy became a place where seeing disease, explaining disease, modelling disease, and imagining intervention increasingly belonged to the same research process (*Czech Centre for Phenogenomics, n.d.*; *Czech-BioImaging, n.d.*; *CZ-OPENSCREEN, n.d.*).

Disease research also reshaped the Academy’s relationship with patients and the public, even when institutes did not treat patients directly. Public interest in biomedical research is intense because disease touches personal life, fear, hope, ageing, family responsibility, and social vulnerability. This gave Academy biomedical communication a special ethical weight. Researchers had to explain why basic research on genes, cells, animals, compounds, or materials might matter for future medicine, while avoiding exaggerated promises. Therapeutic

perspectives are not therapies. A marker discovered in a laboratory is not automatically a diagnostic test. A compound active in cells is not automatically a medicine. A successful animal model is not automatically a cure for patients. The Academy's credibility depended on maintaining this distinction. At the same time, it had to communicate that long-term research is genuinely necessary for medical progress. This required a public language more careful than promotional rhetoric but more accessible than technical reports. Biomedical research after 1993 therefore contributed to a new democratic culture of science communication in which public trust depended on both ambition and restraint (*Institute of Experimental Medicine of the CAS, n.d.*; *Czech Academy of Sciences, n.d.*).

The institutional geography of disease research after 1993 was also important. Prague hosted major biomedical capacities in Krč, Dejvice, and Vestec, but Brno, Liběchov, and other sites also contributed. Brno's Institute of Biophysics, Liběchov's animal physiology and genetics traditions, and the broader network of Academy and university collaborations show that biomedical research was not confined to one metropolitan centre. This distributed geography mattered because disease research needs diverse infrastructures and forms of expertise. A medicinal chemistry success may arise in Prague; a biophysical mechanism may be studied in Brno; an animal model may be developed in Liběchov or Vestec; an imaging platform may connect several cities; a translational project may involve a hospital in Olomouc, Prague, or Brno. The Academy's biomedical system thus became a national network rather than a single institution. This was consistent with the broader post-1993 transformation of Czech science, in which research excellence depended on cooperation among institutes, universities, hospitals, infrastructures, and international partners. Disease research became a practical field in which this networked model was tested and strengthened (*Czech Academy of Sciences, 2026*; *Czech-BioImaging, n.d.*; *EATRIS-CZ, n.d.*).

The international dimension of disease research was unavoidable. Diseases do not respect national borders, and biomedical science advances through global comparison, shared models, international trials, compound development, and common standards. The antiviral success associated with Antonín Holý depended on international collaboration with Leuven and Gilead. EATRIS, Czech-BioImaging, INFRAFRONTIER, ELIXIR, and EU-OPENSCREEN-type environments placed Czech research within European infrastructures. Publication and peer review connected Academy laboratories to global communities studying cancer, neurodegeneration, infection, genomics, physiology, and materials. This internationalisation did not erase the Czech character of the Academy. Rather, it allowed Czech public research to contribute to global medical questions from its own institutional base. The historical meaning of disease research after 1993 therefore lies partly in this change of scale. A Czech institute could study a disease mechanism locally, but the result had to be interpretable internationally. A compound discovered in Prague could become a global medicine only through transnational development. A diagnostic or biomarker approach could become meaningful only if it met standards beyond one laboratory. This made international compatibility a condition of biomedical relevance (*Institute of Organic Chemistry and Biochemistry of the CAS, n.d.*; *EATRIS, n.d.*).

The post-1993 period also placed stronger emphasis on reproducibility, validation, and research integrity. Disease research is particularly vulnerable to premature claims because the desire for medical progress can be powerful. A finding that appears promising in one experimental system may fail in another. A biomarker may look useful in a small cohort but not in wider populations. A compound may show activity but lack safety, selectivity, or

pharmacological viability. Preclinical models may not adequately represent human disease. For this reason, the Academy's disease research needed robust methods, transparent reporting, standardised infrastructures, and ethical oversight. Czech Centre for Phenogenomics, Czech-BioImaging, CZ-OPENSCREEN, and EATRIS-CZ all contributed to this culture by offering standardised services and expertise. The issue was not merely technical. It was institutional and moral. Public research institutions must be reliable because society may build expectations, investments, and policies on their findings. The Academy's modern biomedical role therefore required not only discovery but disciplined validation. This was one of the major differences between mature translational potential and vague medical promise (*Czech Centre for Phenogenomics, n.d.*; *EATRIS-CZ, n.d.*).

By the 2020s, disease research in the Academy had become a multi-scale enterprise. It moved from molecules to cells, from cells to tissues, from tissues to organisms, from organisms to models of disease, from models to diagnostics, from diagnostics to therapeutic hypotheses, and from therapeutic hypotheses to possible translational pathways. This movement was rarely linear. Many projects remained fundamental; some produced tools; a few moved towards application; others changed understanding without immediate medical outcome. Yet the overall capacity was historically significant. The Academy had built an environment in which cancer, neurodegeneration, infection, ageing, chronic non-communicable disease, environmental exposure, tissue injury, and regenerative medicine could be approached through multiple methods and institutions. This was not the old academy model of isolated disciplinary excellence, nor the commercial model of product pipelines alone. It was a public research ecosystem capable of sustaining uncertainty. In disease research, such uncertainty is unavoidable. The Academy's value lay in making uncertainty productive rather than paralysing (*Czech Academy of Sciences, 2026*; *Institute of Experimental Medicine of the CAS, n.d.*).

Thus, disease research, diagnostics, and therapeutic perspectives after 1993 show how the Czech Academy's biomedical institutes transformed fundamental biological knowledge into a long-term medical capacity. The Academy did not promise immediate cures, and its strongest contribution was not routine clinical treatment. Its contribution lay in explaining mechanisms of disease, identifying possible diagnostic markers, developing animal and cellular models, creating imaging and phenotyping infrastructures, discovering chemical probes and antiviral compounds, designing biomaterials, studying environmental health, and connecting Czech research to European translational systems. Cancer, neurodegeneration, chronic non-infectious disease, infection, tissue damage, ageing, and toxic exposure became fields where disciplinary boundaries increasingly dissolved. Molecular genetics, physiology, experimental medicine, microbiology, biophysics, organic chemistry, polymer science, animal genetics, bioinformatics, and imaging all contributed to the same broad biomedical horizon. This history demonstrates that the Academy's post-1993 modernisation was not only administrative or institutional. It was also epistemic and social: the Academy learned to produce knowledge that remained fundamentally scientific while becoming increasingly meaningful for diagnosis, therapy, prevention, and public health.

3. The Academy during Public Health Crises

The COVID-19 pandemic placed the Academy of Sciences of the Czech Republic in a situation that was historically unusual but institutionally revealing. For decades, the Academy had

defended the value of long-term basic research, often against political impatience, economic utilitarianism, and the belief that knowledge should prove itself only through immediate application. The pandemic suddenly changed the terms of that public argument. Molecular biology, virology, immunology, aerosol science, modelling, data analysis, economics, sociology, psychology, ethics, materials research, and public communication became visibly relevant to the functioning of the state and the protection of society. The Academy did not become a ministry of health, a hospital network, or an emergency authority. Its role was different. It became a reservoir of expertise, equipment, trained personnel, laboratories, analytical capacity, public interpretation, and scientific credibility. This role had been built slowly through earlier institutional investments in molecular genetics, microbiology, biomedical research, chemical biology, imaging, informatics, social sciences, and technology transfer. A crisis made visible what normal times often conceal: the capacity to respond rapidly depends on institutions that have been maintained patiently before the emergency begins. The Academy's response to COVID-19 therefore belongs not only to the history of one pandemic, but to the wider institutional history of post-1993 Czech science. It showed how a democratic public research institution could move from autonomy to service without surrendering its scientific identity (*World Health Organization, 2023*; *Academy of Sciences of the Czech Republic, 2020*).

The global context of the crisis is essential for understanding the Academy's position. The World Health Organization declared COVID-19 a Public Health Emergency of International Concern on 30 January 2020 and characterised the outbreak as a pandemic on 11 March 2020. The emergency phase continued internationally until 5 May 2023, when the WHO Director-General accepted the recommendation to end the PHEIC while emphasising that COVID-19 remained a continuing health threat. These dates matter because they show that the crisis was not a short national disturbance, but a multi-year global event that reorganised science, government, education, work, social life, travel, medical logistics, and public trust. The Czech Academy's response unfolded inside this unstable international environment. Scientific knowledge changed quickly, variants emerged, public-health recommendations evolved, and political decisions had to be made under uncertainty. In such a context, the task of science was not to deliver absolute certainty, but to reduce uncertainty responsibly. For the Academy, this meant contributing where its capacities were strongest: testing, diagnostics, molecular analysis, modelling, materials expertise, social analysis, and public explanation. The pandemic thus revealed the practical meaning of the Academy's statutory mission to conduct research at an international level while considering the needs of Czech society. It was precisely the combination of international science and national responsibility that gave the Academy's contribution its historical importance (*World Health Organization, 2023*; *World Health Organization Regional Office for Europe, 2023*).

The first and most visible form of mobilisation was laboratory testing. In March 2020, when diagnostic capacity was a strategic bottleneck, several Academy institutes offered equipment, personnel, and expertise for SARS-CoV-2 detection. The Institute of Molecular Genetics received permission from the National Institute of Public Health to begin testing samples for the presence of the virus. BIOCEV, the joint centre of the Academy and Charles University, also received permission to conduct large-scale testing, with teams able to process hundreds of samples daily. The Biology Centre in České Budějovice, the ALGATECH Centre of the Institute of Microbiology in Třeboň, the Institute of Biophysics in Brno, and the Institute of Physiology through equipment support were all mentioned in early Academy communications. This

mobilisation was historically significant because it converted research infrastructure into emergency public-health capacity. Instruments and trained researchers normally used for molecular biology, plant virology, microbial research, or experimental analysis could be redirected towards urgent diagnostic work. The Academy did not replace clinical laboratories, but it extended the national testing network at a moment when capacity mattered. This showed that the boundary between fundamental research and public-health service could become permeable under crisis conditions. It also demonstrated that national preparedness depends on distributed scientific capacity, not only on formally medical institutions (*Academy of Sciences of the Czech Republic, 2020*; *Institute of Molecular Genetics of the Czech Academy of Sciences, 2020*).

The role of the Institute of Molecular Genetics was especially revealing. Its robotics station and high-throughput screening capacity allowed it to contribute to large-scale molecular testing, with public communications noting the possibility of testing up to one thousand samples per day. This capacity was not created for a pandemic. It had been developed as part of a modern molecular-biology and chemical-biology infrastructure. Yet when the crisis arrived, precisely that infrastructure became useful for public health. This is one of the clearest examples of how basic research institutions generate latent emergency capacity. A robotics platform may appear remote from everyday medical care until a country suddenly needs rapid, reliable, scalable testing. The Institute of Molecular Genetics also stood at the intersection of several pandemic-relevant fields: molecular diagnostics, genomics, cell biology, immunology, bioinformatics, and research infrastructures such as CZ-OPENSCREEN. Its mobilisation therefore represented more than a technical contribution. It showed how the post-1993 investment in modern life-science platforms gave the Academy a capacity that could be redirected quickly when society needed it. In historical terms, the pandemic turned the molecularisation of Czech biology into a public-health asset (*Institute of Molecular Genetics of the Czech Academy of Sciences, 2020*; *ESFRI, 2020*).

BIOCEV became another important node of crisis response. As a biotechnology and biomedicine centre jointly developed by the Academy and Charles University, BIOCEV had already symbolised the post-1993 move towards shared infrastructures and institutional cooperation. During the pandemic, this cooperation became operational. Testing teams at BIOCEV involved virological and service laboratories of Charles University faculties together with the Institute of Biotechnology and the Institute of Molecular Genetics of the Czech Academy of Sciences. The coordinator was Ruth Tachezy from Charles University, which illustrates the collaborative rather than strictly hierarchical nature of the response. The centre's ability to process samples from hospitals and nursing homes showed that the Academy-university infrastructure could be connected directly to urgent social need. This was institutionally important because BIOCEV had sometimes been understood as a strategic research investment whose value would appear in publications, biotechnology, and doctoral training. COVID-19 added another dimension: crisis resilience. A shared biomedical centre could become a testing platform, a coordination space, and a bridge between academic science and the health system. The pandemic therefore validated the broader logic of integrated research infrastructures in a way that ordinary evaluation metrics might not capture (*BIOCEV Gene Core, 2020*; *Academy of Sciences of the Czech Republic, 2020*).

The Biology Centre CAS in České Budějovice also demonstrated the unexpected flexibility of biological expertise. Plant virologists and other researchers contributed to SARS-CoV-2 testing, even though their routine scientific work did not primarily concern human medicine.

This was not an accident. Virology, whether plant, animal, or human, depends on shared molecular principles and laboratory methods. Researchers trained to handle viral nucleic acids, amplification techniques, laboratory safety, and molecular detection can adapt when a new public-health need arises. The Biology Centre's involvement therefore showed that the Academy's organismal, ecological, and agricultural biological expertise also had crisis value. Public health is often imagined narrowly as a medical domain, but pandemic response depends on a wider biological culture. It requires people who understand viruses, molecular detection, host-pathogen systems, laboratory workflows, and data. The Biology Centre's contribution also underlined the decentralised geography of Czech scientific resilience. Testing and expertise were not limited to Prague; regional Academy capacities could support hospitals and public-health needs in South Bohemia and surrounding areas. This regional dimension is important in the institutional history of the Academy because it shows that scientific infrastructure outside the capital can become strategically important during national emergencies (*Academy of Sciences of the Czech Republic, 2020*; *Biology Centre CAS, n.d.*).

Diagnostics also became a field of rapid innovation. In the early phase of the pandemic, the Academy reported that researchers were working on simpler and more efficient methods that would allow faster testing of samples. IOCB Tech, the technology-transfer subsidiary of the Institute of Organic Chemistry and Biochemistry, donated CZK 7 million for research and development of new diagnostic tests for COVID-19, supporting teams at Charles University and the Institute of Molecular Genetics. This episode is historically important because it connected several themes of the Academy's post-1993 transformation: biomedical expertise, technology transfer, public responsibility, cooperation with universities, and rapid response to social need. Diagnostic innovation during a crisis does not arise only from scientific creativity. It requires funding, institutional trust, intellectual-property awareness, technical validation, and coordination with public-health authorities. The donation from IOCB Tech showed how technology-transfer structures developed in the post-socialist period could serve not only commercialisation but also emergency research. It also indicated that the Academy's strongest response was not confined to one institute. It emerged from a network of institutes, university laboratories, transfer offices, and scientific leaders capable of redirecting resources quickly (*Academy of Sciences of the Czech Republic, 2020*; *Institute of Molecular Genetics of the Czech Academy of Sciences, 2020*).

The pandemic also highlighted the importance of antiviral research traditions associated with the Institute of Organic Chemistry and Biochemistry. The institute's earlier success in antiviral chemistry, especially through the work of Antonín Holý and later international collaborations, gave Czech science a historically strong symbolic position in the field of antiviral therapeutics. During COVID-19, public attention often turned to remdesivir, developed by Gilead Sciences, where Tomáš Cihlář, a former student in the wider Czech antiviral tradition, played an important role. The Academy's early pandemic communications explicitly referred to this lineage when discussing medicines against viral infections. This should not be interpreted as a simple national claim over a global drug-development process. Rather, it reveals how scientific traditions can become publicly meaningful in moments of crisis. The history of Czech antiviral chemistry gave the Academy credibility when society was looking for expert interpretation of possible treatments. It also reminded policymakers that therapeutic capacity is not created instantly when a new virus appears. It grows out of decades of organic chemistry, biochemistry, molecular virology, pharmacology, industrial partnership, and international collaboration. The pandemic therefore reinforced one of the central lessons of Academy biomedical history: long-

term basic research is a form of preparedness (*Academy of Sciences of the Czech Republic, 2020*; *Institute of Organic Chemistry and Biochemistry of the CAS, n.d.*).

The Academy's response was not limited to testing and diagnostics. Materials research became crucial because the early pandemic involved severe shortages of masks, respirators, filters, and protective equipment. Experts from the Institute of Chemical Process Fundamentals tested materials for protective gear using aerosol-measurement expertise developed before the crisis. Their work concerned the ability of materials to stop aerosol particles in the size range relevant to viral transmission. This contribution is important because it broadens the meaning of public-health science. A respiratory pandemic is not only a problem of virology or medicine; it is also a problem of aerosols, filtration, material structure, air flow, occupational safety, manufacturing, and public behaviour. The Academy's technical and chemical institutes could therefore contribute to health protection even though they were not biomedical institutes in the narrow sense. This illustrates one of the main institutional features of the Academy: its disciplinary breadth allows cross-domain responses. The same organisation that studies molecules, cells, fossils, social behaviour, plasma, materials, and economics can mobilise different forms of expertise when a crisis crosses disciplinary boundaries. COVID-19 showed that public health is a system problem, and the Academy's multidisciplinary structure was well suited to such a problem (*Academy of Sciences of the Czech Republic, 2020*).

The pandemic also brought modelling and data analysis to the centre of public debate. Epidemiological curves, reproduction numbers, scenarios, hospital-capacity projections, and behavioural responses became part of everyday political language. The Academy's Institute of Computer Science, Institute of Information Theory and Automation, Institute of Organic Chemistry and Biochemistry, and the IDEA think tank at CERGE-EI participated in modelling and analytical initiatives, including the Model antiCOVID-19 Initiative. Such work demonstrated that a public-health crisis is not only biological. It is also mathematical, computational, economic, and social. Models cannot decide policy by themselves, but they can make possible futures visible. They can compare scenarios, identify trade-offs, and expose the consequences of delay or relaxation. At the same time, modelling during a crisis is uncertain and politically sensitive. Data may be incomplete, public behaviour may change, and policymakers may demand more certainty than science can provide. The Academy's contribution in this area therefore involved not only technical modelling, but also the public practice of explaining uncertainty. This was a new form of scientific authority: not the authority of final answers, but the authority of disciplined, transparent, and revisable analysis (*Academy of Sciences of the Czech Republic, 2020*; *Sherratt et al., 2023*).

The social sciences within the Academy also played a significant role. The pandemic was a biological event, but it became a social crisis because it disrupted schools, workplaces, households, inequalities, trust, communication, mobility, and public behaviour. The IDEA think tank analysed the economic shock, labour-market risks, household difficulties, remote education, and social consequences of containment measures. Researchers from the Institute of Sociology and related institutions examined health, quality of life, and social disadvantage. The Centre for Values in Science and Technology and other humanities and social-science actors addressed ethical questions connected with epidemic response. This interdisciplinary response matters for the history of the Academy because it shows that public health cannot be reduced to biomedical expertise. A scientifically correct recommendation may fail if people do not trust institutions, cannot afford to comply, lack information, or

experience measures as unfair. During COVID-19, the Academy's value lay partly in its capacity to combine laboratory science with analysis of society. This reflected the broader post-1993 institutional identity of CAS as a multi-disciplinary academy rather than a narrowly technical research agency (*Academy of Sciences of the Czech Republic, 2020*; *Bartoš et al., 2022*).

Vaccine communication became one of the clearest examples of the interaction between public health, behavioural science, and trust. A study involving researchers from CERGE-EI, the joint workplace of Charles University and the Economics Institute of the Czech Academy of Sciences, found that many people underestimated physicians' support for COVID-19 vaccination. Communicating the broad consensus among doctors increased vaccination uptake. This finding is important because it shows that public-health crises are also crises of perception. The availability of vaccines or scientific evidence does not automatically produce acceptance. People interpret risk through trust, social norms, identity, misinformation, and perceived expert disagreement. The Academy's contribution here did not take the form of a vaccine or diagnostic test, but of behavioural knowledge that could improve public-health outcomes. Such work belongs fully to the history of the Academy during crisis because it demonstrates that scientific expertise can intervene in the social conditions of health. It also shows why the Academy's multidisciplinary structure mattered: economists and behavioural scientists could contribute to vaccination policy just as molecular biologists contributed to testing. Public health required both laboratory capacity and social understanding (*Academy of Sciences of the Czech Republic, 2022*; *Bartoš et al., 2022*).

Molecular surveillance became an increasingly important phase of the pandemic response after the first emergency wave. Initial testing answers the question of whether a person is infected. Genomic surveillance answers a different question: how the virus is changing, which variants are circulating, how transmission is evolving, and whether diagnostic, vaccine, or therapeutic strategies may need adjustment. In 2021, the Czech COVID-19 Genomics Consortium was established to coordinate a national SARS-CoV-2 molecular surveillance network. Researchers associated with the Institute of Molecular Genetics of the Czech Academy of Sciences were among those involved in the wider surveillance ecosystem. This development is significant because it shows how pandemic response matured from emergency detection to long-term genomic monitoring. It also connects directly with the post-1993 history of Czech molecular biology and bioinformatics. Without sequencing capacity, data infrastructure, trained personnel, and international comparison, variant surveillance would not have been possible. Molecular surveillance made the Academy's scientific networks part of the state's capacity to see viral evolution in real time. It also linked Czech data to global variant-tracking systems, showing that national public health depends on international data exchange (*Šúri et al., 2025*; *ECDC, 2023*).

The public commentary of Academy scientists on variants, including Omicron subvariants such as BA.5, also became part of crisis response. Jan Pačes from the Institute of Molecular Genetics explained why BA.5 spread effectively, including its ability to evade immunity acquired from previous variants. Such expert communication performed an important public function. It helped citizens understand why infection waves could occur even after vaccination campaigns, previous infection, or seasonal expectations. It also translated evolutionary biology into public language. Viral mutation, immune escape, variant replacement, and population immunity are complex concepts, but they became necessary for interpreting everyday life. The Academy's role here was not only to generate data but to narrate scientific meaning responsibly. This is historically important because post-socialist scientific authority

could no longer rest on institutional hierarchy alone. It had to be earned through clarity, credibility, and public engagement. Pandemic communication turned Academy scientists into visible interpreters of a changing biological reality (*Academy of Sciences of the Czech Republic, 2022*; *Šúri et al., 2025*).

The crisis also demonstrated the importance of European and international research infrastructures. CZ-OPENSCREEN, hosted by the Institute of Molecular Genetics and linked to EU-OPENSCREEN, was listed among research infrastructures mobilised against COVID-19, with plans for substantial testing capacity. EATRIS, ELIXIR, imaging networks, genomic consortia, and other infrastructures across Europe contributed to the broader pandemic research environment. This matters because COVID-19 was not a crisis that any national science system could solve alone. Methods, sequences, protocols, variants, preprints, clinical-trial results, vaccine data, and therapeutic information moved rapidly across borders. Czech Academy institutes participated in this international circulation from a national institutional base. The lesson is not that national science became irrelevant, but that national science had to be networked in order to be useful. Research infrastructures made that networking practical. They provided shared standards, equipment, data systems, access models, and professional communities. The Academy's earlier investment in infrastructures therefore became one of the hidden conditions of crisis response (*ESFRI, 2020*; *European Medicines Agency, 2023*).

Technology transfer acquired a distinctive crisis meaning during the pandemic. In normal times, technology transfer is often discussed in terms of patents, licensing, start-ups, and economic competitiveness. During a public-health emergency, the same structures can help move diagnostic tools, compounds, devices, or expertise towards urgent social use. IOCB Tech's support for diagnostic-test development is one example. The broader Czech innovation ecosystem also produced emergency medical technologies, such as ventilator development initiatives, though not all belonged directly to CAS. The Academy's relevance lay in its ability to connect knowledge, credibility, and transfer mechanisms. The crisis revealed that intellectual property and rapid mobilisation must be handled carefully. Excessive proprietary control can slow emergency response, but absence of professional transfer capacity can also prevent promising tools from reaching users. Post-1993 technology-transfer structures gave Czech Academy science a more mature way to navigate this terrain. They allowed the Academy to serve public need without abandoning the legal and developmental realities of biomedical innovation (*Institute of Molecular Genetics of the Czech Academy of Sciences, 2020*; *Institute of Organic Chemistry and Biochemistry of the CAS, 2021*).

The Academy's role during COVID-19 should also be understood as part of the history of public trust. In a pandemic, scientific institutions do not communicate into a vacuum. They speak into societies marked by fear, misinformation, political polarisation, economic anxiety, fatigue, and unequal exposure to risk. Scientific advice may be accepted, contested, selectively interpreted, or turned into political symbolism. The Academy therefore had to sustain credibility in a difficult communication environment. Its strongest position was not to act as a partisan actor, but to provide evidence, explain uncertainty, and correct misconceptions. This was especially important in matters such as testing, variants, vaccination, aerosol transmission, protective equipment, and social restrictions. Trust in science was not merely an abstract cultural value; it affected health behaviour and policy compliance. The Academy's public communication during COVID-19 continued a broader post-1989 transformation in which scientific authority had to become democratic rather than paternalistic. Scientists could

no longer speak as representatives of a state ideology. They had to speak as accountable experts in a plural society (*Bartoš et al., 2022*; *Academy of Sciences of the Czech Republic, 2022*).

The educational dimension of the crisis also involved the Academy. During lockdowns and school closures, CAS popularisers and institutes created or gathered online science materials for children, parents, and the public. This may appear secondary compared with testing or diagnostics, but it belongs to the wider public-health story because isolation, school disruption, and loss of structured learning were themselves social consequences of the pandemic. Science communication at home helped maintain a connection between public life and knowledge at a time when ordinary educational institutions were disrupted. The Academy's initiative also showed that public service during crisis can take many forms. It can mean testing samples, analysing filters, modelling epidemiological scenarios, advising on economic consequences, explaining vaccination, or offering educational resources. Such breadth is characteristic of an academy rather than a specialised biomedical agency. It reflects the idea that a public research institution serves society not only through direct technical outputs but also through intellectual continuity, public culture, and support for learning under abnormal conditions (*Academy of Sciences of the Czech Republic, 2020*).

The pandemic exposed both strengths and limitations of the Academy model. Its strengths were clear: deep expertise, disciplinary breadth, modern infrastructures, long-term laboratories, international networks, and public credibility. Its limitations were also visible. The Academy could not itself coordinate the entire national response, impose public-health measures, run hospitals, manufacture all necessary supplies, or guarantee political coherence. Its role depended on cooperation with ministries, public-health authorities, universities, hospitals, companies, and civic initiatives. This dependence should not be seen as weakness. It reflects the real structure of modern crisis response. No single institution can manage a pandemic alone. The historical question is whether institutions know how to collaborate quickly without losing their specific functions. The Academy's experience during COVID-19 suggests that its greatest value lay in flexible mobilisation of specialised knowledge. It could supply capacity and expertise, but it could not substitute for governance. This distinction is important because it prevents unrealistic expectations and clarifies the proper place of public research institutions in emergencies (*Academy of Sciences of the Czech Republic, 2020*; *OECD, 2023*).

Public health crises also force science to confront time. Academic research usually works through long cycles: grant proposals, experiments, publications, peer review, doctoral training, and infrastructure development. A crisis demands speed. Samples must be tested today, models updated tomorrow, public explanations given immediately, and materials evaluated before shortage becomes catastrophe. The Academy's response showed that rapid action is possible only when slow preparation has already occurred. Laboratories could move quickly because trained people, equipment, methods, and institutional trust already existed. This temporal paradox is one of the most important lessons of the pandemic. Emergency science is built during non-emergency years. The post-1993 investments in molecular biology, diagnostics, biotechnology, modelling, materials science, and social research were not designed only for COVID-19, but they created the capacity to respond to it. This gives the pandemic a retrospective meaning in the Academy's institutional history. It confirmed the value of long-term public research in a way that ordinary policy documents could not (*Academy of Sciences of the Czech Republic, 2020*; *Šúri et al., 2025*).

The Academy's pandemic response also belongs to the history of interdisciplinarity. COVID-19 was a single disease caused by a virus, but the crisis it produced crossed almost every disciplinary boundary. Molecular diagnostics required biology and chemistry. Aerosol protection required physics, chemical engineering, and materials science. Viral evolution required genomics, bioinformatics, and evolutionary theory. Epidemiological scenarios required mathematics and computer science. Vaccination behaviour required economics, psychology, sociology, and communication studies. Ethical questions required philosophy, law, and social theory. Economic recovery required macroeconomic and labour-market analysis. This complexity gave practical meaning to a feature often stated abstractly in Academy self-descriptions: the coexistence of natural, technical, social, and human sciences. During COVID-19, that coexistence was not ornamental. It allowed the Academy to respond to different dimensions of the same crisis. This is an important institutional lesson because future public-health threats will also be multidimensional. Antimicrobial resistance, climate-related disease shifts, zoonotic spillovers, air pollution, mental-health crises, and ageing-related vulnerability will require similarly broad scientific capacity (*Academy of Sciences of the Czech Republic, 2020*; *World Health Organization Regional Office for Europe, 2023*).

The crisis also intensified the relationship between national resilience and European integration. The Czech Republic needed domestic testing capacity, laboratories, experts, and public communication. At the same time, it depended on international information about the virus, variants, diagnostics, vaccines, therapeutic trials, and public-health practice. Academy institutes operated at this intersection. They served Czech society, but they used and contributed to global science. This dual position captures one of the central themes of the Academy's post-1993 development. National autonomy in science does not mean self-sufficiency. It means having enough domestic competence to participate intelligently in international networks and to apply global knowledge under local conditions. During COVID-19, countries without strong domestic scientific institutions were more dependent on external interpretation and slower to adapt. The Academy's contribution therefore formed part of Czech scientific sovereignty in a Europeanised world. It helped the state not by isolating it from international science, but by making it capable of using international science effectively (*European Medicines Agency, 2023*; *Czech Academy of Sciences, n.d.*).

The pandemic also changed the public perception of basic research. Before COVID-19, molecular biology, genomics, aerosol measurement, or behavioural economics could appear remote from everyday life. During the pandemic, citizens heard about PCR, RNA, variants, aerosols, antibodies, vaccine efficacy, modelling, and statistical uncertainty in daily news. This sudden public visibility was not always comfortable for scientists. Concepts were simplified, politicised, or misunderstood. Yet the crisis opened a space in which the Academy could show why basic knowledge matters. A country cannot invent molecular diagnostics without molecular biology. It cannot interpret variants without genomics. It cannot evaluate masks without aerosol science. It cannot improve vaccination uptake without behavioural evidence. It cannot manage school closures without social research. The Academy's pandemic role therefore strengthened the public argument for maintaining a broad research base even when no emergency is visible. This argument was not theoretical. It was demonstrated in practice, under pressure, in front of society (*Academy of Sciences of the Czech Republic, 2020*; *Bartoš et al., 2022*).

At the same time, COVID-19 revealed the dangers of overpromising science. Public expectation during a crisis can be impatient and emotionally charged. People want definitive

answers, immediate treatments, reliable predictions, and clear rules. Science often proceeds more cautiously. Early findings may change, variants may alter assumptions, models may require revision, and interventions may have uncertain social consequences. Academy scientists therefore had to communicate uncertainty without appearing indecisive. This is one of the hardest tasks of crisis science. If experts sound too confident, they may lose trust when evidence changes. If they sound too cautious, policymakers and citizens may interpret caution as ignorance. The Academy's role was to hold this difficult middle position. Its authority depended not on infallibility but on disciplined openness to evidence. In this sense, the pandemic pushed the Academy further into a modern democratic mode of expertise, where credibility comes from transparency, correction, and methodological seriousness rather than from institutional prestige alone (*OECD, 2023*; *Academy of Sciences of the Czech Republic, 2022*).

The end of the international PHEIC in May 2023 did not end the historical importance of the Academy's pandemic experience. It shifted the problem from emergency response to preparedness, memory, and institutional learning. What should remain from the crisis? Laboratories that can scale testing. Genomic surveillance capacity. Better connections between research institutes and public-health authorities. Stronger data systems. More mature science communication. Recognition of behavioural science. Clearer ethical frameworks. Better integration between national and European response systems. The Academy's experience can be understood as a rehearsal for future crises. Those crises may involve respiratory viruses, antimicrobial resistance, zoonotic diseases, climate-related health risks, environmental exposures, food safety, or mental-health consequences of social disruption. The specific pathogen or threat may differ, but the institutional lesson is similar. A society needs research organisations that are broad enough to understand complexity, stable enough to preserve expertise, and flexible enough to mobilise quickly. The Academy's pandemic response therefore belongs to the future as much as to the past (*World Health Organization Regional Office for Europe, 2023*; *Šúri et al., 2025*).

The crisis also added a new layer to the Academy's relationship with the Czech state. Since 1993, CAS had repeatedly negotiated its autonomy, funding, evaluation, and public role. During the pandemic, autonomy did not mean distance from the state. It meant the ability to provide expertise that was not merely political instruction. The Academy could support state needs precisely because it was not a ministry. Its scientists could test, analyse, model, explain, and advise from the position of professional research institutions. This relationship was delicate. Science could inform policy, but policy had to make decisions involving values, risks, economics, law, and political responsibility. The pandemic showed that the Academy's public function is strongest when its autonomy and usefulness reinforce one another. If science is too subordinate to government, it loses credibility. If it is too detached from public need, it loses relevance. The post-1993 Academy had been built around this balance, and COVID-19 tested it under extreme conditions (*Czech Academy of Sciences, n.d.*; *Academy of Sciences of the Czech Republic, 2020*).

The Academy's experience during public-health crisis also revealed the importance of leadership and coordination. CAS President Eva Zažímalová publicly framed the Academy as being "on the same ship" with society, while Jan Konvalinka from IOCB helped coordinate academic coronavirus research. Such statements and roles mattered because scientific response in a crisis requires more than dispersed goodwill. It requires coordination, public messaging, institutional trust, and the ability to connect laboratories with authorities and

users. Leadership in this context did not mean command in the old centralised sense. It meant creating channels through which expertise could become effective. The Academy's post-socialist governance structure, with institutes retaining autonomy but belonging to a common institutional framework, was tested by this need for coordination. The crisis showed that decentralised institutes can act collectively when the institution has enough shared identity and public purpose. This is an important finding for the broader history of the Academy's modernisation. Autonomy need not fragment an academy if it is balanced by common responsibility (*Academy of Sciences of the Czech Republic, 2020*).

COVID-19 also connected the Academy with civic and popular initiatives. Early in the pandemic, Czech society saw volunteer networks, technical communities, universities, companies, and research institutions working together on protective equipment, data tools, and emergency support. The Academy's contribution took place within this wider civic mobilisation. This context matters because it shows that scientific institutions are not isolated towers of expertise. During crises, they become part of a social ecosystem of response. Their credibility and usefulness depend on how well they cooperate with hospitals, schools, public authorities, firms, media, and citizens. The pandemic therefore pushed the Academy further into a public-facing role that had already grown after 1989. Yet it also reminded society that spontaneous civic energy needs expert validation. Protective materials, diagnostics, devices, and epidemiological claims must be tested and interpreted. The Academy's role was often to provide that validation, turning goodwill into safer and more reliable action (*Academy of Sciences of the Czech Republic, 2020*; *Tietze, Vimalnath, Aristodemou, & Molloy, 2020*).

The public-health crisis also had an archival and historical dimension. The Academy's pandemic activities created documents, datasets, media statements, scientific publications, policy analyses, institutional memories, and personal experiences that future historians will use to study Czech science in the early 21st century. This matters for the present project because the pandemic should not be treated merely as recent news. It is already part of the institutional history of CAS. It revealed capacities, weaknesses, networks, leadership styles, disciplinary interactions, public expectations, and the meaning of science in democratic society. In earlier chapters of this history, the Academy's relationship with political regimes, national culture, and scientific autonomy was central. COVID-19 added a new configuration: the relationship between the Academy, public health, emergency governance, and societal resilience. This configuration does not replace the older themes. It extends them. The question is still how science relates to the state and society, but the crisis made the question urgent, bodily, and visible to every citizen.

Thus, the Academy during public health crises demonstrated that the post-1993 transformation of Czech science had created more than a set of reformed institutes. It had created a reservoir of national resilience. During COVID-19, the Academy contributed through molecular testing, diagnostic development, genomic surveillance, antiviral and chemical expertise, materials analysis, modelling, behavioural research, economic analysis, ethical reflection, public communication, and educational outreach. These activities were possible because earlier decades had built laboratories, infrastructures, research groups, technology-transfer mechanisms, university partnerships, and international networks. The pandemic therefore confirmed one of the deepest principles of the Academy's modern history: scientific autonomy is socially valuable when it preserves capacities that cannot be improvised during emergencies. CAS did not become a public-health authority, but it became an indispensable part of the public-health knowledge system. Its experience showed that basic research, when

institutionally stable and publicly accountable, can become crisis science without ceasing to be science. In this sense, COVID-19 was not only a medical and social emergency; it was also a test of the Academy's post-socialist identity, and the Academy's response showed the practical meaning of continuity, renewal, interdisciplinarity, and public responsibility.

Biotechnology, Bioinnovation, and Applied Research

1. From Laboratory Discoveries to Practical Applications

After 1993, the relationship between laboratory discovery and practical application became one of the most important tests of the Academy of Sciences of the Czech Republic as a modern public research institution. The question was not whether the Academy should abandon basic research in favour of immediate economic use, because such a move would have weakened precisely the scientific foundations from which important applications arise. The real question was how a post-socialist academy, historically shaped by strong disciplinary institutes and long-term research programmes, could create pathways through which selected discoveries might travel towards medicine, biotechnology, diagnostics, agriculture, environmental technologies, materials, or industry. This was a difficult transition because the old Czechoslovak Academy had possessed applied institutes and state-directed research tasks, but it had not operated within a market economy, a competitive intellectual-property environment, or a European innovation ecosystem. After 1993, practical application increasingly required patents, licensing, industrial partners, venture capital, technology-transfer offices, regulatory awareness, quality standards, and international business competence. These were not natural extensions of traditional academic culture. They had to be learned, institutionalised, and reconciled with the autonomy of science. In the life sciences, this reconciliation was especially delicate because practical benefit could be socially profound, particularly in medicine and environmental protection, but premature application could also distort research priorities. The Academy's life-science institutes therefore developed a model in which basic discovery remained the source of value, while technology transfer, infrastructures, and partnerships created possible routes towards use. This model did not promise that every discovery would become a product. It recognised that application is selective, uncertain, and often long-term (*Czech Academy of Sciences, n.d.*; *IOCB Prague, n.d.*).

The post-1993 transformation changed the meaning of applied research itself. Under state socialism, "application" had often been connected with planned production, ministerial priorities, agriculture, industry, military needs, or health-sector assignments. In the democratic and market-oriented Czech Republic, application came to mean something more plural and less centrally directed. It could involve a licensed compound developed by a multinational pharmaceutical company, a diagnostic method validated with hospitals, a biomaterial tested for regenerative medicine, a plant biotechnology tool used in agriculture, a microbial product with industrial potential, a research infrastructure serving external users, or a spin-off company carrying academic knowledge into a commercial environment. This

plurality required a new institutional imagination. The Academy could no longer assume that practical use would be organised by the state alone. Nor could it simply hand discoveries to industry without professional mediation. Life-science applications require careful protection of intellectual property, experimental validation, reproducibility, financing, clinical or regulatory development, and market assessment. These requirements changed the internal culture of research institutes. Scientists had to become more aware of patents, licensing, confidentiality, invention disclosure, and collaboration agreements. At the same time, institutes had to protect the freedom of researchers to pursue questions that might have no immediate application. The Academy's post-1993 applied life sciences therefore emerged from a tension between openness and protection, curiosity and usefulness, publication and patenting, public mission and commercial partnership (*IOCB Prague, n.d.*; *IOCB Tech, n.d.*).

The most powerful example of this long movement from discovery to application remains the antiviral research associated with Antonín Holý and the Institute of Organic Chemistry and Biochemistry. Although the origins of this work predate 1993, its consequences shaped the post-socialist Academy's understanding of applied potential. Holý's research on acyclic nucleoside phosphonates was not born as a short-term commercial project. It grew out of sustained synthetic chemistry, biochemical imagination, international collaboration, and the willingness to pursue unusual molecular structures over many years. The eventual development of antiviral medicines against HIV/AIDS, hepatitis B, and other viral diseases required cooperation with Erik De Clercq, Gilead Sciences, clinical developers, regulators, and pharmaceutical markets. This case therefore shows that practical application is rarely a direct line from laboratory bench to patient. It is a chain of scientific, institutional, legal, industrial, and medical transformations. The Academy's role was crucial at the beginning of the chain, where basic chemical and biological insight produced compounds with extraordinary potential. The post-1993 significance of the case lay in its demonstration that a Czech Academy institute could generate discoveries of global medical importance. It also gave the Academy a persuasive argument in debates about research funding: the social and economic value of basic research may become visible only after long and unpredictable development (*IOCB Prague, n.d.*; *Gilead Sciences, 2006*; *Gilead Sciences, 2011*).

The Gilead–IOCB partnership became a model of how application could be sustained through long-term international cooperation. The establishment of the Gilead Sciences Research Centre at IOCB Prague in 2006, with annual support for selected research groups, symbolised a new stage in the relationship between Czech public research and global pharmaceutical development. It was not simply a reward for past discoveries. It created a structure through which medicinal chemistry and human-disease research could continue in Prague with international industrial support. The partnership also helped normalise the idea that public institutes could cooperate with major companies without ceasing to be academic institutions. This was important in a post-socialist context where commercialisation could be viewed either with excessive suspicion or with unrealistic enthusiasm. The IOCB experience suggested a more mature position. Industry partnership can be valuable when it is based on strong science, clear agreements, intellectual-property competence, and respect for academic quality. It can also return resources to the research environment, supporting further discovery. The case did not mean that all Academy institutes should follow the same path, because fields differ greatly in their translational possibilities. Yet it gave the Academy a visible example of application grounded in excellence rather than administrative pressure (*Gilead Sciences, 2006*; *IOCB Prague, n.d.*).

The institutionalisation of technology transfer at IOCB marked another important step. In the early post-socialist period, many research institutions across Central and Eastern Europe possessed scientific talent but lacked mature mechanisms for commercialisation. Researchers might publish results, but potential inventions could remain unprotected, underdeveloped, or poorly connected to industrial partners. IOCB Tech was created to address precisely this problem. Its responsibilities included identifying commercially promising projects, analysing market potential and patentability, protecting intellectual property, supporting project development, finding commercial partners, and negotiating licensing agreements. Such functions may appear administrative, but historically they represent a major cultural transformation. They translate academic discovery into a language that investors, companies, patent offices, and development partners can understand. They also protect scientists from having to navigate complex commercial processes alone. The existence of a professional transfer structure means that application is no longer an accidental by-product of personal contacts. It becomes an organised institutional capacity. In the Academy's life sciences, this capacity was essential because biomedical and biotechnological applications often require many years, large investments, and specialised legal knowledge (*IOCB Tech, n.d.*; *EATRIS, n.d.*).

The creation of i&i Prague in 2017 extended this logic from technology transfer towards venture building and spin-off support. Founded by IOCB Prague, i&i Prague was designed to support the commercialisation of Czech research results, help academic institutions and universities identify and protect inventions with commercial potential, and find commercial partners. It also provided pre-seed financing and commercial expertise for innovative projects, including those outside IOCB itself. This was historically significant because it moved the Academy-linked innovation model beyond the walls of one institute. IOCB's success became a platform for a wider Czech academic ecosystem. The life sciences are particularly dependent on early-stage support because many discoveries are too risky for established companies and too immature for conventional investment. Spin-offs, incubators, and specialised funds help bridge this gap. They do not guarantee success, but they create a space where academic results can be developed beyond publication. The establishment of i&i Prague therefore represented a shift from isolated technology transfer to ecosystem building. It showed that the Academy could participate in the creation of institutional intermediaries between research and market without transforming itself into a commercial enterprise (*IOCB Prague, 2017*; *i&i Prague, n.d.*).

The i&i Biotech Fund, established in 2021 in cooperation with the European Investment Fund, further demonstrated the maturation of this ecosystem. Its focus on innovative European life-science companies in drug discovery, medical devices, diagnostics, and digital health placed Czech academic innovation within a broader European investment environment. This matters because the life sciences are expensive, risky, and internationally competitive. A promising diagnostic tool, compound, or medical device often cannot advance without venture financing, development expertise, and access to international partners. The creation of a dedicated fund signalled that Czech academic life sciences had moved beyond the stage of occasional licensing. They were beginning to generate projects that required structured investment pathways. For the Academy's institutional history, this development is important because it shows how applied research became part of a wider financial and entrepreneurial infrastructure. The Academy itself remained a public research organisation, but its discoveries could enter a network of technology-transfer subsidiaries, incubators, venture funds, and

international investors. This networked model reflects the reality of contemporary bioinnovation, where scientific value must pass through several institutional environments before it reaches society (*i&i Prague, n.d.*; *CzechInvest, 2021*).

The opening of IOCB Boston in 2024 added a global dimension to this applied trajectory. Located in one of the world's leading biotechnology hubs, IOCB Boston was intended to showcase Czech projects and provide transfer support, including the search for American investors. This step is historically striking because it represents almost the inverse of the restricted international position of Czech science before 1989. A Czech Academy institute was no longer only trying to gain access to Western laboratories; it was creating an outpost in a global centre of biotechnology. The aim was not simply prestige. It was to connect Czech scientific projects with the dense ecosystem of investors, companies, legal expertise, experienced entrepreneurs, and biomedical developers that characterises Boston. This move shows that practical application in the 21st-century life sciences is increasingly international from the beginning. A Czech discovery may be made in Prague, but its development may require partners in the United States, Europe, or elsewhere. The Academy's applied life sciences therefore became geographically extended. They remained rooted in Czech public research, but their routes to use could pass through global innovation hubs (*IOCB Prague, 2024*).

The Institute of Biotechnology of the Czech Academy of Sciences represented a different but complementary path from discovery to application. Established in 2008, it was formed in a period when biotechnology, molecular medicine, and translational expectations were already central to European research policy. Its mission was grounded in excellent basic research in biomedical molecular biology, but with prospective transfer of biotechnological methods and tools to human and veterinary medicine or other important areas of human activity. This formulation captures the Academy's preferred balance. The institute was not created as a commercial development company, yet application was part of its horizon from the beginning. Its work on biomolecular mechanisms, protein engineering, structural biology, disease-related processes, and biomedical tools showed how the boundary between fundamental and applied research had become more permeable. The Institute of Biotechnology did not merely inherit a Czechoslovak disciplinary tradition; it embodied a new institutional generation shaped by European infrastructure, university cooperation, and translational potential. Its establishment showed that the post-1993 Academy was not limited to reforming old institutes. It could create new institutes aligned with emerging scientific and societal needs (*Institute of Biotechnology of the Czech Academy of Sciences, n.d.*; *EMBL ARISE, n.d.*).

BIOCEV became the spatial and organisational environment in which much of this new biotechnology could mature. As a biotechnology and biomedicine centre of the Academy and Charles University, BIOCEV focused research and development on selected areas of biotechnology and biomedicine and organised its scientific scope through mutually integrated research programmes. This mattered because applied life-science research rarely arises from isolated laboratories. It depends on critical mass, advanced equipment, doctoral training, shared services, and interaction among molecular biologists, physicians, chemists, structural biologists, microbiologists, geneticists, and technologists. BIOCEV was built on precisely this logic. It created a campus environment where fundamental mechanisms could be studied with possible diagnostic, therapeutic, and biotechnological outcomes in mind. It also addressed a structural problem inherited from the socialist period: the separation between Academy research and university teaching. By bringing Academy institutes and Charles University

together, BIOCEV allowed application-oriented research to interact with education and clinical knowledge. This made it one of the most important post-1993 platforms for moving life-science discoveries towards practical use (*BIOCEV, n.d.*; *Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

Research infrastructures were essential to this movement from laboratory discovery to application. In the life sciences, a discovery often cannot move towards use unless it can be reproduced, scaled, visualised, modelled, screened, or validated. Czech-BioImaging, CZ-OPENSCREEN, the Czech Centre for Phenogenomics, ELIXIR CZ, and EATRIS-CZ all contributed to this capacity. Czech-BioImaging made advanced biological and medical imaging available across institutions. CZ-OPENSCREEN supported chemical biology, screening, molecular probes, and early therapeutic exploration. The Czech Centre for Phenogenomics enabled genetic engineering and standardised phenotyping of animal models. ELIXIR CZ provided biological data and bioinformatics infrastructure. EATRIS-CZ linked Czech biomedical, chemical, and clinical research to the European translational medicine environment. These infrastructures changed the meaning of applied research. Application was no longer imagined as a final step after discovery; it became dependent on platforms present throughout the research process. A compound needs screening, a disease hypothesis needs models, a cellular mechanism needs imaging, a biomarker needs data, and a therapeutic idea needs translational validation. The Academy's applied potential therefore rested increasingly on infrastructural depth (*Czech-BioImaging, n.d.*; *CZ-OPENSCREEN, n.d.*; *Czech Centre for Phenogenomics, n.d.*; *EATRIS-CZ, n.d.*).

CZ-OPENSCREEN illustrates especially well the early phase of practical translation. Chemical biology is concerned with small molecules that can probe, modulate, or reveal biological processes. Such molecules may become research tools, diagnostic aids, target validators, or early therapeutic candidates. The infrastructure hosted at the Institute of Molecular Genetics created open access to compound libraries, screening technologies, assay expertise, and chemical-biology services. This made it possible for academic laboratories to move from a biological hypothesis towards molecular intervention. The importance of such a platform lies in its position before conventional drug development. It operates where scientific uncertainty is still high, but where practical potential may begin to appear. By supporting molecular probes and screening, CZ-OPENSCREEN helped convert basic biological mechanisms into experimentally manipulable systems. In institutional terms, this strengthened the Academy's capacity to participate in bioinnovation without becoming dependent on pharmaceutical companies at the earliest stage. It allowed researchers to generate more mature and credible findings before seeking external development partners (*CZ-OPENSCREEN, n.d.*).

The Czech Centre for Phenogenomics similarly supported the transition from gene-level discovery to functional and preclinical knowledge. Many modern biomedical discoveries begin with a gene, variant, pathway, or cellular observation, but practical application requires evidence of function in a living organism. Phenogenomics provides precisely this bridge. Through genetically modified mice and rats, standardised phenotyping, imaging, pathology, behavioural analysis, metabolism, and data systems, researchers can test how molecular changes affect whole organisms and disease models. This is essential for translational research because therapies cannot be judged only in cell cultures. They must be understood in systemic biological contexts. The centre's location at BIOCEV and its connection with the Institute of Molecular Genetics gave the Academy a strong position in model-organism-based biomedical research. It also linked Czech science to European infrastructures for mouse

functional genomics. In the applied life sciences, this kind of platform reduces the distance between discovery and validation. It does not guarantee clinical success, but it makes research more credible, reproducible, and development-ready (*Czech Centre for Phenogenomics, n.d.*; *INFRAFRONTIER, n.d.*).

Biomaterials research opened another pathway from laboratory discovery to practical application. The Institute of Macromolecular Chemistry had a long tradition in polymer science, and after 1993 this tradition increasingly intersected with biomedical needs. Drug delivery systems, hydrogels, tissue scaffolds, wound-healing materials, bioresponsive polymers, and materials for regenerative medicine require exactly the kind of macromolecular expertise that a chemistry-oriented Academy institute can provide. The path to application here differs from the path of a drug molecule. A biomaterial must be biocompatible, mechanically suitable, degradable or stable as required, manufacturable, sterilizable, and acceptable under medical regulation. It must interact with cells and tissues in controlled ways. This makes biomaterials research deeply interdisciplinary. It requires polymer chemistry, cell biology, physiology, medicine, engineering, and often industrial development. The Academy's strength was its ability to sustain advanced materials research while connecting it to biological and medical questions. In this way, polymer laboratories contributed to the applied life sciences even when they stood outside the formal biological-medical section (*Institute of Macromolecular Chemistry of the CAS, n.d.*).

Microbiology and microbial biotechnology formed another important field of application. Microorganisms are sources of enzymes, metabolites, antibiotics, immunomodulators, industrial processes, environmental technologies, and diagnostic tools. The Institute of Microbiology's research on microbial physiology, molecular microbiology, immunology, biotechnology, natural products, environmental microbiology, and host-microbe interactions created multiple routes towards use. Some applications may relate to medicine, such as antimicrobials, immunological tools, or microbiome-related insights. Others may relate to industry, agriculture, waste processing, soil systems, water quality, or bioactive compounds. Microbial biotechnology is historically significant because it connects older applied traditions with modern molecular methods. Under socialism, microbiology already had practical significance for industry and agriculture. After 1993, its application potential became reframed through patents, international cooperation, European projects, and biotechnology platforms. The field therefore shows continuity and renewal at the same time. It preserved practical relevance while entering a more open and competitive innovation system (*Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

Plant biotechnology and experimental botany also contributed to practical application, although their routes differed from biomedical translation. The Institute of Experimental Botany worked on plant genetics, physiology, biotechnology, structural and functional genomics, DNA repair, pollen biology, plant development, hormones, plant viruses, stress responses, and plant pathophysiology. Such research can support agriculture, breeding, plant health, food security, environmental resilience, and adaptation to climate change. Its applied potential may appear in new diagnostic tools for plant pathogens, improved understanding of stress tolerance, biotechnological methods, or strategies for sustainable cultivation. In the post-1993 period, plant biotechnology became increasingly important because agriculture faced both economic and environmental pressures. Climate change, drought, disease, soil degradation, and the need for sustainable production made plant research socially relevant in new ways. The Academy's contribution was not to replace agricultural companies or breeding stations,

but to generate knowledge of plant mechanisms that could later inform practical solutions. This again demonstrates the Academy's preferred model: fundamental research with a horizon of public usefulness (*Institute of Experimental Botany of the Czech Academy of Sciences, n.d.*).

Environmental biotechnology and ecological applications broadened the field further. Life-science application was not confined to medicine and agriculture. It also included water quality, soil processes, biodiversity monitoring, invasive species management, bioremediation, algal technologies, and ecosystem restoration. Institutes such as the Biology Centre CAS, the Institute of Botany, and the Institute of Microbiology contributed to this broader applied landscape. Ecological knowledge may become practical when it informs conservation plans, restoration strategies, pest management, water treatment, or environmental risk assessment. Such applications are often less commercially visible than drugs or medical devices, but they are crucial for society. They also challenge narrow definitions of innovation. A better method for monitoring biodiversity, managing invasive species, assessing soil health, or protecting freshwater ecosystems may not produce a spin-off company, yet it may have substantial public value. The Academy's life sciences therefore participated in both market-oriented and public-good innovation. This distinction is essential for evaluating applied research fairly (*Biology Centre CAS, n.d.*; *Institute of Botany of the Czech Academy of Sciences, n.d.*).

Strategy AV21 gave this broader public-good orientation an institutional language. Its formula of "top research in the public interest" expressed the idea that Academy research should respond to contemporary problems through coordinated, interdisciplinary programmes while preserving excellence. This was important for the applied life sciences because not all practical applications fit the commercialisation model. Public health, ageing, biodiversity loss, environmental change, food security, and diagnostic methods may require scientific solutions whose value is social, regulatory, or infrastructural rather than immediately profitable. Strategy AV21 therefore complemented technology-transfer mechanisms. IOCB Tech and i&i Prague supported commercial pathways; Strategy AV21 framed research around societal challenges and public interest. Together, these instruments show that applied research in the Academy after 1993 had more than one route. Some discoveries moved towards patents and firms; others moved towards expert advice, infrastructures, methods, standards, or public policy. The Academy's applied mission was strongest when it recognised this plurality rather than forcing all research into one innovation template (*Strategy AV21, n.d.*; *Institute of Psychology of the CAS, n.d.*).

The development of diagnostic methods and techniques became one of the practical areas where public-interest research and innovation overlapped. Diagnostic innovation may produce commercial products, but it may also strengthen public health, hospital practice, environmental monitoring, or research capacity. The Academy's biological and technical institutes contributed to diagnostics through molecular biology, imaging, nanotechnology, bioinformatics, chemical probes, animal models, and materials. The COVID-19 pandemic later made the public value of diagnostic capacity dramatically visible, but the foundations had been built earlier. Diagnostic application requires reliable detection, sensitivity, specificity, reproducibility, and integration into clinical or monitoring systems. These qualities depend on deep science and careful validation. In the Academy's context, diagnostic development was therefore a natural field for cooperation among basic researchers, clinicians, engineers, and transfer specialists. It also showed that applied research is often methodological. A new method can change what other scientists, doctors, or public agencies are able to see and

measure. Such methodological innovation may be as important as a single product (*Strategy AV21, n.d.*; *EATRIS-CZ, n.d.*).

The movement from laboratory discovery to application also depended on changing attitudes among scientists themselves. In older academic cultures, commercialisation could be seen as secondary, suspicious, or inappropriate for serious research. After 1993, especially in biomedical and biotechnological fields, this attitude gradually changed. Researchers became more aware that patents do not necessarily contradict publication, that spin-offs can preserve scientific value if well governed, and that industry collaboration can support further research. Yet the change was uneven. Not every scientist wanted to become an entrepreneur, and not every discovery deserved commercial development. The Academy therefore needed intermediaries who could recognise potential without imposing business logic on all laboratories. This is why technology-transfer offices, incubators, and project managers became important. They allowed scientists to remain scientists while making application possible where appropriate. The cultural transformation of applied research was therefore not a conversion of academic people into business people. It was the creation of institutional roles that made communication between science and business more competent (*IOCB Tech, n.d.*; *i&i Prague, n.d.*).

Intellectual property became central to this transformation. In the life sciences, a discovery may lose practical value if it is disclosed without protection before development partners are identified. At the same time, excessive secrecy can undermine scientific openness and slow collective progress. Post-1993 Academy institutes had to learn to balance these concerns. Patentability, market potential, licensing, invention disclosure, and confidentiality agreements entered the world of laboratories that had once been organised primarily around publications and institutional reports. This was a major institutional and psychological change. It required training, legal advice, trust between scientists and technology-transfer professionals, and clear rules about benefit sharing. It also required understanding that not all valuable research is patentable. Some knowledge is valuable because it informs policy, improves methods, supports public health, or enriches basic understanding. The strongest technology-transfer culture is therefore selective and intelligent. It protects what should be protected while preserving openness where openness best serves science and society (*IOCB Prague, n.d.*; *IOCB Tech, n.d.*).

Application also required validation, and validation often proved more difficult than discovery itself. A promising molecule may work in vitro but fail in animals. A biomarker may appear useful in a small dataset but not in a diverse population. A material may perform well in laboratory conditions but encounter safety, manufacturing, or regulatory obstacles. A plant-biotechnology result may be biologically sound but agronomically impractical. A microbial product may be effective but economically difficult to produce. The Academy's applied research therefore needed infrastructures and partnerships that could test discoveries under more demanding conditions. Phenogenomics, imaging, screening, translational medicine networks, university hospitals, and industrial collaborations all helped address this problem. Historically, this is where the post-socialist Academy had to move beyond the old belief that a good scientific result naturally becomes useful. Practical application requires systems of proof. The Academy's modernisation involved building parts of those systems while recognising that many projects would still not reach the final stage of use (*Czech Centre for Phenogenomics, n.d.*; *EATRIS, n.d.*).

The European context strongly shaped this development. European research policy after the 1990s increasingly emphasised competitiveness, knowledge transfer, biotechnology, health innovation, sustainability, and the connection between research and society. More recently, the European Commission's life-sciences strategy has framed life sciences as a field central to Europe's future competitiveness and resilience. Czech Academy institutes operated within this wider policy environment. European programmes encouraged collaboration, infrastructure development, applied potential, and links between public research and users. This helped the Academy modernise its applied pathways, but it also created pressure to speak the language of impact. The challenge was to avoid reducing impact to short-term commercial metrics. In the life sciences, true impact may take decades and may appear in unexpected places. The Academy's experience shows that European innovation policy is most productive when it supports both application and the basic research from which application grows. If the second is weakened, the first becomes shallow (*European Commission, 2025*; *Strategy AV21, n.d.*).

The Czech national context also mattered. The Czech Republic is a medium-sized research system with strong scientific traditions but limited domestic pharmaceutical and biotechnology scale compared with the United States, Germany, Switzerland, or the United Kingdom. This meant that Academy discoveries often needed international partners to reach full application. The IOCB–Gilead story is a clear example. It also meant that domestic technology-transfer structures had to help Czech projects become visible beyond national borders. IOCB Boston, i&i Prague, i&i Biotech Fund, and international infrastructure participation all responded to this structural condition. Czech bioinnovation could not rely only on the domestic market. It had to connect early with European and global development systems. For the Academy, this created a dual responsibility: to serve Czech society and to position Czech discoveries internationally. The route from laboratory to application therefore often passed through transnational networks, even when the original discovery was made in a Czech public institute (*IOCB Prague, 2024*; *i&i Prague, n.d.*).

The Academy's applied life sciences were also shaped by cooperation with universities and hospitals. Laboratory discoveries become medically or biologically useful only when they interact with educational systems, clinical knowledge, patient-related expertise, field sites, and validation environments. BIOCEV, EATRIS-CZ, Czech-BioImaging, and many doctoral collaborations reflected this reality. The Academy's institutes brought long-term research capacity and specialised infrastructures; universities brought students, faculties, and often medical or teaching environments; hospitals brought clinical questions, samples, patient cohorts, and practical knowledge of disease. Application emerged where these capacities met. This was particularly important because the Academy's post-1993 institutional identity remained non-university and non-clinical. Its practical contribution therefore depended on partnerships rather than institutional self-sufficiency. The movement from laboratory discovery to application was, in this sense, a movement from institutional separation to functional cooperation (*BIOCEV, n.d.*; *EATRIS-CZ, n.d.*).

Not all applications were successful, and this must be acknowledged in a serious institutional history. Bioinnovation is inherently uncertain. Many promising projects fail because biology is complex, markets are limited, regulation is demanding, funding is insufficient, or evidence does not survive validation. The existence of technology-transfer structures does not eliminate this uncertainty. It manages it. A mature Academy does not measure applied success only by a few spectacular cases, but by the creation of an environment in which good ideas can be

recognised, tested, protected, and developed when appropriate. Failures are part of such an environment. They can still produce knowledge, methods, trained people, and improved judgement. This point is important because public discussion often expects a direct return on investment from research. The history of life-science application shows a more complicated economy of value. The Academy's strongest applied contribution may lie in maintaining a pipeline of possibilities, only some of which become practical technologies (*IOCB Tech, n.d.*; *EATRIS, n.d.*).

The movement from discovery to application also changed the Academy's public narrative. In earlier periods, the Academy's legitimacy had often been defended through national culture, scientific prestige, or autonomy from political interference. After 1993, especially in the life sciences, the Academy increasingly had to explain how its research could improve health, sustainability, technology, and economic development. This did not replace the older narrative, but it added a new layer. The Academy could point to antiviral drugs, diagnostic tools, biomaterials, biotechnology platforms, plant science, environmental expertise, and research infrastructures as evidence of social usefulness. Yet the most responsible version of this narrative avoided exaggeration. It did not claim that every laboratory would produce a product. It argued that a society needs deep scientific institutions because practical breakthroughs arise unpredictably from them. In this sense, applied research became part of the Academy's democratic communication with society. It helped citizens see why public investment in advanced science matters (*Czech Academy of Sciences, n.d.*; *IOCB Prague, n.d.*).

The life sciences were particularly well suited to this narrative because their applications touch ordinary life. Antiviral drugs affect patients with serious infections. Diagnostic methods affect early detection. Biomaterials affect repair and regeneration. Plant biotechnology affects food and agriculture. Microbial biotechnology affects health, industry, and environment. Biodiversity research affects conservation and ecosystem resilience. These applications are not abstract. They enter bodies, hospitals, fields, water systems, companies, and public policy. The Academy's life sciences therefore made the social relevance of research unusually visible. At the same time, they also revealed the ethical complexity of application. Medical technologies, animal models, genetic tools, environmental interventions, and commercial partnerships all require responsible governance. Practical application is not automatically good merely because it is practical. The Academy had to cultivate an applied research culture guided by scientific quality, public interest, ethical standards, and long-term responsibility (*EATRIS, n.d.*; *Strategy AV21, n.d.*).

By the 2020s, the Academy's route from laboratory discovery to practical application had become a multi-level system. At one level stood the institutes, where discoveries were generated through basic research. At another level stood infrastructures that made discoveries reproducible, measurable, and technically mature. At a third level stood technology-transfer offices, incubators, and funds that assessed patentability, market potential, licensing, and company creation. At a 4th level stood universities, hospitals, industry, investors, public agencies, and international partners. At a 5th level stood European and global policy frameworks shaping innovation, health, biotechnology, and sustainability. This layered structure was far more complex than the old image of applied science as a direct transfer from laboratory to factory. It was also more realistic. Life-science application requires ecosystems. The Academy's achievement after 1993 was not that it solved every problem of Czech bioinnovation, but that it helped build parts of such an ecosystem around strong public research (*i&i Prague, n.d.*; *BIOCEV, n.d.*; *European Commission, 2025*).

Thus, the movement from laboratory discoveries to practical applications after 1993 shows that the Academy of Sciences of the Czech Republic developed a distinctive model of applied life science. It did not abandon fundamental research, nor did it return to the centrally planned applied research of the socialist period. Instead, it gradually built pathways through which selected discoveries could move towards medicine, biotechnology, diagnostics, biomaterials, plant science, environmental solutions, and commercial development. The antiviral legacy of IOCB Prague, the Gilead partnership, IOCB Tech, i&i Prague, the i&i Biotech Fund, IOCB Boston, the Institute of Biotechnology, BIOCEV, CZ-OPENSCREEN, the Czech Centre for Phenogenomics, EATRIS-CZ, and research in microbiology, plant biotechnology, biomaterials, and environmental biology together demonstrate this transformation. The Academy's applied potential rested on continuity, but it required new institutions, new skills, and new partnerships. Its history shows that practical application is not the opposite of basic research. It is one possible future of basic research when scientific depth is joined with infrastructure, validation, intellectual-property competence, public responsibility, and international connectivity.

2. Cooperation with Universities, Hospitals, and Industry

After 1993, cooperation with universities, hospitals, and industry became one of the decisive conditions for the transformation of life-science research within the Academy of Sciences of the Czech Republic. The Academy had inherited from the Czechoslovak period a strong institute-based research model, in which many of the most advanced laboratories were located outside the university system. This model had significant advantages: it allowed concentration of expertise, long-term research programmes, specialised equipment, and professional research careers. Yet it also had structural limitations. Modern biotechnology, biomedicine, diagnostics, and translational research require not only strong institutes, but also doctoral training, clinical contact, patient-related expertise, regulatory knowledge, industry development, and routes towards application. No academy institute, however excellent, can alone cover the entire path from molecular discovery to medical use, industrial process, environmental technology, or commercial product. The post-1993 period therefore made cooperation not a polite institutional ideal, but a practical necessity. Universities provided education, students, faculties, and disciplinary breadth. Hospitals provided clinical questions, patient cohorts, biological samples, diagnostic needs, and therapeutic reality. Industry provided development capacity, manufacturing, regulatory experience, capital, and access to markets. The Academy's contribution lay in fundamental research, advanced infrastructures, scientific continuity, and methodological depth. Cooperation among these sectors became one of the central mechanisms through which Czech life sciences moved from inherited academic strength towards a modern innovation ecosystem (*Czech Academy of Sciences, n.d.; BIOCEV, n.d.*).

The relationship between the Academy and universities was especially important because it addressed one of the oldest structural divisions in Czechoslovak and Czech science. During the socialist period, the Academy of Sciences functioned as a major research sector, while universities were primarily responsible for teaching, although many university departments also conducted research. This division created strong academy institutes but could separate advanced research from student formation. After 1989 and 1993, such separation became increasingly problematic. Molecular biology, biotechnology, experimental medicine, ecology,

bioinformatics, and biomedicine all required young researchers trained in advanced laboratories. Universities needed access to infrastructures and research environments capable of supporting competitive doctoral work. Academy institutes needed students, postdoctoral researchers, and formal educational partnerships to reproduce expertise across generations. Cooperation therefore gradually became more organic. Academy scientists supervised doctoral students through university programmes, university students worked in Academy laboratories, and joint centres created shared spaces where education and research could intersect. This development changed the social structure of Czech science. It weakened the old boundary between the academy as a research estate and the university as a teaching estate. In the life sciences, this boundary could not survive unchanged because the laboratory itself became a training environment (*BIOCEV, n.d.; Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

BIOCEV became the clearest institutional expression of this new Academy-university cooperation. As the Biotechnology and Biomedicine Centre of the Academy of Sciences and Charles University, it brought together several Academy institutes and two faculties of Charles University in a shared research environment in Vestec. Its significance lay not merely in physical concentration or modern buildings. BIOCEV embodied a new model of Czech life-science organisation, one based on shared infrastructures, joint programmes, doctoral training, interdisciplinary platforms, and proximity between basic research and biomedical application. The centre's participating Academy institutes included major actors in molecular genetics, biotechnology, microbiology, physiology, experimental medicine, and macromolecular chemistry, while Charles University contributed educational, biomedical, and scientific capacities. This was a practical answer to the problem of fragmentation. Molecular life sciences require genomics, proteomics, imaging, model organisms, structural biology, cell biology, medicinal chemistry, and clinical awareness. No one institution can sustain all of these alone. BIOCEV therefore represented cooperation as infrastructure, not only cooperation as goodwill. It showed that post-1993 reform was not limited to statutes or funding mechanisms; it also required new spatial and organisational forms where institutions could work together without dissolving their identities (*BIOCEV, n.d.; Institute of Molecular Genetics of the Czech Academy of Sciences, 2015*).

The cooperation embodied in BIOCEV also had a symbolic meaning in the long history of the Academy. Earlier scientific institutions in the Czech lands often developed around learned societies, national cultural associations, museums, universities, and later state academies. After 1993, the challenge was no longer simply to create national scientific institutions, but to connect them efficiently. BIOCEV showed that the Academy could move beyond self-contained institute culture and enter a more networked mode of operation. This was especially important for biotechnology and biomedicine, where the path from discovery to use usually passes through several institutional contexts. A gene may be studied in an Academy laboratory, interpreted with university bioinformatics, validated in a model-organism facility, discussed with clinicians, protected through a technology-transfer office, and developed with an industrial partner. Such a path cannot be managed by one traditional department. It requires a collaborative environment in which different professional logics meet. BIOCEV gave Czech life science a place where these logics could be brought into regular contact. In this sense, it was not only a research centre, but a mechanism for overcoming inherited institutional separation (*BIOCEV, n.d.; EMBL ARISE, n.d.*).

Charles University was a particularly important partner because of its historical depth, medical faculties, and biological education. The cooperation between the Academy and Charles University linked two different forms of legitimacy. The Academy contributed specialised research institutes and long-term scientific programmes. Charles University contributed the prestige and infrastructure of one of Central Europe's oldest universities, together with students, medical faculties, and a broad disciplinary environment. In the life sciences, this complementarity was highly productive. University faculties could provide training in biology, medicine, pharmacy, chemistry, and related fields, while Academy institutes offered advanced research topics and instruments. This arrangement also helped doctoral students enter international science earlier. A student formally enrolled at a university could work in an Academy laboratory, publish with Academy researchers, access infrastructure, and participate in European projects. The outcome was not a merger but an interdependence. The Academy remained a public research institution, and the university remained an educational institution, but their functions overlapped in the formation of scientific careers and research programmes. This overlap was one of the most important post-1993 changes in Czech life-science organisation (*BIOCEV, n.d.; Charles University, n.d.*).

Cooperation with other universities also became essential. Palacký University in Olomouc played a major role through the Institute of Molecular and Translational Medicine, which became the national node of EATRIS-CZ. Masaryk University and CEITEC in Brno contributed to biomedical, molecular, and technological research capacities. The University of South Bohemia in České Budějovice formed a close regional ecosystem with the Biology Centre CAS, especially in ecology, parasitology, entomology, hydrobiology, and plant science. Czech University of Life Sciences and other institutions were important for agriculture, environment, plant biology, and applied ecological research. This wider network shows that Academy-university cooperation was not limited to Prague. Life sciences in the Czech Republic became geographically distributed. Prague remained central, but Brno, Olomouc, České Budějovice, and other centres gained strategic importance. This distribution was beneficial because different fields require different environments. Biomedicine needs hospitals and translational platforms; ecology needs field sites and regional biological expertise; plant and agricultural science need experimental landscapes and applied partners. The Academy's cooperation with universities therefore helped build a national life-science map rather than a single metropolitan cluster (*EATRIS-CZ, n.d.; Biology Centre CAS, n.d.*).

The Biology Centre CAS illustrates the regional dimension of this cooperation particularly well. Located in České Budějovice, it brought together institutes in entomology, hydrobiology, parasitology, plant molecular biology, and soil biology and biogeochemistry. Its relationship with the University of South Bohemia created a powerful scientific environment in South Bohemia. This cooperation was different from the biomedical model of BIOCEV, but no less important. It linked Academy research with university training in ecology, evolutionary biology, parasitology, plant science, and environmental biology. Field stations, freshwater systems, forests, ponds, soils, insect collections, and tropical ecology projects became part of a training and research ecosystem. The South Bohemian model shows that applied life sciences are not only about hospitals and pharmaceutical innovation. They also concern water quality, biodiversity, agriculture, parasitic disease, ecological monitoring, and environmental management. Academy-university cooperation in this region allowed organismal and ecological expertise to be reproduced across generations. It also gave regional science

international visibility, especially in tropical ecology, parasitology, freshwater ecology, and biodiversity research (*Biology Centre CAS, n.d.; University of South Bohemia, n.d.*).

Hospitals entered the Academy's life-science networks in a different way. Their primary role was not general education but clinical reality. Hospitals know what diseases look like in patients, what diagnostic gaps exist, what therapies fail, which samples are available, which ethical rules must be observed, and which interventions are realistic. Academy institutes, by contrast, are strongest in mechanism, method, model, and long-term experimental work. Translational research requires both. A molecular marker discovered in a laboratory has limited value unless it can be tested in clinical material and related to patient outcomes. A therapeutic candidate requires preclinical and clinical development. A biomaterial may need surgeons, rehabilitation specialists, regulatory experts, and clinical validation. Cooperation with hospitals therefore moved Academy biomedical research closer to the human consequences of disease. This did not turn Academy laboratories into hospital departments. Rather, it connected upstream science with downstream need. In the post-1993 period, such connections became increasingly formalised through infrastructures, projects, and translational networks, especially EATRIS-CZ (*EATRIS-CZ, n.d.; Institute of Experimental Medicine of the CAS, n.d.*).

EATRIS-CZ became one of the most important platforms linking Academy institutes, universities, hospitals, and clinical research. As the Czech national node of the European Infrastructure for Translational Medicine, it connected leading national research institutions, universities, and hospitals and aimed to accelerate chemical, biomedical, and clinical research into clinical practice. Its network included institutions such as Palacký University, Charles University, Masaryk University, the Institute of Experimental Medicine of the CAS, the Institute of Microbiology of the CAS, the Institute of Organic Chemistry and Biochemistry of the CAS, and clinical centres including St Anne's University Hospital Brno. This structure is historically significant because it institutionalised cooperation along the translational value chain. It recognised that biomedical innovation cannot move from discovery to patient through isolated enthusiasm. It requires preclinical platforms, clinical expertise, patient cohorts, diagnostics, regulatory knowledge, data systems, and industrial awareness. EATRIS-CZ therefore gave Czech biomedical research a practical framework for cooperation with hospitals and clinical researchers. For the Academy, participation in this network meant that its discoveries and platforms could be positioned within a broader route towards medical use (*EATRIS-CZ, n.d.; Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

The presence of hospitals in such networks also changed the epistemology of biomedical research. Laboratory disease models are indispensable, but they are simplified. Patients are heterogeneous, affected by age, sex, environment, comorbidities, genetic background, lifestyle, and treatment history. A mechanism that appears clear in a cell line or animal model may become more complicated in clinical reality. Hospital cooperation therefore tests the robustness of laboratory knowledge. It also introduces researchers to questions that may not arise from model systems alone. Why do some patients fail to respond to therapy? Which diagnostic markers are actually useful in routine practice? How can a discovery be translated into a test that clinicians can use? What ethical and logistical barriers affect sample collection? These questions force Academy researchers to think beyond the controlled conditions of the laboratory. This is not a weakening of science, but an expansion of its relevance. It makes biomedical research more difficult and more realistic at the same time (*EATRIS, n.d.; EATRIS-CZ, n.d.*).

Cooperation with hospitals also encouraged the development of precision and personalised medicine. Contemporary biomedicine increasingly seeks to understand not only disease categories, but also subgroups of patients defined by molecular profiles, biomarkers, imaging, genetics, immune state, or therapeutic response. This requires a dense connection between laboratory science and clinical data. EATRIS-CZ's emphasis on translational infrastructure, patient cohorts, and clinical proof-of-concept belongs to this shift. Academy institutes could contribute molecular mechanisms, preclinical models, imaging platforms, chemical probes, bioinformatics, and biomaterials, while hospitals and university medical faculties provided the clinical environment in which patient relevance could be tested. This form of cooperation was especially important for oncology, infectious disease, neurodegeneration, regenerative medicine, and rare or complex disorders. Precision medicine therefore became one of the arenas where the Academy's basic research capacity and hospital-based clinical expertise met most directly. It also showed that cooperation was not merely institutional convenience, but a scientific requirement of modern medicine (*EATRIS, n.d.; Institute of Experimental Medicine of the CAS, n.d.*).

Industry formed the third major partner in the applied life-science triangle. Its role differed from that of universities and hospitals. Industry can develop products, manufacture at scale, navigate regulatory approval, conduct late-stage development, organise distribution, and invest in risky translational pathways. In biotechnology and biomedicine, these capacities are essential because many promising academic discoveries require years of development before they can reach users. Yet cooperation with industry also raises difficult questions. How can a public research institution protect academic freedom while engaging in commercial development? How should intellectual property be managed? How can conflicts of interest be avoided? How can public benefit be preserved when private companies are involved? The Academy's post-1993 life-science history shows a gradual movement towards professional answers to these questions. Instead of relying only on informal contacts, institutes developed technology-transfer offices, licensing structures, spin-off support, and investment partnerships. Industry cooperation became more systematic, but also more regulated and strategically selective (*IOCB Tech, n.d.; IOCB Prague, n.d.*).

The Institute of Organic Chemistry and Biochemistry became the most influential Academy model for industry cooperation. Its collaboration with Gilead Sciences, rooted in the antiviral discoveries associated with Antonín Holý and colleagues, demonstrated how a Czech public research institute could interact successfully with a global pharmaceutical company. The significance of this case lies not only in the drugs that emerged, but also in the institutional lessons it provided. Licensing, patent protection, long-term partnership, and reinvestment of revenues into research became part of the institute's development. The Gilead Sciences Research Centre at IOCB Prague showed that industry cooperation could support academic research rather than simply extract value from it. This model helped change attitudes within Czech science. It demonstrated that commercial partnership is not inherently opposed to scientific excellence when it is based on strong discovery, competent negotiation, and institutional control of intellectual property. The IOCB case became a reference point for the wider Academy and for Czech life-science innovation more generally (*IOCB Prague, n.d.; Gilead Sciences, 2006*).

IOCB Tech professionalised this industry-facing function. As the technology-transfer subsidiary of IOCB Prague, it identified commercially promising research results, assessed market potential and patentability, protected intellectual property, supported development,

searched for partners, and negotiated licensing agreements. These activities changed the practical meaning of cooperation with industry. Rather than individual scientists approaching companies ad hoc, a specialised organisation could mediate between academic research and commercial development. This mediation was crucial because scientists and companies often speak different languages. Scientists think in terms of mechanisms, methods, publications, and scientific novelty. Companies think in terms of protectable assets, markets, development risks, regulatory pathways, and investment. IOCB Tech helped translate between these worlds. Its existence also protected researchers from premature disclosure, poorly structured agreements, or unrealistic expectations. In the institutional history of the Academy, this kind of transfer office marks the maturation of applied research from occasional success to repeatable professional practice (*IOCB Tech, n.d.; IOCB Prague, n.d.*).

i&i Prague extended the cooperation model from licensing to venture building and spin-off development. Founded in 2017, it represented IOCB Prague in spin-off companies arising from the institute and also searched for innovative projects beyond IOCB, offering pre-seed financing and business expertise. This was important because not all life-science discoveries are best developed through direct licensing to an established company. Some require the creation of a new company that can focus on the technology, raise capital, build a team, and carry the project through early development. Spin-offs are especially common in biotechnology, diagnostics, drug discovery, and medical technologies, where early-stage academic results may be too specialised or too risky for large firms at first. i&i Prague therefore expanded the Academy-linked innovation ecosystem. It allowed public research results to enter entrepreneurial pathways while still drawing on scientific credibility and institutional experience. This development also showed that the Academy's cooperation with industry was no longer limited to external companies; it could involve the creation of new companies from academic knowledge (*i&i Prague, n.d.; IOCB Prague, 2017*).

The i&i Biotech Fund further broadened this cooperation by connecting academic life-science projects with investment capital. Established in cooperation with the European Investment Fund, it provided financing for academic spin-offs and innovative biotechnology projects. This kind of funding is essential because the gap between a promising discovery and an investable product is often difficult to cross. Traditional grants may support research, but they are not designed for business development. Large companies may wait until the risk is lower. Venture funds and specialised incubators can support the intermediate stage, where a technology must be de-risked, validated, protected, and positioned for further investment. The creation of such a fund reflected the growing sophistication of Czech bioinnovation. It also showed how Academy-linked structures entered a European financial environment. Cooperation with industry was no longer only bilateral; it became ecosystemic, involving public institutes, universities, start-ups, investors, European funds, and multinational partners (*i&i Prague, n.d.; CzechInvest, 2021*).

Industry cooperation was not limited to pharmaceuticals. Biotechnology, diagnostics, imaging, chemical biology, biomaterials, agricultural biotechnology, microbial products, environmental technologies, software, and data platforms all offered possible industrial connections. The Institute of Macromolecular Chemistry could cooperate around biomaterials, polymers, and medical or environmental materials. The Institute of Microbiology could connect with biotechnology, natural products, microbial processes, and industrial microbiology. The Institute of Experimental Botany could support plant biotechnology, crop resilience, and diagnostic methods for plant health. The Institute of Molecular Genetics could offer screening,

phenogenomics, imaging, and molecular tools. The Institute of Biotechnology could develop biomedical molecular tools and biotechnological methods. This diversity is important because it prevents the history of Academy-industry cooperation from being reduced to the IOCB–Gilead success story alone. That story is important, but the broader life-science ecosystem involved many possible routes from research to use. Some routes led to companies; others led to services, licences, public-sector tools, or collaborative projects (*Institute of Microbiology of the Czech Academy of Sciences, n.d.; Institute of Macromolecular Chemistry of the CAS, n.d.; Institute of Experimental Botany of the Czech Academy of Sciences, n.d.*).

Research infrastructures became one of the main meeting points between the Academy, universities, hospitals, and industry. Czech-BioImaging, CZ-OPENSCREEN, the Czech Centre for Phenogenomics, ELIXIR CZ, and EATRIS-CZ offered services and expertise to academic and sometimes non-academic users. This service orientation changed the Academy's relationship with external partners. Instead of cooperation depending only on personal scientific contacts, partners could access defined facilities, technologies, methods, and expert support. An industrial partner might need screening or imaging. A hospital-linked group might need preclinical models. A university laboratory might need sequencing, phenotyping, or bioinformatics. A biotechnology start-up might need validation services. Infrastructures therefore acted as interfaces between institutions. They made cooperation more systematic, transparent, and technically reliable. They also placed Academy institutes within European norms of open access, quality control, and shared capacity. In the applied life sciences, such infrastructures are often as important as individual discoveries because they create the conditions under which discoveries can be tested and developed (*Czech-BioImaging, n.d.; CZ-OPENSCREEN, n.d.; Czech Centre for Phenogenomics, n.d.; ELIXIR CZ, n.d.*).

EATRIS-CZ is especially important because it explicitly joined research institutions, universities, hospitals, and translational development. It provided a framework for moving from discovery towards clinical proof-of-concept and first-in-human application, particularly through product platforms for drugs, vaccines, diagnostics, and advanced therapies. Academy institutes within this network could contribute their strongest capacities while relying on clinical partners for patient-related expertise. The Institute of Experimental Medicine, for example, contributed expertise relevant to advanced therapy medicinal products, genetically modified organisms, embryonic stem cells, and experimental animals. The Institute of Microbiology contributed applied and basic microbiological capacities. IOCB contributed chemical and medicinal expertise. This networked arrangement shows that translational medicine is not a single institutional possession. It is a chain of capabilities spread across institutions. The Academy's role was to provide key links in that chain, especially in basic mechanisms, preclinical research, chemical biology, microbiology, biomaterials, and experimental models (*EATRIS-CZ, n.d.; Institute of Experimental Medicine of the CAS, n.d.; Institute of Microbiology of the Czech Academy of Sciences, n.d.*).

Cooperation also affected the governance of research. Joint projects require agreements on funding, authorship, intellectual property, data sharing, ethics, access to facilities, and responsibility for results. These issues are more complex when universities, hospitals, and companies are all involved. A university may prioritise publication and student training. A hospital may prioritise patient welfare and clinical utility. A company may prioritise protectable assets and development timelines. An Academy institute may prioritise scientific excellence and long-term research continuity. Successful cooperation requires mechanisms that allow these priorities to be aligned without pretending they are identical. Post-1993 Czech life

sciences gradually developed such mechanisms through contracts, infrastructure access rules, technology-transfer offices, ethics committees, and project-management structures. This was a major institutional change. Cooperation was no longer a matter of informal socialist-era personal networks or ad hoc bilateral arrangements. It became a professionalised part of research governance (*IOCB Tech, n.d.; EATRIS, n.d.*).

The ethical dimension of cooperation was particularly important in biomedical research. Work with hospitals involves patients, samples, medical data, clinical uncertainty, and public expectations. Work with industry involves commercial interests, intellectual property, and possible conflicts of interest. Work with animal models, stem cells, genetic technologies, and advanced therapies raises additional ethical questions. The Academy's cooperation with external partners therefore had to be grounded in responsible research standards. Ethical review, informed consent, data protection, animal welfare, transparency in funding, and scientific integrity became essential elements of cooperation. This is historically significant because it shows how post-1993 autonomy differed from the older struggle against political control. Scientific freedom now had to coexist with accountability to patients, society, collaborators, and international norms. Cooperation expanded the Academy's reach, but it also expanded its responsibilities. A public research institution cannot enter biomedical innovation as if it were only a private market actor. It must carry its public ethos into every partnership (*EATRIS, n.d.; Czech Academy of Sciences, n.d.*).

Cooperation with industry also required a realistic understanding of failure. Many academic discoveries do not become products, even when they are scientifically valuable. Clinical development may fail, markets may be too small, toxicity may appear, manufacturing may be difficult, or a competing technology may advance faster. This reality affects relationships among institutes, universities, hospitals, and companies. If cooperation is judged only by immediate commercial success, it will appear disappointing. A more mature view recognises that partnerships can produce several kinds of value: publications, patents, trained personnel, methods, data, validated models, improved diagnostics, clinical insight, failed-but-informative trials, and new companies. The Academy's life-science cooperation after 1993 should therefore be evaluated as ecosystem building rather than as a catalogue of products. The IOCB antiviral success was exceptional, not routine. Its importance lies partly in showing what is possible, but it should not create the illusion that every cooperation can produce similar outcomes. Sustainable cooperation depends on accepting uncertainty while building structures that improve the probability of useful results (*IOCB Prague, n.d.; EATRIS-CZ, n.d.*).

Internationalisation strengthened all three forms of cooperation. Universities, hospitals, and industry partners were increasingly connected through European projects, research infrastructures, mobility programmes, and multinational development networks. EATRIS-CZ linked Czech institutions to a European infrastructure with many academic centres across Europe. CZ-OPENSCREEN connected chemical biology to European screening environments. Czech-BioImaging aligned national imaging facilities with European standards. IOCB's partnerships connected Czech chemistry with global pharmaceutical and biotechnology systems. This internationalisation mattered because life-science innovation is rarely purely national. A Czech discovery may need European validation, American investment, multinational clinical development, or global regulatory strategy. International networks also raised standards. Czech institutions had to make their methods, data, ethics, and project management compatible with partners abroad. This increased the quality of cooperation at home as well. Domestic Academy-university-hospital-industry relations became more

professional partly because they had to operate within international frameworks (*EATRIS, n.d.; CZ-OPENSCREEN, n.d.; Czech-BioImaging, n.d.; IOCB Prague, 2024*).

The COVID-19 pandemic provided an unexpected stress test of these cooperative networks. Academy institutes, universities, hospitals, technology-transfer structures, and public-health authorities worked together on testing, diagnostics, protective materials, modelling, and expert communication. BIOCEV's laboratories were repurposed for PCR testing in cooperation with Charles University and Academy institutes. IOCB Tech supported diagnostic-test development. Academy researchers contributed to molecular surveillance and public interpretation. The pandemic demonstrated that cooperation built for research and innovation could become cooperation for crisis response. It also showed that public health relies on pre-existing relationships. Institutions cannot easily invent trust, protocols, or technical capacity in the middle of an emergency. The pandemic therefore confirmed the strategic importance of cooperation among universities, hospitals, industry, and the Academy. These relationships were not only useful for long-term innovation; they were part of national resilience (*Academy of Sciences of the Czech Republic, 2020; BIOCEV Gene Core, 2020*).

The role of doctoral and postdoctoral researchers should not be overlooked. Cooperation among institutions is often described at the level of directors, agreements, centres, and infrastructures, but much of it is lived by early-career scientists. A doctoral student may be enrolled at Charles University, trained in an Academy laboratory, use a national infrastructure, collaborate with a hospital group, and later join a biotechnology company or spin-off. A postdoctoral researcher may move between an Academy institute, a European project, and an industrial partner. These career trajectories are themselves mechanisms of cooperation. People carry methods, norms, and contacts across institutional boundaries. After 1993, such mobility became one of the ways Czech life sciences overcame the older rigidity of the research system. Cooperation was not only written into agreements; it was embodied in scientific biographies. This generational dimension was essential for innovation because new fields often emerge when young researchers move fluently between academic, clinical, and industrial contexts (*BIOCEV, n.d.; EATRIS-CZ, n.d.*).

The cooperation model also changed the public image of the Academy. A self-contained academy may appear distant from ordinary social needs, even when it produces excellent science. An academy that cooperates with universities, hospitals, and industry can show more clearly how public research enters education, health, technology, and the economy. This does not mean that public visibility should determine all research priorities. Some of the most valuable discoveries remain invisible for years. Yet cooperation helps society understand the routes by which knowledge becomes useful. A molecule studied at IOCB may become a licensed therapy. A model developed at the Czech Centre for Phenogenomics may support disease research. A biomaterial from the Institute of Macromolecular Chemistry may lead towards regenerative medicine. A diagnostic method developed with hospital partners may improve patient stratification. A plant-biotechnology result may support agriculture. Such examples make the Academy's public value concrete. They also help justify stable funding for basic research, because they show that application grows from long-term scientific depth rather than from short-term political pressure (*IOCB Prague, n.d.; Strategy AV21, n.d.*).

Cooperation with universities, hospitals, and industry also had limits. Institutional cultures differ, and conflict is unavoidable. Universities may be concerned about academic freedom and student training. Hospitals may prioritise immediate clinical demands over research

timelines. Industry may seek exclusivity, speed, and commercial confidentiality. Academy institutes may need time for basic inquiry and publication. Public funders may demand measurable impact. These pressures can create misunderstandings. Cooperation is therefore not an inherently harmonious process. It requires negotiation, governance, trust, and sometimes restraint. The Academy's post-1993 experience shows that successful cooperation depends on recognising differences rather than pretending they do not exist. A strong public research institution should cooperate widely but not lose its core identity. Its role is not to become a university, hospital, or company, but to connect with them from the position of scientific depth and institutional autonomy (*Czech Academy of Sciences, n.d.; IOCB Tech, n.d.*).

By the 2020s, cooperation had become one of the defining features of Czech Academy life sciences. BIOCEV institutionalised Academy-university collaboration. EATRIS-CZ linked Academy institutes with universities, hospitals, and translational platforms. IOCB Tech, i&i Prague, and the i&i Biotech Fund connected academic discoveries with industry and investment. Czech-BioImaging, CZ-OPENSCREEN, ELIXIR CZ, and the Czech Centre for Phenogenomics offered shared capacities across institutional boundaries. The Biology Centre and the University of South Bohemia showed the strength of regional research ecosystems. Charles University, Palacký University, Masaryk University, CEITEC, university hospitals, and industrial partners all became part of the wider life-science network. This network did not erase the Academy's individuality. Instead, it made that individuality more productive. The Academy's institutes could remain centres of long-term research while participating in the applied, clinical, educational, and industrial environments necessary for contemporary life sciences (*BIOCEV, n.d.; EATRIS-CZ, n.d.; i&i Prague, n.d.*).

Thus, cooperation with universities, hospitals, and industry after 1993 became a central mechanism through which the Academy of Sciences of the Czech Republic transformed life-science research into a modern, networked, and application-capable system. Universities helped connect Academy research with doctoral training, disciplinary breadth, and academic reproduction. Hospitals linked laboratory discoveries to clinical reality, patient needs, diagnostics, and therapeutic validation. Industry provided development capacity, intellectual-property pathways, investment, manufacturing potential, and routes to wider use. The Academy contributed what it could do best: fundamental knowledge, specialised institutes, long-term continuity, advanced infrastructures, and scientific credibility. BIOCEV, EATRIS-CZ, IOCB Tech, i&i Prague, the i&i Biotech Fund, Czech-BioImaging, CZ-OPENSCREEN, ELIXIR CZ, the Czech Centre for Phenogenomics, and regional ecosystems such as the Biology Centre and the University of South Bohemia all demonstrate that cooperation became institutional rather than occasional. This history shows that post-1993 Czech life sciences did not move from autonomy to dependence, but from isolated autonomy to connected autonomy. The Academy remained itself, but it became more useful, more visible, and more resilient because it learned to work systematically with the institutions through which knowledge becomes education, diagnosis, therapy, technology, and innovation.

3. The Place of Life Sciences in the Innovation Ecosystem

After 1993, the life sciences gradually became one of the most important bridges between the Academy of Sciences of the Czech Republic and the emerging Czech innovation ecosystem. This did not happen immediately, nor did it occur through a simple conversion of research

institutes into commercial laboratories. The Academy entered the post-socialist period with a strong tradition of public, institute-based research, but with comparatively weaker experience in market-oriented technology transfer, venture financing, intellectual-property management, and industrial innovation under democratic capitalism. The life sciences forced these issues to the surface because biological and biomedical discoveries often possess visible social and economic potential. A molecule may become an antiviral drug, a biomarker may become a diagnostic tool, a genetic model may support preclinical research, a polymer may become a biomaterial, a plant-biotechnology method may support agriculture, and ecological expertise may guide environmental management. Yet none of these applications emerges automatically from discovery. They require an ecosystem: institutions, funding instruments, infrastructures, companies, regulatory standards, public policies, universities, hospitals, investors, and trained people. The place of life sciences in the Czech innovation ecosystem after 1993 was therefore defined by a dual movement. On the one hand, Academy institutes preserved fundamental research as their primary source of strength. On the other hand, they increasingly developed the mechanisms through which selected results could move towards social, medical, environmental, and economic use (*Czech Academy of Sciences, n.d.; IOCB Prague, n.d.*).

The concept of an innovation ecosystem is useful because it avoids the misleading idea that innovation is produced by one institution alone. In the life sciences, innovation almost always depends on multiple actors. A public research institute may discover a mechanism, compound, material, organismal model, or diagnostic principle. A university may train the researchers who carry that discovery forward. A hospital may test its relevance to patients. A technology-transfer office may protect the intellectual property. A start-up may develop the idea into a platform. An investor may finance the risky early stage. A company may manufacture or commercialise the product. A regulator may approve or reject its use. A public agency may create incentives or infrastructure support. European programmes may provide funding and standards. This chain is not linear, because ideas often move back and forth between research and development. It is better understood as an ecosystem in which knowledge circulates through several institutional environments. The Academy's life sciences became increasingly important in this ecosystem because they provided the deep research base without which the later stages would be empty. Their role was foundational rather than merely supplementary (*EATRIS, n.d.; EATRIS-CZ, n.d.*).

In the Czech case, the post-1993 innovation ecosystem developed under specific historical constraints. The country possessed strong scientific schools, a highly educated population, industrial traditions, and excellent institutes, but it also inherited from state socialism a research system that had not been organised around competitive entrepreneurship. Applied research had existed before 1989, but it operated within a planned economy and state-sector logic. After 1993, the Academy and the wider Czech research system had to adapt to patents, licensing, private firms, foreign investment, European research programmes, and global competition. This adaptation was uneven. Some fields moved faster than others. Organic chemistry, medicinal chemistry, molecular biology, biotechnology, and biomedical infrastructures created visible successes, while other areas required longer cultural and institutional learning. The life sciences were both a challenge and an opportunity. They demanded expensive infrastructure and sophisticated transfer mechanisms, but they also offered some of the clearest examples of how Czech basic research could generate international value. The Academy's position in the innovation ecosystem therefore grew from

the interaction between inherited scientific excellence and newly built innovation institutions (*IOCB Prague, n.d.; CzechInvest, 2021*).

The Institute of Organic Chemistry and Biochemistry became the most visible institutional model for this transition. Its antiviral discoveries showed that public research in chemistry and biology could lead to therapies of global importance. The institute's later technology-transfer strategy, including IOCB Tech, the Gilead Sciences Research Centre, i&i Prague, and IOCB Boston, placed it at the centre of Czech bioinnovation. IOCB's example mattered not because every Academy institute could reproduce the same financial or pharmaceutical success, but because it demonstrated the institutional possibility of turning basic research into protected, developed, and internationally valuable assets. It also showed that application does not weaken basic research when the relationship is managed wisely. Revenues, partnerships, and transfer structures can support further discovery rather than replace it. This was an important lesson for the Academy as a whole. The old opposition between pure science and practical application became less convincing. The more serious question became how to build institutions capable of protecting both excellence and transfer potential (*IOCB Prague, n.d.; IOCB Tech, n.d.; i&i Prague, n.d.*).

The life-science innovation ecosystem also depended on research infrastructures. In contemporary biotechnology and biomedicine, laboratories cannot move towards application without access to specialised platforms. Czech-BioImaging, CZ-OPENSCREEN, the Czech Centre for Phenogenomics, ELIXIR CZ, BIOCEV, and EATRIS-CZ all contributed to this infrastructural layer. Imaging makes cellular and tissue processes visible. Screening identifies probes and candidate compounds. Phenogenomics validates gene function and disease models. Bioinformatics manages biological data. BIOCEV provides a shared biotechnology and biomedicine environment. EATRIS-CZ links chemical, biomedical, and clinical research to translational medicine. These infrastructures are not merely technical appendices to scientific work. They shape what can be discovered, measured, validated, and developed. They also serve users beyond the originating institute, creating interfaces among Academy institutes, universities, hospitals, and companies. The Academy's life-science role in the innovation ecosystem therefore rested not only on individual discoveries but on the provision of national and European scientific capacity (*BIOCEV, n.d.; Czech-BioImaging, n.d.; CZ-OPENSCREEN, n.d.; Czech Centre for Phenogenomics, n.d.; ELIXIR CZ, n.d.; EATRIS-CZ, n.d.*).

The Czech Centre for Phenogenomics illustrates this infrastructural contribution particularly well. Modern disease research and biomedical innovation require model organisms that can connect genetic discoveries with organismal function. A gene identified in a sequencing study or a pathway observed in cells needs validation in living systems before it can plausibly support therapy or diagnostics. Phenogenomics provides this bridge through genetically modified mouse and rat models, standardised phenotyping, imaging, pathology, cryopreservation, data analysis, and preclinical services. Such capacity is valuable not only for Academy laboratories but also for universities, hospitals, biotechnology companies, and international collaborators. It reduces the distance between basic biology and development-ready knowledge. In ecosystem terms, it functions as shared infrastructure that lowers barriers for many actors. This is one of the ways in which a public research institution can strengthen innovation without becoming a private company. It provides capabilities that the market alone might under-supply because they are expensive, specialised, and useful across many projects (*Czech Centre for Phenogenomics, n.d.; INFRAFRONTIER, n.d.*).

CZ-OPENSCREEN offers another example of the Academy's position at the early stage of innovation. Chemical biology occupies the space between mechanism and intervention. Small molecules can be used to probe pathways, validate targets, reveal vulnerabilities, and begin therapeutic exploration. Most such molecules will not become drugs, but they are essential for understanding whether a biological process can be manipulated. CZ-OPENSCREEN, hosted by the Institute of Molecular Genetics, provides access to compound libraries, screening technologies, assay expertise, and chemical-biology support. This is an ecosystem function because it helps academic groups generate more mature and testable results before seeking industrial development. It also supports companies that need specialised screening capacity. The infrastructure therefore creates a shared zone between public research and bioinnovation. It shows that the Academy's role is not only to discover knowledge, but also to make early-stage development scientifically credible (*CZ-OPENSCREEN, n.d.; Research Infrastructures of the Czech Republic, n.d.*).

BIOCEV's place in the innovation ecosystem is broader and more spatial. As a joint biotechnology and biomedicine centre of the Academy and Charles University, it created a campus environment in which basic research, doctoral training, infrastructure, and applied potential could coexist. Its significance lies in its ability to concentrate critical mass. Innovation in the life sciences rarely emerges from isolated brilliance alone. It requires proximity among molecular biologists, structural biologists, microbiologists, geneticists, chemists, physicians, bioinformaticians, students, facility specialists, and transfer professionals. BIOCEV gave Czech life sciences one of the environments where such proximity could be sustained. It also helped connect the Academy with university education and biomedical training. In ecosystem terms, BIOCEV functioned as a node where the traditional separation between Academy institutes and university faculties became more porous. This porosity was essential because innovation depends on movement: of people, ideas, samples, data, methods, and technologies (*BIOCEV, n.d.; Institute of Molecular Genetics of the Czech Academy of Sciences, 2015*).

EATRIS-CZ linked the Academy's biomedical research with clinical translation and hospital environments. This was crucial because life-science innovation often fails at the boundary between laboratory and clinic. A promising biomarker, compound, material, or biological mechanism must be tested in relation to real patients, clinical workflows, regulatory pathways, and therapeutic needs. EATRIS-CZ connected research institutions, universities, and hospitals to support chemical, biomedical, and clinical research and speed its transfer into clinical practice. Academy institutes such as the Institute of Experimental Medicine, Institute of Microbiology, and Institute of Organic Chemistry and Biochemistry belonged to this wider translational landscape. The ecosystem function here was clear. EATRIS-CZ helped organise the difficult middle space between discovery and clinical use. It did not turn every discovery into a therapy, but it created a framework in which promising results could be evaluated, validated, and moved forward more systematically. This was one of the most important changes in Czech biomedical innovation after 1993 (*EATRIS, n.d.; EATRIS-CZ, n.d.*).

The state also shaped the life-science innovation ecosystem through policy and funding. The National Research and Innovation Strategy for Smart Specialisation, or RIS3, directed support towards priority areas with potential to create long-term competitive advantage through knowledge exploitation and innovation. This mattered for the Academy because public research organisations operate within national strategies even when they retain scientific autonomy. Life sciences, biotechnology, pharmaceuticals, diagnostics, medical technologies,

and related fields became part of the Czech Republic's ambition to strengthen knowledge-based competitiveness. CzechInvest's Tech4Life framing similarly presented the life-science sector as supported by patent protection, GMP, GLP and GCP standards, genetic-engineering regulation aligned with the European environment, R&D infrastructure, and government support for knowledge transfer between science and business. Such policy language shows that life sciences were no longer viewed only as academic disciplines. They became part of industrial, health, and competitiveness policy. The Academy's role was to supply the research depth and credibility that such policy ambitions required (*National RIS3 Strategy, 2021; CzechInvest, n.d.*).

The Czech innovation ecosystem also included national agencies and support instruments beyond the Academy itself. CzechInvest, Technology Incubation, venture funds, regional innovation centres, university transfer offices, and European programmes all contributed to the environment in which Academy discoveries could move towards application. Technology Incubation, for example, aimed to support innovative technology companies and develop the start-up ecosystem in strategic sectors. Such instruments are important because the life sciences require more than excellent science. They need entrepreneurship, mentoring, investment readiness, regulatory planning, and access to markets. For Academy-linked projects, these instruments could provide routes beyond the institute. At the same time, the Academy's contribution remained distinctive. It was not an incubator, investment agency, or ministry. Its value lay in producing high-quality knowledge and infrastructural capacity that other actors could help translate. The innovation ecosystem worked best when each actor understood its own function and cooperated without trying to replace the others (*CzechInvest, 2022; Technology Incubation, n.d.*).

The emergence of i&i Prague and the i&i Biotech Fund strengthened the entrepreneurial side of Czech life sciences. i&i Prague acted as a biotech incubator and venture builder, supporting spin-offs and early-stage academic projects. The i&i Biotech Fund focused on European life-science companies in areas such as drug discovery, medtech, diagnostics, and artificial intelligence. This was significant because early-stage biotechnology often suffers from a funding gap. Academic grants may support discovery, but they rarely provide the resources needed for company formation, regulatory planning, proof-of-concept development, or investor engagement. Large pharmaceutical companies may not enter until the risk is lower. Specialised venture funds and incubators can occupy this difficult middle zone. Their emergence around IOCB and the wider Czech academic environment indicates that life sciences had become one of the few areas where Czech research could plausibly generate a more complete innovation chain. For the Academy, this meant that its discoveries could enter entrepreneurial pathways without forcing research institutes themselves to become commercial firms (*i&i Prague, n.d.; i&i Bio, n.d.; CzechInvest, 2021*).

The place of life sciences in the innovation ecosystem was also strengthened by internationalisation. Czech biotechnology and biomedical research could not rely solely on the domestic market. The country's scientific capacity was strong, but the scale of pharmaceutical development, venture capital, clinical validation, and global competition required international partners. IOCB Boston represented this recognition. By opening a branch in one of the world's leading biotechnology hubs, IOCB Prague positioned Czech academic projects closer to American investors, companies, and development networks. European infrastructures and EU programmes performed a similar function at the continental level. They connected Czech laboratories to shared standards, facilities, data systems, clinical networks,

and funding streams. The result was a multi-level ecosystem: Czech in institutional roots, European in policy and infrastructure, and global in application potential. This international structure was not a luxury. In life sciences, serious innovation almost always depends on cross-border development pathways (*IOCB Prague, 2024; European Commission, 2025*).

The innovation ecosystem also redefined the relationship between public and private value. Life-science discoveries can produce commercial products, but their public meaning is broader. An antiviral medicine, diagnostic test, biomaterial, disease model, biodiversity database, plant-resilience tool, or microbial technology may serve society in ways that cannot be measured only by revenue. The Academy's public character made this distinction important. It had to participate in commercialisation where appropriate, but it also had to defend research whose value was social, medical, environmental, or strategic rather than immediately profitable. Strategy AV21 expressed this broader orientation through the motto of top research in the public interest. Its programmes linked Academy institutes with universities, industry, the state, and the public sector around contemporary societal challenges. This framework complemented technology transfer by reminding policymakers and researchers that innovation is not identical with commercialisation. Public-interest research can produce policy tools, expert advice, methods, infrastructures, standards, and long-term preparedness. In the life sciences, such outputs may be as important as market products (*Strategy AV21, n.d.; Czech Academy of Sciences, 2026*).

The life sciences therefore occupied a distinctive position between market innovation and public-good innovation. Biomedical compounds, diagnostics, and biotechnology platforms may move through patents, licences, spin-offs, investors, and companies. Ecological expertise, biodiversity monitoring, plant-health knowledge, public-health preparedness, and environmental risk assessment may move through public agencies, conservation authorities, agricultural practice, or international policy bodies. Both forms belong to the innovation ecosystem, but they operate through different channels. The Academy's life-science institutes participated in both. IOCB, IBT, IMG, and related biomedical infrastructures were strongly connected with commercial or translational pathways. The Institute of Botany, Biology Centre, Institute of Experimental Botany, and ecological institutes contributed to environmental and public-policy innovation. The Czech innovation ecosystem is therefore best understood not as a single market pipeline, but as a plural system of knowledge use. The Academy's institutional breadth allowed it to contribute to this plurality (*Institute of Botany of the Czech Academy of Sciences, n.d.; Biology Centre CAS, n.d.; Institute of Experimental Botany of the Czech Academy of Sciences, n.d.*).

The innovation ecosystem also depended on trust between researchers and non-academic partners. Scientists may fear that industry will restrict publication, distort priorities, or appropriate public knowledge. Companies may fear that academic partners lack development discipline, deadlines, or market awareness. Hospitals may fear that research projects will not respect clinical realities. Public agencies may fear that scientific recommendations will be too uncertain for policy use. Technology-transfer organisations, translational infrastructures, and joint centres help manage these tensions. They create rules, contracts, expectations, and shared processes. In post-1993 Czech life sciences, this trust had to be built gradually. It could not be inherited from the socialist system, where state ownership and planning had produced a very different kind of relationship between research and production. Trust in the new ecosystem required professional mediation, successful examples, and repeated cooperation.

The Academy's strongest cases, especially IOCB and BIOCEV, helped demonstrate that such trust was possible (*IOCB Tech, n.d.; BIOCEV, n.d.*).

The human dimension of innovation should not be underestimated. Life-science ecosystems are built by people who can move between institutional cultures. Doctoral students, postdoctoral researchers, facility managers, technology-transfer officers, clinician-scientists, entrepreneurs, project managers, patent lawyers, investors, and public-policy experts all contribute to the route from discovery to use. After 1993, Czech Academy institutes became increasingly involved in training such people, even when formal degrees remained the responsibility of universities. A student trained in an Academy laboratory may later work in a hospital research unit, a biotechnology start-up, a university department, a technology-transfer office, or an international company. These career paths are part of the innovation ecosystem because they carry knowledge across boundaries. The Academy's life-science institutes therefore contributed not only discoveries and infrastructures, but also human capital. This contribution is often less visible than a patent or a spin-off, but it is fundamental. Without trained people able to operate in different environments, innovation ecosystems remain institutional diagrams rather than living systems (*BIOCEV, n.d.; EATRIS-CZ, n.d.*).

The regional dimension also shaped the place of life sciences in innovation. Prague was central because of IOCB, Charles University, BIOCEV, IMG, and several major infrastructures. Brno was important through Masaryk University, CEITEC, the Institute of Biophysics, hospitals, and technological initiatives. Olomouc contributed through Palacký University and translational medicine. České Budějovice and South Bohemia were important for ecology, parasitology, freshwater biology, plant science, and the Biology Centre. This distributed geography mattered because innovation ecosystems are not only national; they are regional. Proximity among institutes, universities, firms, hospitals, and public agencies helps ideas move. At the same time, strong national and European networks prevent regional fragmentation. The Academy's life-science institutes contributed to this multi-centre geography. They helped ensure that Czech innovation was not reduced to one city or one sector. This regional spread also corresponded to the diversity of life sciences themselves, from biomedical laboratories to field ecology and agricultural landscapes (*CzechInvest, n.d.; Biology Centre CAS, n.d.*).

The life-science innovation ecosystem was also shaped by regulation and standards. Biomedical innovation requires Good Manufacturing Practice, Good Laboratory Practice, Good Clinical Practice, ethical review, animal-welfare rules, data protection, clinical-trial regulation, and patent law. Plant biotechnology and synthetic biology require biosafety rules and public communication. Environmental biotechnology requires ecological assessment and regulatory oversight. These standards can be burdensome, but they are also conditions of trust. A diagnostic test, therapy, biomaterial, or genetically modified tool cannot enter responsible use without validation and governance. CzechInvest's description of the life-science sector emphasised patent protection, GMP, GLP, GCP standards, and alignment with the European regulatory environment. For the Academy, this meant that practical application required partners and professionals who understood regulation. Scientists could not simply assume that a good result would move into use. Innovation had to be compatible with law, ethics, safety, and quality assurance (*CzechInvest, n.d.; EATRIS, n.d.*).

Synthetic biology illustrates both the promise and the sensitivity of life-science innovation. It combines biology, engineering, genetics, computation, and design-oriented thinking, and it can support medicine, materials, agriculture, environmental technologies, and industrial

processes. Yet it also raises questions of biosafety, public acceptance, ethical limits, and governance. Czech discussions of synthetic biology have recognised the need to build community, capacity, and public understanding. This is important because innovation ecosystems are not built only through investment and laboratories. They also depend on social legitimacy. Public uncertainty about genetic modification, biotechnology, or biological engineering can affect policy, funding, and adoption. The Academy's role includes not only research but also informed public dialogue. Life-science innovation must be explained, debated, and governed if it is to retain democratic legitimacy (*Juračka et al., 2024; Strategy AV21, n.d.*).

The Academy's place in the innovation ecosystem was therefore not the same as that of a private biotechnology company. A company must focus on development, product strategy, investment, and market success. The Academy must focus on knowledge, excellence, continuity, public responsibility, and the conditions that make future innovation possible. When it participates in technology transfer or spin-offs, it does so from this public-research identity. This distinction matters because the Academy's legitimacy would be weakened if it measured itself only by commercial outputs. Its strongest contribution to the ecosystem is the production of deep, reliable, and often long-term knowledge. Some of that knowledge becomes commercial. Some becomes public-health capacity. Some becomes environmental expertise. Some becomes training. Some becomes infrastructure. Some remains fundamental until future conditions reveal its usefulness. The Academy's innovation role is therefore broader than product generation. It is the cultivation of a knowledge base from which different forms of value can emerge (*Czech Academy of Sciences, n.d.; Strategy AV21, n.d.*).

The COVID-19 pandemic provided a dramatic demonstration of this broader ecosystem role. Molecular testing, diagnostic development, genomic surveillance, behavioural research, modelling, materials analysis, and technology-transfer support all became part of crisis response. Many of these capacities had been created for research and innovation before the crisis. The pandemic showed that life-science infrastructures and expertise can become public-health resilience. This experience changed the public meaning of innovation. Innovation was no longer only about competitiveness or start-ups; it was also about the ability of society to respond to emergency. Academy institutes contributed because they had maintained capacities that could be redirected quickly. The lesson for the innovation ecosystem was clear: long-term public research is a strategic reserve. It supports economic development in normal times and national resilience in crises (*Academy of Sciences of the Czech Republic, 2020; Šúri et al., 2025*).

The life sciences also exposed the limits of a narrow innovation policy. If policy focuses only on immediate commercialisation, it may neglect taxonomy, ecology, public health, basic physiology, long-term monitoring, or fundamental molecular mechanisms whose value appears later. If policy focuses only on publication metrics, it may neglect transfer, validation, public engagement, and user needs. The Academy's experience suggests that a mature innovation ecosystem must support multiple temporalities. Some projects move quickly to application; others require decades. Some require patents; others require open data. Some need industrial partners; others need public agencies or conservation authorities. Life sciences are diverse enough to make this plurality visible. The Academy's task was not to force all research into one innovation model, but to maintain an institutional environment where different routes to value could coexist (*National RIS3 Strategy, 2021; Strategy AV21, n.d.*).

By the 2020s, the Czech life-science innovation ecosystem had become more complete than it had been in the early 1990s. It included strong Academy institutes, research universities, modern infrastructures, university hospitals, technology-transfer offices, incubators, venture funds, European research networks, national strategies, and international partners. It also included weaknesses: limited domestic pharmaceutical scale, uneven venture capital compared with larger countries, administrative burdens, competition for talent, and the continuing difficulty of moving discoveries through expensive development phases. A serious institutional history must recognise both sides. The progress was substantial, but the ecosystem remained dependent on international links and long-term public investment. The Academy's life sciences occupied a central place in this system because they provided scientific depth, credibility, and continuity. Without them, the innovation ecosystem would be thinner, more dependent on imported knowledge, and less capable of producing original Czech contributions (*CzechInvest, n.d.; i&i Bio, n.d.; European Commission, 2025*).

The historical meaning of life sciences in the innovation ecosystem is therefore larger than biotechnology alone. It concerns the transformation of the Academy's relationship with society. In earlier chapters of the Academy's history, the central questions concerned national culture, state authority, ideological control, autonomy, and institutional survival. After 1993, these questions did not disappear, but they were joined by a new one: how can a public academy contribute to a knowledge-based democratic economy without losing the independence and depth that make it valuable? The life sciences offered one of the most persuasive answers. They showed that public research can produce discoveries, infrastructures, people, methods, companies, diagnostics, therapies, public-health capacity, environmental expertise, and policy-relevant knowledge. They also showed that such contributions require autonomy, not obedience to short-term political or market demand. The Academy's place in the innovation ecosystem was strongest when it remained scientifically ambitious and publicly accountable at the same time.

Thus, the place of life sciences in the innovation ecosystem after 1993 reveals the Czech Academy's movement from institute-based public research towards connected, application-capable, and internationally embedded knowledge production. Life sciences became a strategic field because they linked molecular discovery, biomedical need, environmental responsibility, biotechnology, public health, venture creation, research infrastructures, and European innovation policy. IOCB Prague, IOCB Tech, i&i Prague, i&i Bio, BIOCEV, EATRIS-CZ, CZ-OPENSCREEN, Czech-BioImaging, ELIXIR CZ, the Czech Centre for Phenogenomics, Strategy AV21, RIS3 priorities, CzechInvest initiatives, universities, hospitals, and industry all formed parts of this ecosystem. The Academy did not become an industrial corporation, and its strongest function remained the production of deep public knowledge. Yet it learned to create pathways through which knowledge could become diagnostics, therapeutics, materials, tools, companies, public expertise, and crisis capacity. This history shows that innovation in the life sciences is not a sudden leap from laboratory to market, but a long institutional process in which autonomy, infrastructure, policy, trust, capital, regulation, and scientific excellence must work together.

References

Academy of Sciences of the Czech Republic. (2020). *The Czech Academy of Sciences tests samples, develops new tests and advises with economics*. CAS.

Academy of Sciences of the Czech Republic. (2020). *The Czech Academy of Sciences tests samples, develops protective materials and advises with economics*. CAS.

Academy of Sciences of the Czech Republic. (2022). *COVID-19 strain BA.5 is on the rise. What do we know about it?* CAS.

Academy of Sciences of the Czech Republic. (2022). *Doctors fully trust the vaccines. People do not know that*. CAS.

Academy of Sciences of the Czech Republic. (2022). *Tropical biologist Vojtěch Novotný's research forays into Papua New Guinea*. CAS.

Academy of Sciences of the Czech Republic. (2023). *The Biology Centre of the CAS will strengthen plant research*. CAS.

Academy of Sciences of the Czech Republic. (2024). *IOCB Prague expands overseas, opens a new branch in Boston*. CAS.

Academy of Sciences of the Czech Republic. (2026). *Four CAS projects get ERC Consolidator Grants, each to receive two million euros*. CAS.

Academy of Sciences of the Czech Republic. (2026). *The CAS launches new research programs as part of its Strategy AV21*. CAS.

Academy of Sciences of the Czech Republic. (n.d.). *Evolution, alive and well: What lies at the heart of biodiversity?* CAS.

Academy of Sciences of the Czech Republic. (n.d.). *History overview*. CAS.

ALTER-Net. (n.d.). *Biology Centre, Academy of Sciences of the Czech Republic (BC-CAS)*. ALTER-Net: Europe's Ecosystem Research Network.

Antol, M., Marek, J., Capandová, M., Juráček, J., & Matyska, L. (2024). EOSC CZ: Towards the development of Czech national ecosystem for FAIR research data. *arXiv*.

Bartoš, V., Bauer, M., Cahlíková, J., Chytilová, J., & Želinský, T. (2022). Communicating doctors' consensus persistently increases COVID-19 vaccinations. *Nature, 606*, 542–549.

BIOCEV Gene Core. (2020). *COVID-19 testing*. BIOCEV Gene Core Facility.

BIOCEV. (n.d.). *BIOCEV: Biotechnology and Biomedicine Centre of the Academy of Sciences and Charles University*. BIOCEV.

Biology Centre CAS. (2013). *Research activities of the Institute of Entomology*. Biology Centre of the CAS.

Biology Centre CAS. (2019). *Newcomers play cryptic: The impacts of invasive species are often difficult to predict*. Biology Centre of the CAS.

Biology Centre CAS. (2022). *Big-data world brings revolution to movement ecology*. Biology Centre of the CAS.

Biology Centre CAS. (2025). *Global science faces persistent geographic disparities*. Biology Centre of the CCAS.

Biology Centre CAS. (2025). *How the arts and science can jointly protect nature*. Biology Centre of the CAS.

Biology Centre CAS. (n.d.). *Biology Centre CAS*. Biology Centre of the CAS.

Biology Centre CAS. (n.d.). *Homepage*. Biology Centre of the CAS.

Biology Centre CAS. (n.d.). *Structural funds*. Biology Centre of the CAS.

Charles University. (n.d.). *First Faculty of Medicine: Science and research*. Charles University.

Chytrý, M. (2012). Vegetation of the Czech Republic: Diversity, ecology, history and dynamics. *Preslia, 84*(3), 427–504.

Czech Academy of Sciences. (2026). *Research institutes*. CAS.

Czech Academy of Sciences. (2026). *The CAS launches new research programs as part of its Strategy AV21*. CAS.

Czech Academy of Sciences. (n.d.). *European Research Area Section of the Division of International Cooperation*. CAS.

Czech Academy of Sciences. (n.d.). *Statutes of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (n.d.). *The Czech Academy of Sciences*. CAS.

Czech Centre for Phenogenomics. (n.d.). *Czech Centre for Phenogenomics*. Czech Centre for Phenogenomics.

Czech-BioImaging. (n.d.). *Czech-BioImaging: National research infrastructure for biological and medical imaging*. Czech-BioImaging.

CzechInvest. (2021). *Over 38 million EUR for Czech biotechnology start-ups*. CzechInvest.

CzechInvest. (2022). *CzechInvest seeks innovative startups for Technology Incubation*. CzechInvest.

CzechInvest. (n.d.). *Strong focus on R&D*. CzechInvest.

CzechInvest. (n.d.). *Tech4Life*. CzechInvest.

CZ-OPENSCREEN. (2026). *CZ-OPENSCREEN User Project Support Program*. Institute of Molecular Genetics of the CAS.

CZ-OPENSCREEN. (n.d.). *CZ-OPENSCREEN: National infrastructure for chemical biology*. CZ-OPENSCREEN.

Danihelka, J., Chytrý, M., Kaplan, Z., Wild, J., Holubová, D., Novotný, P., Řezníčková, M., Rohn, M., Dřevojan, P., Grulich, V., Klimešová, J., Lepš, J., Lososová, Z., Pergl, J., Sádlo, J., Šmarda, P., Štěpánková, P., Tichý, L., Axmanová, I., … Pyšek, P. (2021). Pladias Database of the Czech Flora and Vegetation. *Preslia, 93*, 1–87.

EATRIS. (n.d.). *About EATRIS*. European Infrastructure for Translational Medicine.

EATRIS. (n.d.). *EATRIS: European infrastructure for translational medicine*. EATRIS.

EATRIS-CZ. (n.d.). *Czech National Node to the European Infrastructure for Translational Medicine*. EATRIS-CZ.

EATRIS-CZ. (n.d.). *Home*. Czech National Node of the European Infrastructure for Translational Medicine.

EATRIS-CZ. (n.d.). *Institute of Microbiology of the Czech Academy of Sciences*. Czech National Node of the European Infrastructure for Translational Medicine.

ECDC. (2023). *SARS-CoV-2 variant surveillance in the Czech Republic*. European Centre for Disease Prevention and Control.

ELIXIR CZ. (n.d.). *ELIXIR: The Czech Republic Node*. ELIXIR CZ.

EMBL ARISE. (n.d.). *Institute of Biotechnology of the Czech Academy of Sciences*. European Molecular Biology Laboratory.

ENRIO. (2026). *Country report: Czech Republic*. European Network of Research Integrity Offices.

ESFRI. (2020). *Research infrastructures against COVID-19 pandemic*. European Strategy Forum on Research Infrastructures.

European Commission. (2025). *Choose Europe for life sciences: A strategy for a strong and competitive European life sciences sector*. European Commission.

European Commission. (2026). *European Research Area*. European Commission.

European Medicines Agency. (2023). *COVID-19 public health emergency of international concern (2020–2023)*. European Medicines Agency.

European Research Council. (2022). *Information for applicants to the Horizon Europe European Research Council frontier research grants*. European Commission.

European Research Council. (n.d.). *European Research Council*. European Research Council.

Gilead Sciences. (2006). *Gilead Sciences and the Institute of Organic Chemistry and Biochemistry establish new academic research centre in Prague*. Gilead Sciences.

Gilead Sciences. (2011). *Gilead extends its funding support for the Gilead Sciences Research Centre at the Institute of Organic Chemistry and Biochemistry in Prague*. Gilead Sciences.

Hejnar, J. (2017). Jan Svoboda (1934–2017): Sixty years with retroviruses. *Retrovirology, 14*, Article 28.

Horizon Europe Portal. (2026). *European Research Area: Czech Republic and ERA*. Technology Centre Prague.

i&i Bio. (n.d.). *i&i Bio: Early-stage biotech venture capital*. i&i Bio.

i&i Prague. (n.d.). *i&i Prague: Biotech incubator and venture builder*. i&i Prague.

INFRAFRONTIER. (n.d.). *Czech Centre for Phenogenomics (CCP)*. INFRAFRONTIER.

Institute of Animal Physiology and Genetics CAS. (n.d.). *About institute*. Institute of Animal Physiology and Genetics of the CAS.

Institute of Animal Physiology and Genetics CAS. (n.d.). *Press release: Small blood particles and Huntington's disease*. Institute of Animal Physiology and Genetics of the CAS.

Institute of Biophysics of the Czech Academy of Sciences. (n.d.). *Institute of Biophysics of the Czech Academy of Sciences*. Institute of Biophysics of the CAS.

Institute of Biotechnology of the Czech Academy of Sciences. (n.d.). *Institute of Biotechnology of the Czech Academy of Sciences*. Institute of Biotechnology of the CAS.

Institute of Botany of the Czech Academy of Sciences. (2026). *Institute of Botany is represented in the Intergovernmental Platform IPBES*. Institute of Botany of the CAS.

Institute of Botany of the Czech Academy of Sciences. (n.d.). *Department of Evolutionary Plant Biology*. Institute of Botany of the CAS.

Institute of Botany of the Czech Academy of Sciences. (n.d.). *Department of Invasion Ecology*. Institute of Botany of the CAS.

Institute of Botany of the Czech Academy of Sciences. (n.d.). *History of the Institute of Botany*. Institute of Botany of the CAS.

Institute of Botany of the Czech Academy of Sciences. (n.d.). *Institute of Botany of the Czech Academy of Sciences*. Institute of Botany of the CAS.

Institute of Experimental Botany of the Czech Academy of Sciences. (n.d.). *Research*. Institute of Experimental Botany of the CAS.

Institute of Experimental Medicine of the CAS. (2025). *Defective DNA repair: A putative nexus linking immunological diseases, neurodegenerative disorders, and cancer*. Institute of Experimental Medicine of the CAS.

Institute of Experimental Medicine of the CAS. (n.d.). *Basic information*. Institute of Experimental Medicine of the CAS.

Institute of Experimental Medicine of the CAS. (n.d.). *Homepage*. Institute of Experimental Medicine of the CAS.

Institute of Experimental Medicine of the CAS. (n.d.). *Project EATRIS-CZ*. Institute of Experimental Medicine of the CAS.

Institute of Experimental Medicine of the CAS. (n.d.). *Study and careers*. Institute of Experimental Medicine of the CAS.
Institute of Macromolecular Chemistry of the CAS. (n.d.). *Biomaterials and bioanalogous systems: Research*. Institute of Macromolecular Chemistry of the CAS.
Institute of Macromolecular Chemistry of the CAS. (n.d.). *Institute of Macromolecular Chemistry, Czech Academy of Sciences*. Institute of Macromolecular Chemistry of the CAS.
Institute of Microbiology of the CAS. (n.d.). *BIOCEV*. Institute of Microbiology of the CAS.
Institute of Microbiology of the CAS. (n.d.). *Czech National Node of the European Infrastructure for Translational Medicine EATRIS-CZ*. Institute of Microbiology of the CAS.
Institute of Microbiology of the CAS. (n.d.). *Institute of Microbiology of the CAS*. Institute of Microbiology of the CAS.
Institute of Molecular Genetics of the CAS. (2015). *The scientific centre BIOCEV starts operation*. Institute of Molecular Genetics of the CAS.
Institute of Molecular Genetics of the CAS. (2020). *Beginning of COVID-19 testing at the Institute of Molecular Genetics of the Czech Academy of Sciences*. Institute of Molecular Genetics of the CAS.
Institute of Molecular Genetics of the CAS. (2020). *IOCB Tech donates 7 million CZK to fight coronavirus*. Institute of Molecular Genetics of the CAS.
Institute of Molecular Genetics of the CAS. (2025). *Czech-BioImaging: Ten years of bringing cutting-edge imaging technologies*. Institute of Molecular Genetics of the CAS.
Institute of Molecular Genetics of the CAS. (n.d.). *Facts and figures*. Institute of Molecular Genetics of the CAS.
Institute of Molecular Genetics of the CAS. (n.d.). *History of the Institute*. Institute of Molecular Genetics of the CAS.
Institute of Molecular Genetics of the CAS. (n.d.). *Pillars of our research*. Institute of Molecular Genetics of the CAS.
Institute of Molecular Genetics of the CAS. (n.d.). *Research and service groups*. Institute of Molecular Genetics of the CAS.
Institute of Molecular Genetics of the CAS. (n.d.). *Research infrastructures*. Institute of Molecular Genetics of the CAS.
Institute of Organic Chemistry and Biochemistry of the CAS. (2017). *i&i Prague: A new platform for commercialization of Czech research results*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry of the CAS. (2021). *License for new precision test for antibodies protecting against coronavirus*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry of the CAS. (n.d.). *Acyclic nucleoside phosphonates*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry of the CAS. (n.d.). *Gilead Sciences Research Centre*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry of the CAS. (n.d.). *History*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Organic Chemistry and Biochemistry of the CAS. (n.d.). *Successful compounds*. Institute of Organic Chemistry and Biochemistry of the CAS.
Institute of Physiology of the CAS. (n.d.). *Institute of Physiology of the Czech Academy of Sciences*. Institute of Physiology of the CAS.

Institute of Plant Molecular Biology of the Biology Centre CAS. (n.d.). *Homepage*. Institute of Plant Molecular Biology, Biology Centre of the CAS.

IOCB Prague. (2017). *i&i Prague: A new platform for commercialisation of Czech research results*. Institute of Organic Chemistry and Biochemistry of the CAS.

IOCB Prague. (2024). *IOCB Prague expands overseas, opens a new branch in Boston*. Institute of Organic Chemistry and Biochemistry of the CAS.

IOCB Prague. (n.d.). *Tech transfer*. Institute of Organic Chemistry and Biochemistry of the CAS.

IOCB Tech. (n.d.). *IOCB Tech*. Institute of Organic Chemistry and Biochemistry of the CAS.

IPBES. (n.d.). *Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. IPBES.

Iványi, P. (2003). Milan Hašek and the discovery of immunological tolerance. *Nature Reviews Immunology, 3*(7), 591–597.

Juračka, S., Levíčková, A., Matoušek, J., & Dvořák, P. (2024). Building the SynBio community in the Czech Republic. *Synthetic Biology, 9*(1), ysae021.

Kopecký, J. (2015). Recent development of biomedical research at the Institute of Physiology of the Czech Academy of Sciences in Prague. *Physiological Research, 64*(5), 595–609.

Leydesdorff, L., Wagner, C. S., Park, H. W., & Adams, J. (2013). International collaboration in science: The global map and the network. *El Profesional de la Información, 22*(1), 87–94.

Masaryk University. (2025). *The invisible biodiversity crisis: Global study reveals "dark diversity" of plants*. Faculty of Science, Masaryk University.

National RIS3 Strategy. (2021). *National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027*. Ministry of Industry and Trade of the Czech Republic.

Novotný, V., & Toko, P. (2015). Ecological research in Papua New Guinean rainforests: Insects, plants and people. In J. E. Bryan & P. L. Shearman (Eds.), *The state of forests of Papua New Guinea: Measuring change over the period 2002–2014* (pp. 71–85). University of Papua New Guinea.

OECD. (2023). *COVID-19 and science for policy and society*. OECD Publishing.

Pärtel, M., Tamme, R., Carmona, C. P., Riibak, K., Moora, M., Bennett, J. A., Chiarucci, A., Chytrý, M., de Bello, F., Eriksson, O., Harrison, S., Lewis, R. J., Moles, A. T., Öpik, M., Price, J. N., & DarkDivNet Consortium. (2025). Global impoverishment of natural vegetation revealed by dark diversity. *Nature*.

Research Infrastructures of the Czech Republic. (n.d.). *Czech National Node to the European Infrastructure for Translational Medicine*. Ministry of Education, Youth and Sports of the Czech Republic.

Research Infrastructures of the Czech Republic. (n.d.). *National infrastructure for chemical biology*. Ministry of Education, Youth and Sports of the Czech Republic.

Sherratt, K., Abbott, S., Meakin, S. R., Hellewell, J., Munday, J. D., Bosse, N. I., CMMID COVID-19 Working Group, & Funk, S. (2023). Exploring surveillance data biases when estimating the reproduction number: With insights into subpopulation transmission of COVID-19 in England. *Philosophical Transactions of the Royal Society B, 378*(1873), Article 20220308.

Strategy AV21. (n.d.). *Top research in the public interest*. CAS.

Šúri, T., et al. (2025). Developing molecular surveillance of SARS-CoV-2 in the Czech Republic. *Scientific Reports, 15*, Article 20442.

Technology Incubation. (n.d.). *Technology innovation, incubation of startups and investing in the future*. CzechInvest.

Tietze, F., Vimalnath, P., Aristodemou, L., & Molloy, J. (2020). Crisis-critical intellectual property: Findings from the COVID-19 pandemic. *IEEE Transactions on Engineering Management, 69*(5), 2031–2045.

University of South Bohemia. (n.d.). *Faculty of Science*. University of South Bohemia.

Weiss, R. A. (2018). Remembering Jan Svoboda: A personal reflection. *Viruses, 10*(4), Article 191.

World Health Organization Regional Office for Europe. (2023). *With the international public health emergency ending, WHO/Europe launches its transition plan for COVID-19*. World Health Organization Regional Office for Europe.

World Health Organization. (2023). *Statement on the 15th meeting of the International Health Regulations (2005) Emergency Committee regarding the coronavirus disease (COVID-19) pandemic*. World Health Organization.

Chapter 12.

Humanities and Social Sciences: Memory, Society, Language, and Culture

The Humanities after Ideology

1. Rebuilding Historical, Philosophical, and Philological Research after 1989

The transformation of the humanities in the Czech lands after 1989 was not merely a change of institutional administration, nor only a correction of research plans imposed by the late socialist state. It was a deeper epistemic and moral reconstruction, because history, philosophy, philology, literary studies and linguistics had all been affected by the ideological architecture of the previous regime in different but interconnected ways. Some fields had been directly subordinated to Marxist-Leninist interpretation, others had survived by cultivating older scholarly traditions in restricted or formally neutral spaces, and still others had preserved intellectual continuity through source editions, dictionaries, textual criticism, archival work and specialised historical research. The Velvet Revolution therefore opened not an empty field, but a complicated landscape in which suppressed traditions, compromised institutions, returning émigrés, internally marginalised scholars and younger researchers had to find a new common language. In this sense, the rebuilding of the humanities was both institutional and biographical: institutes had to be reorganised, but scholarly careers, intellectual reputations and ethical responsibilities also had to be reassessed. The humanities were expected to help society understand the past, yet they themselves had been part of that past and could not simply speak from outside it. This made the post-1989 renewal of the Academy's humanities unusually delicate, because it joined the language of academic freedom with the language of public accountability (*Kopeček & Kolář, 2007*; *Franc & Mádlová, 2014*).

The first task after 1989 was to restore autonomy where ideological supervision had earlier shaped appointments, research priorities, publication opportunities and international contacts. In historical research this meant moving away from prescribed narratives of class struggle, party leadership and teleological progress, while in philosophy it meant re-entering debates from which Czech thought had been partly excluded after the repression of the post-1968 period. In philology and literary studies, the transformation involved a revaluation of authors, genres, editions and interpretative models that had been pushed to the margins or forced into ideologically acceptable forms. The change was not instantaneous, because the inherited Academy consisted of real workplaces, real collections, real editorial projects and real scholars whose work could not be divided simply into "old" and "new". Some researchers had adjusted to ideological conditions; some had resisted quietly through exact scholarship; some had been excluded; and some had entered the field only after the collapse of communist power. The Academy therefore had to avoid two opposite dangers: the mechanical destruction of inherited structures and the complacent continuation of compromised habits. Its humanities institutes became laboratories of selective continuity, where the question was not

whether to preserve or abolish the past, but how to distinguish scholarly value from ideological deformation (*Institute of History of the CAS, n.d.*; *Kopeček & Kolář, 2007*).

The position of history was especially sensitive because modern Czech and Czechoslovak history had been one of the principal symbolic battlegrounds of the socialist state. The communist regime had not simply censored historical writing; it had organised a public memory in which selected events, personalities and social forces were integrated into an official story of national and social liberation. The post-1989 moment therefore generated a powerful demand for "blank spaces" to be filled: the First Republic, the Protectorate, the Holocaust, the expulsion of the German population, Stalinism, the political trials, collectivisation, the Prague Spring, normalisation, dissent and exile all required renewed empirical and interpretative work. Yet this demand for recovery could not automatically produce methodological renewal. As later observers of Czech historiography noted, the sudden freedom to research forbidden topics often initially encouraged the accumulation of facts, documents and testimonies rather than an immediate theoretical revolution (*Kopeček & Kolář, 2007*). This was understandable: a society emerging from censorship first needed reliable knowledge about what had happened. At the same time, the Academy's historians gradually had to move beyond correction and denunciation towards comparative, social, cultural and transnational approaches.

The Institute of History entered the new period with a strong consciousness of injury and continuity. Its earlier development had been marked by the forced restructuring that followed the Prague Spring, when the institute was renamed and many leading historians were removed, marginalised or otherwise punished. The return of democratic conditions after 1989 therefore meant more than a change of title or administrative status; it meant the restoration of scholarly legitimacy to a discipline that had been damaged by political intervention. The leadership of František Šmahel in the early 1990s symbolised this renewal, because Šmahel represented both high professional authority and the memory of scholars who had suffered from the politics of normalisation. Under the new conditions, the Institute of History strengthened international contacts, revived methodological pluralism, and expanded the infrastructure of historical scholarship through editions, bibliographies, encyclopaedic projects and journals (*Institute of History of the CAS, n.d.*). These activities were not secondary to research but formed the very material basis of a renewed historical profession. In a country where archives and historical publications had long been politically filtered, the reconstruction of such infrastructure was itself an act of intellectual emancipation.

The founding of the Institute of Contemporary History in 1990 was one of the clearest signs that the humanities after 1989 were expected to respond directly to the moral and political needs of society. The institute emerged from the post-November conviction that the period from 1938 to 1989 could no longer remain under the shadow of ideological control, selective memory and censorship. Its creation corresponded to a broader European pattern: democratic societies needed specialised institutions capable of studying dictatorship, war, occupation, collaboration, resistance, repression and social transformation with professional distance. Yet in the Czech case the institute also had an immediate civic dimension, because recent history was not a remote academic subject but a living field of personal memories, family traumas, political disputes and institutional responsibilities. The early leadership of Vilém Prečan, with his experience of exile and documentary work, connected domestic renewal with the transnational circulation of sources, methods and contacts (*Institute of Contemporary History of the CAS, n.d.*). From the beginning, the institute's mission stood at the intersection of

archival research, public debate and democratic self-understanding. This made it one of the most visible examples of how the Academy's humanities were rebuilt not only to study the past but to help society regain a truthful relationship with it.

Philosophy underwent a different but equally significant transformation. The Institute of Philosophy of the Czech Academy of Sciences was re-established in 1990 as a restoration of the original institute founded in the Czechoslovak Academy of Sciences in 1953 and dissolved in 1970 for political reasons (*Institute of Philosophy of the CAS, n.d.*). This institutional fact carried strong symbolic weight, because philosophy had been among the fields most directly affected by ideological surveillance after the defeat of the Prague Spring. Marxist-Leninist orthodoxy had attempted to define the legitimate boundaries of philosophical inquiry, while important currents of Czech philosophy, including phenomenology, personalist thought, religious philosophy, analytical tendencies and independent reflections on history and politics, were restricted or displaced into samizdat, exile or private seminars. After 1989, the re-established institute had to restore philosophy as a plural intellectual discipline rather than as a doctrinal service of the state. This meant reconnecting Czech philosophical research with classical studies, medieval thought, Comeniology, philosophy of science, intellectual history and global philosophical debates. It also meant reinterpreting the legacy of figures such as Jan Patočka, whose philosophical and civic significance became newly visible in the democratic public sphere (*Patočka, 1996*; *Institute of Philosophy of the CAS, n.d.*).

The renewal of philosophy was not only a matter of returning prohibited names to reading lists. It required a transformation of the conditions under which philosophical authority was produced. Under state socialism, official philosophy often derived its institutional security from ideological conformity, while unofficial philosophy derived moral prestige from exclusion and risk. After 1989, these two economies of recognition could no longer function in the same way. Philosophers had to publish internationally, teach, participate in grant competitions, organise conferences and enter debates that were no longer defined primarily by the polarity of regime and dissent. This produced new opportunities but also new tensions. Some forms of dissident authority did not automatically translate into the routines of professional academic philosophy, while younger researchers increasingly measured themselves against international standards, peer review and specialised scholarship. The Institute of Philosophy thus became a site where moral memory, national intellectual tradition and professional internationalisation had to be held together without allowing any one of them to dominate completely.

Philological research after 1989 followed a slower and more cumulative rhythm, because much of its strength lay in long-term projects that could not be remade through political declaration. The study of language, texts and literary history had preserved a degree of scholarly continuity even under restrictive conditions, especially where exact editorial, lexicographical or historical-philological work could be defended as specialised expertise. Yet philology was also deeply connected to cultural identity, and in the Czech context language and literature had long functioned as foundations of national self-understanding. After the Velvet Revolution, this older national role did not disappear, but it had to be reinterpreted in a democratic and European framework. The Czech language was no longer to be treated as a symbolic possession guarded against ideological or foreign threats, but as a living historical and social phenomenon requiring empirical, comparative and public-facing research. Likewise, literary studies could no longer be limited by politically approved canons, but had to recover exile literature, samizdat, religious writing, suppressed modernism, minority voices

and forms of cultural transfer. The rebuilding of philology therefore combined the restoration of continuity with a widening of the cultural archive.

The Czech Language Institute represented one of the clearest examples of long institutional continuity across very different political regimes. Its roots reached back to the lexicographical work of the Czech Academy of Sciences and Arts, especially the effort to prepare a major explanatory dictionary of the national language. After the Second World War, the former dictionary office was transformed into a research institute with wider tasks in dialectology, language history and contemporary standard Czech. After the creation of the Czechoslovak Academy of Sciences, it became one of the anchor institutes of the new academic system, and after 1992 it formed part of the Czech Academy of Sciences as the Czech successor institution (*Czech Language Institute, n.d.*). The post-1989 return of František Daneš to the directorship had particular significance because it connected the democratic renewal with the high tradition of Czech linguistic scholarship. Linguistic research after 1989 did not need to be "liberated" in the same dramatic way as contemporary history, but it did need to redefine its public role in a society moving from ideological uniformity to plural communication. Questions of standard language, language cultivation, dictionaries, dialects, public usage and linguistic advice acquired new significance in a democratic media environment.

The Institute of Czech Literature also stood at the crossroads of continuity and reinterpretation. Founded in the post-war period and incorporated into the Czechoslovak Academy of Sciences in 1953, it had undergone its own institutional changes during the socialist decades, including the transformation into the Institute for Czech and World Literature in 1970 (*Institute of Czech Literature of the CAS, n.d.*). After 1989, literary scholarship had to address a canon that had been distorted by censorship, ideological selection and the separation of official, samizdat and exile cultures. This required not simply the addition of forbidden authors to existing narratives, but a more fundamental reconsideration of how Czech literature had developed under conditions of discontinuity, exile, multilingual contact and political pressure. Scholars had to reconstruct publication histories, textual variants, reception contexts and networks of writers who had lived between official institutions and unofficial circulation. The Academy's literary researchers therefore became custodians of a fractured cultural memory. Their work helped to reconnect Czech literature with the complexity of 20th-century experience, including modernism, Catholic literature, Jewish cultural memory, underground writing, exile publishing and dissident intellectual life.

One of the most important features of the post-1989 humanities was the rehabilitation of scholarly infrastructure. In the natural sciences, infrastructure often means laboratories, instruments and experimental facilities; in the humanities, it often means archives, catalogues, dictionaries, bibliographies, critical editions, source series, scholarly journals and specialised libraries. These forms of infrastructure are less spectacular than machines or laboratories, but they are indispensable for disciplined knowledge. After decades of restricted access, selective publication and disrupted international exchange, the renewal of such infrastructure was a major condition of intellectual freedom. The Institute of History's emphasis on bibliographies, encyclopaedic work and source editions, the Czech Language Institute's lexicographical and advisory functions, the Institute of Czech Literature's textual and documentary work, and the Institute of Contemporary History's publication series all belonged to this broader reconstruction (*Institute of History of the CAS, n.d.*; *Czech Language Institute, n.d.*; *Institute of Contemporary History of the CAS, n.d.*). In this sense, rebuilding the

humanities was not only a matter of changing interpretations. It was also the patient rebuilding of the tools through which future interpretations would become possible.

The Academy's humanities after 1989 also had to renegotiate their relationship with universities. Under state socialism, the Academy had often functioned as a centralised research sector distinct from university teaching, although individual scholars participated in education in various ways. After the transition, this separation became less rigid. Doctoral education, joint projects, teaching, supervision and cooperation with faculties became increasingly important, especially as younger scholars entered research careers under new conditions. The CAS itself later emphasised the participation of Academy researchers in doctoral study programmes and university teaching as part of its mission (*Academy of Sciences of the Czech Republic, n.d.*). For the humanities, this relationship was particularly important because fields such as history, philosophy, philology and literary studies depend heavily on the formation of interpretative communities across generations. The Academy offered research continuity, editorial infrastructure and specialised projects, while universities provided student communities, teaching environments and broader disciplinary reproduction. The post-1989 system therefore required not only institutional reform inside the Academy but a rebalancing of the whole Czech scholarly ecosystem.

Internationalisation was another key dimension of rebuilding. Before 1989, international contacts had existed, but they were uneven, politically filtered and often limited by travel restrictions, ideological suspicion and the division between official and unofficial scholarly networks. After the Velvet Revolution, Czech humanities scholars entered European and global debates with a mixture of enthusiasm, backlog and asymmetry. They needed to translate Czech topics into internationally intelligible questions, but also to resist the danger of becoming merely a regional case study for Western theoretical frameworks. Historical research on communism, nationalism, memory, dictatorship, exile and transformation attracted international attention, while philosophy reconnected with European traditions and philology participated in comparative, Slavic, textual and digital projects. The Institute of Contemporary History, for example, quickly developed international cooperation and acquired a reputation in modern and contemporary history (*Institute of Contemporary History of the CAS, n.d.*). Yet internationalisation was not simply a technical achievement. It forced Czech scholars to ask how national scholarly traditions could remain meaningful within a wider European space without retreating into provincialism.

The post-1989 transformation also changed the status of archives. Archival access was one of the most visible forms of intellectual liberation, especially for historians of the 20th century. Files that had been inaccessible, selectively used or ideologically interpreted could now become the basis for new research into state security, party rule, political repression, cultural policy, exile, religious life and everyday socialism. However, archival freedom brought its own methodological problems. Documents produced by authoritarian institutions could not simply be treated as transparent truth; they had to be read critically as records shaped by surveillance, bureaucratic categories, fear, self-protection and institutional interests. The humanities therefore had to combine the excitement of access with renewed source criticism. This was especially important in contemporary history, where archival discoveries often entered public debate before being fully contextualised. The Academy's role was to slow down the rush from document to judgement by insisting on method, comparison and historical interpretation.

Rebuilding the humanities also meant rethinking the relationship between scholarship and national identity. Czech historical and philological research had long been connected with the formation and preservation of national culture, from the learned societies of the 18th and 19th centuries to the Academy institutions of the 20th century. After 1989, this mission could not simply be abandoned, because language, literature, history and philosophy remained essential to cultural self-understanding. Yet the older national mission had to be freed from both romantic idealisation and socialist instrumentalisation. The democratic humanities had to show that national culture was not a closed essence but a historically changing field shaped by conflict, plurality, translation, migration, religious diversity, social hierarchy and international exchange. This was particularly important in the Czech lands, where German, Jewish, Slovak, Austrian, Central European and broader European contexts were inseparable from Czech history and culture (*Agnew, 2004*; *Sayer, 1998*). The Academy's humanities institutes could therefore serve national culture best not by simplifying it, but by making its complexity visible.

The reassessment of academic elites formed another layer of transformation. The fall of the regime raised difficult questions about responsibility, collaboration, exclusion and rehabilitation. Some scholars had been removed from institutions after 1968 and could now return or be publicly recognised; others had built careers within official structures and had to adapt to a new moral and professional environment. Lustration, generational replacement and institutional elections changed the personnel structure, but they could not resolve every ambiguity of scholarly life under dictatorship. In the humanities, these questions were especially sharp because the disciplines themselves dealt with truth, interpretation, memory and public meaning. The credibility of historians, philosophers and literary scholars depended not only on technical competence but also on the perceived integrity of their relationship to the past. The Academy's post-1989 renewal therefore involved an implicit ethical re-foundation. It had to show that scholarly authority would henceforth be based on evidence, argument, professional evaluation and openness rather than on political loyalty.

The transformation did not remove all structural problems. Funding cuts, competition for grants, uncertainty over institutional futures and the changing legal status of research organisations affected the humanities as much as other fields. The Academy as a whole had to adapt to new conditions of evaluation, international review and diversified financing. Later, the transformation of Academy institutes into public research institutions under the framework of Act No. 341/2005 gave them a clearer legal form, while also placing them in a modern regime of accountability, governance and public reporting (*Act No. 341/2005 Coll., 2005*). For humanities institutes, this meant that traditional long-term scholarship had to coexist with project-based funding and measurable outputs. The tension was obvious: critical editions, dictionaries, archives and bibliographies often require decades, while evaluation systems tend to reward shorter cycles of publication and international visibility. The post-socialist humanities thus had to defend the value of slow scholarship in a system increasingly shaped by competitive research management.

At the same time, the humanities gained new public importance because Czech society was engaged in an intense reinterpretation of its 20th century. Questions of guilt, victimhood, resistance, collaboration, national continuity and European belonging became part of political and media discourse. Historians were invited to comment on anniversaries, archival revelations, property restitution, memory laws, school curricula and public monuments. Philosophers contributed to debates on democracy, responsibility, civil society, Europe and

the moral meaning of dissent. Linguists addressed questions of public language, standard usage, media communication and education. Literary scholars helped restore suppressed authors and interpret cultural forms that had circulated outside official channels. The Academy's humanities therefore did not retreat into the archive after 1989. They became part of a broader democratic conversation, even when they had to resist simplification, politicisation or moral impatience.

The rebuilding of historical research also involved a change in temporal perspective. During the first post-1989 years, attention naturally concentrated on the recent past, especially the communist period and its immediate traumas. Gradually, however, Czech historiography expanded its questions. Medieval, early modern and 19th-century studies were also affected by the transformation, not because they had been equally censored, but because the interpretative frameworks surrounding nation, statehood, religion, social hierarchy and Central Europe changed. František Šmahel's own authority as a medievalist illustrates that the renewal of historical scholarship was not limited to contemporary history. Older periods could now be studied with stronger international integration, comparative methods and less pressure to fit national teleologies. Historical geography, biographical dictionaries, encyclopaedic projects and source editions acquired renewed importance as foundations for broad cultural history (*Institute of History of the CAS, n.d.*). The result was a more plural historical field, in which the recent past remained urgent but no longer monopolised the discipline.

The transformation of philosophy similarly connected older traditions with new questions. Czech philosophy after 1989 could return to the intellectual legacies of Comenius, Masaryk, Patočka and other figures without forcing them into ideological frameworks. Yet it also had to participate in contemporary debates on science, ethics, politics, globalisation and European identity. The Institute of Philosophy's broad structure, including classical and medieval studies, Comeniology, philosophy of science, modern intellectual history and global studies, reflected this pluralisation (*Institute of Philosophy of the CAS, n.d.*). The restoration of philosophical plurality was important not only for specialists but for public culture. A society emerging from ideological monopoly needed habits of argument, conceptual distinction and critical reflection. Philosophy could not dictate political answers, but it could help restore the intellectual conditions under which democratic disagreement becomes meaningful rather than destructive.

In philology, the post-1989 period encouraged a renewed awareness of texts as historical witnesses. Literary works, dictionaries, editions, correspondence, journals and linguistic corpora became evidence of cultural life under pressure. The division between official and unofficial literature had to be reconstructed through bibliographical work, textual scholarship and archival recovery. Exile publications, samizdat editions and underground cultural activity challenged the older idea of literature as a single national canon. At the same time, philologists had to avoid replacing one simplified canon with another heroic narrative of suppression and resistance. Czech literature under socialism included compromise, adaptation, irony, coded speech, aesthetic experiment and ordinary professional work. The Academy's literary and linguistic institutes were well placed to handle this complexity because they possessed the documentary patience required for long-term cultural reconstruction. Their contribution lay not only in judgement but in making the full textual record available for interpretation.

The role of Brno and other non-Prague centres should also be noted. Although Prague remained the dominant institutional centre of the Academy's humanities, Czech scholarly life was never

reducible to the capital alone. The Czech Language Institute's Brno branch, the Brno branch of the Institute of Contemporary History and broader Moravian scholarly networks contributed to the territorial diversification of research. This mattered for historical, linguistic and cultural studies because regional archives, dialects, literary traditions and local memories are not peripheral ornaments but essential parts of national and Central European history. After 1989, the recovery of local and regional perspectives became one way of correcting centralised narratives. It also helped connect professional scholarship with communities outside the main metropolitan institutions. The rebuilding of the humanities was therefore not only a vertical process of reform from Academy leadership to institutes. It was also a horizontal expansion of voices, archives and places.

The digital turn, although more visible in later decades, had roots in the post-1989 reconstruction of scholarly infrastructure. Bibliographies, catalogues, dictionaries, source databases and textual corpora gradually moved from printed or internal forms into electronic environments. This development changed the humanities by expanding access, accelerating search, enabling new types of linguistic and literary analysis, and strengthening cooperation between institutes. The Czech Language Institute's lexicographical tradition, the Institute of History's bibliographical work and the documentary practices of literary and contemporary historical research all provided fertile ground for digital humanities. Digitalisation did not replace classical philological and historical skills; rather, it made their disciplined procedures newly scalable. In the Czech case, this was especially important because so much post-1989 work involved recovering dispersed, censored or fragmented materials. The digital humanities thus continued the older Academy mission of preserving and organising knowledge, but under technological conditions that made wider public and international access possible.

The humanities after ideology were therefore not "post-ideological" in a naïve sense. They did not enter a neutral world free from political assumptions, social pressures or cultural conflicts. Instead, they moved from a system of explicit ideological monopoly to a plural public sphere in which memory, identity, European integration and social transformation remained contested. This required new forms of scholarly self-discipline. Historians had to resist both nostalgia and prosecutorial simplification; philosophers had to avoid turning dissident moral capital into unquestioned authority; philologists had to rebuild canons without reducing literature to political testimony. The Academy's institutional setting offered a relatively stable environment for this work, because it supported long-term projects that could outlast immediate political fashion. At its best, the Academy's humanities helped Czech society replace imposed certainty with argued complexity.

This reconstruction also changed the symbolic meaning of the Academy itself. Under the Czechoslovak socialist model, the Academy had been a centralised institution closely tied to the state's vision of planned science. After 1989 and especially after the establishment of the Czech Academy of Sciences as the successor to the former Czechoslovak Academy, the institution had to redefine itself as a public, autonomous and internationally oriented research body (*Academy of Sciences of the Czech Republic, n.d.*). In the humanities, this redefinition was particularly visible because the disciplines dealt directly with national memory, language, culture and civic self-interpretation. The Academy could no longer claim authority through proximity to the state. It had to earn authority through scholarly quality, openness, public usefulness and institutional self-government. The rebuilding of historical, philosophical and philological research was therefore also a rebuilding of the Academy's moral profile.

The post-1989 humanities were marked by a productive tension between recovery and innovation. Recovery was necessary because names, texts, archives, topics and methods had been suppressed or distorted. Innovation was necessary because democratic scholarship could not be satisfied with merely reversing ideological signs. The most successful institutions and research programmes were those that combined archival seriousness with methodological openness, national responsibility with international comparison, and public engagement with scholarly restraint. The Academy's historians, philosophers and philologists had to learn to speak simultaneously to Czech society, to specialised international communities and to their disciplinary traditions. This triple audience made their work demanding, but also gave it unusual richness. The humanities became one of the places where the Czech Republic could examine not only what had happened to it, but how it wished to understand itself after the end of ideological rule.

Thus, the rebuilding of historical, philosophical and philological research after 1989 was a central chapter in the transformation of the Czech Academy of Sciences. It restored suppressed institutions, opened forbidden questions, renewed scholarly infrastructure, reconnected Czech research with international debates and redefined the public mission of the humanities. The process was neither simple nor purely celebratory, because it involved difficult judgements about continuity, compromise, exclusion, rehabilitation and methodological delay. Yet its broader significance is clear: the Academy's humanities helped transform freedom from a political event into a sustained scholarly practice. They showed that democracy requires not only elections and institutions, but also archives, dictionaries, editions, critical concepts, historical patience and a disciplined language for speaking about the past. In this sense, the humanities after 1989 became one of the essential foundations of the modern Czech Academy's identity.

2. Archival Freedom and New Historiographical Questions

The opening of archives after 1989 was one of the most decisive conditions for the renewal of Czech and Czechoslovak historiography. Political freedom by itself could not automatically produce historical knowledge, because historical knowledge depends on sources, access, institutional trust and the ability to compare documentary evidence with memory, testimony and inherited interpretation. Under state socialism, archives had not been completely closed, but access was selective, supervised and uneven, especially for topics touching upon the Communist Party, the security apparatus, the post-war settlement, the Prague Spring, normalisation, exile and dissent. The collapse of the regime therefore changed not only the political atmosphere around history but the practical foundations of historical work. Researchers could begin to ask questions that had previously been forbidden, discouraged or artificially narrowed by the archive itself. Yet archival freedom was never a simple passage from darkness to light. It created a new terrain in which historians had to learn how to use liberated documents without turning them into political weapons or treating them as self-explanatory truth (*Kopeček & Kolář, 2007*; *Institute of Contemporary History of the CAS, n.d.*).

The first post-November years were marked by the powerful social expectation that archives would reveal the truth about the recent past. This expectation was understandable, because official historical narratives had been saturated with silences, euphemisms and ideological mythologies. Families wanted to know what had happened to persecuted relatives; former dissidents wanted to understand the mechanisms of surveillance; citizens wanted to see the

structure of collaboration and coercion; politicians wanted legal and moral criteria for excluding the agents of the old regime from sensitive offices. Historians, however, faced a more complex task than simply “opening files”. They had to reconstruct provenance, institutional context, authorship, bureaucratic language and the purposes for which documents had been produced. Secret police reports, party records and personnel files were not neutral mirrors of reality; they were products of power, suspicion and administrative self-preservation. The new archival freedom therefore required not less source criticism than before, but more of it.

The founding of the Institute of Contemporary History in 1990 was closely connected with this new archival situation. The institute was established in the post-November atmosphere to provide independent research into Czechoslovak history between 1938 and 1989, precisely the period most heavily affected by ideological supervision and censorship under communist rule (*Institute of Contemporary History of the CAS, n.d.*). Its emergence reflected a broad conviction that democratic Czechoslovakia needed professional historical inquiry into the Nazi occupation, the post-war settlement, Stalinism, the reform communist movement, the Prague Spring, normalisation and the final crisis of the regime. The institute’s mission did not merely consist of studying recent history as another chronological period. It was expected to help restore society’s capacity to think historically about events still present in living memory. This gave contemporary history an unusual public burden. It had to combine scholarly distance with the urgency of a society trying to understand its own moral and political biography.

Archival freedom immediately expanded the range of possible questions. Instead of writing the history of modern Czechoslovakia mainly through official political narratives, historians could study decision-making mechanisms, informal networks, surveillance practices, everyday adaptation, social mobility, economic constraint, cultural censorship and the interior life of institutions. They could examine how the Communist Party functioned not only as an ideological centre but as a bureaucratic organisation with files, committees, careers, rivalries and regional structures. They could explore how the security services produced knowledge about society and how that knowledge shaped repression, intimidation and negotiation. They could ask how ordinary people interacted with the state, not only as victims or collaborators but also as workers, parents, believers, consumers, neighbours and readers. This shift from official narrative to social and institutional analysis was one of the most important methodological consequences of open archives. It allowed Czech historiography to move beyond a purely political chronicle and towards a more layered history of power, society and experience.

The archives also transformed the study of 1968 and normalisation. During the socialist period, the Prague Spring had been either condemned through the language of “counter-revolution” or treated with extreme caution, while normalisation had often appeared in official discourse as a restored order. After 1989, documents from party bodies, state administration, cultural institutions, security organs and personal collections made it possible to reconstruct the reform movement, the Soviet-led invasion, political purges, intellectual resistance and the everyday mechanisms of post-1968 conformity. The Institute of Contemporary History’s early publication series on the Czechoslovak crisis of 1967–1970 signalled the importance of source editions for this task (*Institute of Contemporary History of the CAS, n.d.*). These editions did more than supply material for specialists. They helped establish a new public vocabulary for speaking about a period that had shaped the careers, fears and memories of several generations. Archival publication thus became an instrument of democratic clarification.

The question of the security services became particularly charged. Secret police archives attracted public attention because they seemed to promise direct access to hidden truth: names of informers, files on dissidents, reports on surveillance, operational plans and records of repression. Yet the apparent concreteness of such material could be deceptive. A police file may record an encounter but not its emotional meaning; it may list a collaborator but not explain the conditions of pressure, fear or opportunism; it may contain denunciations, fabrications or bureaucratic exaggerations. Historians had to distinguish between the archive as evidence and the archive as a product of authoritarian imagination. This methodological caution did not relativise repression. Rather, it made the study of repression more accurate by refusing to adopt the categories of the repressing institution uncritically. The opening of security archives therefore created both a new empirical field and a new ethical discipline (*Act No. 181/2007 Coll., 2007*; *Williams, 2003*).

The later creation of the Security Services Archive and the Institute for the Study of Totalitarian Regimes institutionalised a part of this archival and memory agenda outside the Academy, but it also affected Academy-based historical research. The Security Services Archive was established under Act No. 181/2007 Coll., which laid the legal foundation for the Institute for the Study of Totalitarian Regimes and the archive responsible for records of the security apparatus (*Act No. 181/2007 Coll., 2007*). This development demonstrated that archival freedom had become a matter of state policy, public memory and democratic legitimacy, not merely an internal concern of historians. For Academy historians, the existence of such institutions created opportunities for cooperation, comparison and access, but also raised questions about the boundary between scholarly research and official memory politics. The Academy's role was not to monopolise historical interpretation. Its role was to insist that even the morally urgent study of dictatorship required method, context and scholarly independence.

The National Archives and other public archival institutions formed the broader infrastructure within which this transformation took place. Czech archival law and research rules gradually defined the conditions under which researchers could access records, finding aids, copies and research rooms (*Act No. 499/2004 Coll., 2004*; *National Archives, n.d.*). This legal and administrative framework mattered because archival freedom is not only a political slogan; it is a system of permissions, catalogues, professional archivists, preservation procedures, privacy rules and reading-room practices. The democratisation of historical knowledge therefore depended on mundane but essential institutional work. Files had to be arranged, described, conserved, transferred and made intelligible. Without archivists and archival institutions, the opening of the past would have remained rhetorical. The post-1989 transformation of historiography was therefore also a transformation of archival labour.

Within the Czech Academy of Sciences, the Masaryk Institute and Archives became one of the key institutions linking historical research, archival preservation and the history of scholarship. Its archival departments collect and process records of the Academy, the fonds of older scientific institutions and the personal papers of scientists working in the Czech lands (*Masaryk Institute and Archives of the CAS, n.d.*). This role gave the Academy an internal archive of its own institutional memory. It allowed researchers to study not only national political history but also the history of scientific institutions, academic elites, scholarly networks and disciplinary development. Such archives are crucial for an institutional history of the Academy because they reveal how decisions were made, how research priorities changed, how institutes communicated with the state and how scholars experienced political pressure. In

this respect, archival freedom also turned the Academy itself into an object of historical investigation.

The return of the Masaryk tradition after 1989 was inseparable from archival recovery. Tomáš Garrigue Masaryk had been a foundational figure of democratic Czechoslovakia, yet under communist rule his legacy was selectively interpreted, marginalised or ideologically reframed. The reinstatement of the T. G. Masaryk Institute in 1990 and the later development of the Masaryk Institute within the Academy gave institutional form to a broader re-engagement with democratic political thought, presidential culture, the First Republic and Central European liberal traditions (*Masaryk Institute and Archives of the CAS, n.d.*). Archival access made it possible to study Masaryk, Edvard Beneš and their circles not as icons alone but as historical actors embedded in correspondence, institutions, political conflicts and international contexts. This was important because post-1989 society needed more than symbolic rehabilitation. It needed critical knowledge of the democratic traditions to which it claimed to return.

The Institute of History also benefited from the new archival environment, though its chronological scope extended far beyond the 20th century. Its work covers Czech, Czechoslovak and general history from the early Middle Ages to the modern and contemporary periods, while also providing scholarly infrastructure through source editions, journals, bibliographies and specialised libraries (*Institute of History of the CAS, n.d.*). After 1989, the institute's earlier focus on history up to 1945 or 1948 gradually expanded towards communist Czechoslovakia. This shift showed that archival freedom was not restricted to the most recent past but reshaped the entire architecture of historical inquiry. Medievalists, early modernists and 19th-century historians also worked in a different intellectual climate, because older narratives of nationhood, class, statehood and Central Europe could now be reconsidered without ideological constraints. The opening of archives therefore produced a general rebalancing of Czech historiography, even where the sources themselves were not newly available.

One of the most visible new historiographical questions concerned the post-war expulsion and transfer of the German population. Before 1989, this subject was embedded in official narratives of anti-fascist justice and national liberation, while its moral and social complexity was often suppressed. After the opening of archives and the pluralisation of public debate, historians could examine local violence, administrative procedures, property transfers, international diplomacy, demographic transformation and the long-term effects on borderland society. This did not mean replacing one national myth with another. Rather, it meant allowing the topic to be studied as part of a broader Central European history of war, revenge, ethnic cleansing, state-building and memory. Kopeček and Kolář noted that after 1989 the so-called Sudeten German question became one of the most intensely discussed themes in Czech historiography and society (*Kopeček & Kolář, 2007*). Its prominence showed how archival freedom could reopen questions that touched the moral foundations of post-war national identity.

The Holocaust and the history of the Jewish population also acquired new research depth in the post-1989 archival environment. The communist regime had not denied Nazi persecution, but it often subsumed Jewish suffering under broader anti-fascist and class narratives. After 1989, historians could more fully explore the specific experience of Czech and Moravian Jews, the functioning of the Protectorate, the role of local institutions, property confiscation,

restitution, memory and post-war silence. This work required cooperation across archives in the Czech Republic, Germany, Austria, Israel and other countries. It also required sensitivity to the relationship between documentary evidence and survivor testimony. The Academy's contribution to such fields lay in its ability to support long-term scholarly work that connected national archives with international research networks. The opening of archives thus helped Czech historiography enter broader European debates about genocide, collaboration, restitution and memory.

The history of exile became another major field transformed by access to sources. Czech and Czechoslovak exile communities had preserved documents, periodicals, correspondence and institutional records that were either inaccessible or ideologically discredited before 1989. After the transition, these materials could be reintegrated into national history. Exile was no longer treated merely as a political deviation or foreign influence but as part of the intellectual, cultural and scientific life of Czechoslovakia. Figures who had worked abroad as historians, philosophers, journalists, scientists or cultural mediators could be studied in relation to domestic developments. The return of exile documentation also complicated the idea of a single national scholarly space. It showed that Czech culture and science had continued across borders, languages and institutions even when domestic public life was constrained.

Archival freedom also reshaped the history of dissent. Before 1989, dissent was criminalised, ridiculed or erased from official narratives; after 1989, it risked being idealised as the pure moral centre of the nation. Archives allowed historians to move beyond both denunciation and sanctification. They made it possible to study Charter 77, samizdat, underground culture, religious networks, ecological activism, independent seminars and human rights initiatives as social, intellectual and communicative phenomena. Researchers could examine not only public declarations but also networks of friendship, surveillance, fear, disagreement and international support. This helped transform dissent from a heroic legend into a historical field. Such transformation did not diminish its moral importance. It made that importance more historically intelligible.

The new archival situation also gave historians access to the internal world of socialist institutions. Schools, factories, editorial offices, theatres, research institutes, party committees, trade unions and local administrations all produced records that could be used to study the everyday operation of the regime. This broadened the historiography of communism beyond the history of repression alone. Historians could ask how authority was negotiated, how people adapted to rules, how shortages shaped social relations, how cultural institutions managed censorship, how experts interacted with party officials and how late socialism created forms of private retreat and public conformity. This development corresponded to broader international shifts in the study of socialist societies, where the focus moved from totalitarian control alone to practices of everyday life, consumption, gender, expertise and social negotiation (*Bren, 2010*; *Kopeček & Kolář, 2007*). Open archives made such questions empirically possible in the Czech case.

The archival turn also affected the history of science and the Academy itself. The Czechoslovak Academy of Sciences had been both a research institution and part of the socialist state's planned scientific system. Its archives therefore contain evidence of scientific ambition, international exchange, ideological pressure, personnel decisions, disciplinary restructuring and cooperation with industry and government. After 1989, historians could investigate how scientific autonomy had been restricted, negotiated or preserved under different political

conditions. They could examine purges after 1968, the fate of excluded scholars, the position of institutes during normalisation and the transformation of research priorities after the Velvet Revolution. This was essential for the Academy's self-understanding, because institutional memory cannot be reduced to anniversary celebration. It must include the uncomfortable history of dependence, adaptation and rupture.

The opening of archives also changed the relationship between professional historians and the wider public. Archival discoveries entered newspapers, television, museums, court cases, school textbooks and political debates. This expanded the social importance of historical expertise but also exposed historians to pressure for immediate judgement. Public debate often wanted names, guilt and clear moral categories, while scholarship required context, comparison and caution. The Academy's historians were therefore placed in a difficult position. They could not withdraw from public discussion, because the past was being actively used in democratic reconstruction. Yet they also had to protect historical interpretation from becoming a mere extension of political conflict. Archival freedom thus intensified the public responsibility of the historian.

The problem of lustration illustrates this tension especially clearly. Lustration laws were intended to protect the new democratic state from the influence of former communist functionaries, secret police officers and collaborators in sensitive positions (*David, 2003*; *Williams, 2003*). Their implementation depended partly on records produced by the former regime itself. This created a paradox: democracy used the documentary remains of dictatorship to define the boundaries of public trust. Historians were not the same as lustration authorities, but their work unfolded in a society where archival files could affect reputations, careers and political legitimacy. This made methodological precision and ethical restraint even more important. The file had to be read not only as evidence but as an artefact of power.

Another new historiographical question concerned the relationship between memory and documentation. After 1989, oral history, memoirs and witness testimony became indispensable, especially for the study of persecution, dissent, exile, imprisonment and everyday life. Yet memories did not always match archival documents, and documents did not always capture the subjective experience of historical actors. The best post-1989 historiography did not choose simply between archive and memory. It treated their tension as productive. Archival records could challenge self-justifying memories, while testimony could expose the blind spots and violence of bureaucratic documentation. In this way, archival freedom strengthened rather than weakened the need for plural sources.

The generational dimension of archival freedom was also significant. Older scholars who had experienced exclusion after 1968 often returned to archives with biographical urgency, while younger historians trained after 1989 approached the same materials with different theoretical questions and fewer personal memories. This generational shift was visible in the Institute of Contemporary History, where the founding generation gradually gave way to researchers formed under democratic conditions (*Institute of Contemporary History of the CAS, n.d.*). The change did not necessarily produce a simple opposition between memory and method. Rather, it created a layered discipline in which lived experience, documentary recovery and international methodological training interacted. The maturing of Czech historiography after 1989 depended on this dialogue between generations. Without it, the field might have remained either commemorative or prematurely detached.

International comparison became increasingly important as Czech historians gained access to sources and networks. The history of communism, dictatorship, resistance and transition could now be studied alongside the histories of Poland, Hungary, East Germany, Slovakia and the Soviet Union. Archival openness allowed Czech scholars to participate in broader debates about state socialism, post-war violence, memory politics, transitional justice and Europeanisation. At the same time, Czech archives offered foreign scholars rich material for comparative research. The Institute of Contemporary History's cooperation with international institutions and its projects on socially relevant topics demonstrate this outward turn (*Institute of Contemporary History of the CAS, n.d.*). The result was a historiography less confined to national self-explanation and more capable of seeing Czech experience as part of European history.

The expansion of archival access also encouraged new forms of historical infrastructure. Bibliographies, databases, digital catalogues, thematic portals and source editions became essential tools for a profession dealing with large quantities of newly available material. The Institute of History's continuous bibliography and source edition projects, the Institute of Contemporary History's documentation collections and the Masaryk Institute and Archives' databases all contributed to this infrastructure (*Institute of History of the CAS, n.d.*; *Masaryk Institute and Archives of the CAS, n.d.*). These tools did not merely support research after the fact. They shaped the questions that could be asked, the connections that could be seen and the audiences that could access historical knowledge. In the digital age, archival freedom increasingly meant not only physical access to documents but also the intelligent organisation of information.

However, the opening of archives did not eliminate silences. Some records had been destroyed, manipulated, dispersed or never created. Others remained restricted because of privacy, state security, copyright or preservation concerns. In addition, archives often preserve the perspective of institutions more fully than the perspective of those who lived under them. The poor, the marginalised, the Roma, women in informal labour, religious minorities, migrants and ordinary citizens may appear only fragmentarily or through the language of administration. Contemporary Czech historiography therefore had to ask not only what the newly opened archives revealed but what they still concealed. Archival freedom was a beginning, not a guarantee of completeness.

This awareness helped generate new questions about marginalised groups and everyday experience. The Institute of Contemporary History's current research themes include democracy, everyday life in dictatorships, the Roma and other marginalised groups, social transformations and the history of thought and science (*Institute of Contemporary History of the CAS, n.d.*). Such topics reflect a historiographical movement away from a narrow focus on political elites and towards a broader analysis of society. Open archives made this possible, but they did not make it automatic. Historians had to combine state records with local archives, oral testimony, visual sources, material culture, press collections and private papers. The more democratic the questions became, the more diverse the source base had to be.

The political sensitivity of archival research also affected the public image of the Academy. The Czech Academy of Sciences defines its mission as research across the natural, technical and social sciences and the humanities, taking into account the needs of Czech society and national culture (*Academy of Sciences of the Czech Republic, n.d.*). In the field of history, this

mission acquired a particular meaning after 1989. The Academy was expected to contribute to society's understanding of the past, but it also had to protect the autonomy of scholarship from immediate ideological demands. Its authority therefore rested not on producing a new official history, but on sustaining the conditions for critical historical inquiry. The distinction is crucial. Democratic society does not need the Academy to replace one authorised narrative with another; it needs the Academy to keep historical knowledge open, verifiable and intellectually responsible.

Archival freedom also altered the emotional economy of historical work. Historians were not dealing only with distant documents but with records that could wound, shame, rehabilitate or unsettle living people. Files on collaboration, surveillance, denunciation, persecution and property confiscation entered family histories and public reputations. This made empathy and caution part of scholarly professionalism. A historian of dictatorship cannot read documents as if they were neutral administrative traces alone. They contain human fear, coercion, self-protection and sometimes deliberate cruelty. The archives after 1989 therefore taught Czech historiography that truth is not only a matter of discovery. It is also a matter of responsible interpretation.

In the longer perspective, the opening of archives transformed the rhythm of Czech historical scholarship. The first phase after 1989 was often dominated by recovery, publication and correction. Later phases increasingly involved synthesis, comparison, theoretical reflection and public history. This sequence is understandable: before historians could write new interpretations, they needed to know what the sources contained. Yet the best work did not stop at documentary accumulation. It asked how regimes functioned, how societies remembered, how identities changed and how democracy inherited the structures of dictatorship. Archival freedom thus did not merely add new facts to old narratives. It made possible a new historiographical architecture.

Thus, archival freedom after 1989 became one of the foundations of the modern Czech humanities. It opened sources, created new research institutions, redefined contemporary history, transformed the study of dictatorship and democracy, and made the Academy itself available for critical institutional history. At the same time, it forced historians to confront difficult methodological and ethical questions: how to read documents produced by power, how to connect archives with memory, how to serve public debate without surrendering to political simplification, and how to recognise the silences that remain even in open collections. The significance of this transformation lies not only in the quantity of newly accessible material. It lies in the emergence of a democratic historical culture in which archives, criticism and public responsibility became inseparable.

3. The Academy as Guardian of Cultural and Scholarly Memory

The Czech Academy of Sciences has never been only a research organisation in the narrow administrative sense of the term. In the humanities, and especially after 1989, it also became a custodian of cultural memory, scholarly continuity and the documentary traces of Czech intellectual life. This role was not invented by the democratic transformation, because the Academy inherited older traditions from learned societies, national scholarly institutions, archival collections, editorial projects and lexicographical enterprises. Yet the meaning of guardianship changed profoundly after the collapse of ideological rule. Under socialism,

memory had often been organised, censored or selectively interpreted by the state; after the Velvet Revolution, the Academy had to help transform memory into an open field of research, debate and public access. The task was not simply to preserve the past, but to preserve it in ways that allowed society to ask new questions. In this respect, the Academy's humanities institutes stood at the intersection of scholarship, national culture and democratic responsibility (Academy of Sciences of the Czech Republic, n.d.; Franc & Mádlová, 2014).

The phrase "guardian of memory" may sound ceremonial, but in the context of the Czech humanities it has a very concrete institutional meaning. Memory is guarded through archives, libraries, dictionaries, bibliographies, critical editions, databases, corpora, expert advisory services, personal fonds, scholarly journals and long-term research projects. These instruments are less visible than political speeches or public monuments, yet they determine what can be known, checked, cited and transmitted. Without them, cultural memory becomes dependent on anecdote, nostalgia, ideological simplification or market visibility. The Academy's particular strength has been its ability to maintain slow, cumulative and technically demanding forms of scholarship that do not always fit short-term political or commercial expectations. This is especially important for small and medium-sized national cultures, where the survival of scholarly infrastructure cannot be left entirely to universities, publishing houses or private foundations. The Czech Academy therefore performs a memory function not by replacing society's plural voices, but by sustaining the tools through which those voices can be studied responsibly.

The transformation after 1989 intensified this memory function because Czech society was confronted with several pasts at once. There was the democratic memory of the First Republic, long distorted by communist interpretation; the traumatic memory of the Protectorate and the Holocaust; the contested memory of post-war violence and the expulsion of the German population; the memory of Stalinism, political trials and collectivisation; the reform memory of 1968; the bitter memory of normalisation; and the newly celebrated but also complex memory of dissent and exile. These layers did not form a harmonious national narrative. They often contradicted one another, divided families, shaped political identities and raised moral questions that could not be answered by commemoration alone. The Academy's historians, literary scholars, philosophers and linguists contributed by slowing down the movement from memory to judgement. Their work insisted that public remembrance should be accompanied by documentation, source criticism, linguistic precision and historical context (Kopeček & Kolář, 2007; Suk, 2003).

The Masaryk Institute and Archives of the Czech Academy of Sciences is one of the clearest institutional embodiments of this guardianship. Its archival division collects and processes records of the Academy, archival collections of earlier scientific institutions and personal papers of scholars who worked in the Czech lands. This means that the Academy preserves not only external national history but also its own scientific biography. The fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences make it possible to study the continuity and discontinuity of institutes, departments, research programmes and academic elites from the socialist period into the democratic era. Such archival work is indispensable for an institutional history of science, because it allows scholars to reconstruct how scientific authority was produced, negotiated and sometimes compromised. The archive therefore protects the Academy from becoming a purely celebratory institution of anniversaries. It enables a more demanding form of self-knowledge, one that includes

achievement, pressure, adaptation, exclusion and reform (Masaryk Institute and Archives of the CAS, n.d.; Masaryk Institute and Archives of the CAS, n.d.).

The Masaryk legacy itself occupies a special place in the Academy's work of memory. Tomáš Garrigue Masaryk is not only a political symbol of democratic Czechoslovakia but also a figure through whom Czech intellectual culture connects philosophy, sociology, history, religion, ethics and public life. Under communist rule, his legacy was frequently reframed or marginalised, because it pointed to democratic, liberal and humanistic traditions incompatible with the ideological monopoly of the party-state. After 1989, the renewed institutional study of Masaryk did not merely restore a forbidden national icon. It created an opportunity to examine the intellectual foundations of Czech democracy with scholarly tools rather than patriotic reverence alone. This distinction was crucial. A democratic culture needs symbols, but it also needs institutions capable of studying those symbols critically, historically and philologically.

The Academy's role as guardian of memory is also visible in the preservation of the Czech language. The Czech Language Institute inherited a long lexicographical and linguistic tradition reaching back to the older Czech Academy of Sciences and Arts and to the national importance of dictionary-making. Language has been one of the deepest carriers of Czech cultural identity, especially because the national revival itself was inseparable from philology, grammar, vocabulary, literature and education. After 1989, however, the Academy could no longer approach language cultivation as a defensive national project alone. The Czech language had to be studied as a living system exposed to democratisation, market communication, media pluralism, European integration, migration, digital communication and global English. The Language Consulting Centre of the Czech Language Institute illustrates this public dimension, because it offers expert advice on spelling, morphology, meaning, etymology, usage and formulation to Czech language users. Here the Academy guards memory not by freezing language, but by helping speakers understand its structure, history and public norms (Czech Language Institute, n.d.).

This linguistic guardianship is particularly important because language memory is often invisible to its speakers. Every dictionary entry, dialect record, etymological explanation, corpus annotation and normative recommendation preserves traces of earlier usage and helps society negotiate change without losing continuity. Czech, like all national languages, is not a museum object; it changes through schools, media, bureaucracy, literature, technology and everyday speech. Yet change becomes culturally intelligible only when there are institutions capable of describing it. The Academy's linguistic work therefore joins descriptive science with public service. It gives citizens, teachers, journalists, editors, courts, offices and publishers access to expert knowledge that is not merely a matter of personal taste. In this way, the Academy protects the linguistic foundations of public communication, which are themselves a crucial part of democratic culture.

The Institute of Czech Literature performs a related but distinct memory function. It preserves and studies literary history not as a simple canon of great books, but as a complex ecosystem of authors, journals, publishing houses, genres, editions, criticism, reception, exile, samizdat and popular culture. Its history reflects the larger institutional biography of Czech literary studies: established in the post-war period, incorporated into the Czechoslovak Academy of Sciences, transformed during normalisation, and renamed after 1993 in connection with a renewed conception of Czech studies. After 1989, its task was not only to add prohibited

writers back into a textbook narrative. It had to reconstruct the fractured literary field of the 20th century, including authors who had written in exile, published in samizdat, worked under censorship or remained outside dominant cultural institutions. Literary memory in this sense is not passive preservation. It is active reconstruction of a cultural field that political regimes had divided into official, unofficial and foreign circuits (Institute of Czech Literature of the CAS, n.d.; Holy, 1996).

The Academy's literary databases and bibliographies demonstrate how memory is transformed into usable knowledge. The Dictionary of Czech Post-1945 Literature, for example, is a cyclically updated electronic database based on earlier dictionaries that were no longer constrained by pre-November ideological limitations. Its purpose is to provide professionally processed information for experts and the general public alike. The Czech Literary Science bibliographic databases record the reflection of Czech literature and literary studies in periodicals, newspapers, cultural journalism, scholarly press and book publications from 1945 to the present. The Retrospective Bibliography of Czech Literature preserves an even broader documentary world, including materials from Czech and German periodicals in the Czech lands before 1945. These projects reveal the Academy's memory role with unusual clarity: they do not simply interpret literature, but ensure that the documentary conditions for future interpretation remain available (Digital Humanities Czech Academy of Sciences, n.d.; Digital Humanities Czech Academy of Sciences, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

The significance of such bibliographical and lexicographical projects is easy to underestimate. A bibliography may seem less dramatic than a monograph on dictatorship or a public exhibition on national trauma. Yet bibliographies determine whether a literary work, review, polemic, obituary, translation, exile journal or regional newspaper can be found at all. They transform dispersed traces into a structured cultural archive. In a national culture shaped by censorship, exile, multilingualism and political rupture, this work is especially important. It allows scholars to reconstruct connections that were intentionally broken or accidentally lost. It also democratises memory by allowing users outside narrow academic circles to discover authors, texts and debates that would otherwise remain hidden.

The Library of the Czech Academy of Sciences adds another layer to this system of guardianship. Its Digital Library contains digitised periodicals and monographs produced by the institutes of the Academy and their predecessors. This is not simply a technical service, although the technical side is highly important. Digitisation changes the social life of scholarly memory by making older publications searchable, accessible and less dependent on physical proximity to Prague collections. It also preserves fragile materials and helps integrate Czech academic production into wider digital environments. For the humanities, such digital access is transformative because it allows historians, philologists, literary scholars, sociologists and philosophers to work across large bodies of material. The Academy thus carries older traditions of collecting and publishing into the digital age (Library of the Czech Academy of Sciences, n.d.).

Digital humanities projects do not abolish classical scholarship; they extend it. The Academy's databases of literary figures, bibliographies, correspondence, dictionaries and digitised periodicals are meaningful only because they are built on decades of archival, editorial and philological expertise. The digital format changes speed, scale and access, but the underlying scholarly virtues remain accuracy, provenance, citation, completeness and interpretative

caution. This continuity is important because digital culture can encourage an illusion of immediate knowledge. Searchability does not automatically create understanding. The Academy's role is to ensure that digital memory remains scholarly memory, structured by method rather than by accidental visibility or algorithmic popularity.

The Academy also guards scholarly memory through the history of its own disciplines. Every institute contains not only present research teams but also traces of earlier disciplinary formations, lost departments, reorganised laboratories, dismissed scholars, renamed journals and unfinished projects. In the humanities, this disciplinary memory is especially significant because research traditions are transmitted through editions, methods, terminologies and intellectual genealogies. The Institute of History, the Institute of Philosophy, the Czech Language Institute, the Institute of Czech Literature and the Institute of Contemporary History all carry institutional biographies that reflect broader political changes. Their archives and publications show how disciplines survived monarchy, republic, occupation, Stalinism, reform communism, normalisation and post-socialist transformation. To write the history of these institutes is therefore to write a history of the changing conditions under which Czech society has allowed itself to know its own past.

The memory of excluded and returning scholars was another essential element of the post-1989 Academy. After the purges that followed the Prague Spring, many historians, philosophers, sociologists and literary scholars were dismissed, demoted, silenced or pushed into marginal employment. Others continued their work in exile, samizdat, private seminars or foreign universities. The democratic transformation created space for rehabilitation, but rehabilitation was not only a personnel matter. It required the restoration of interrupted intellectual lineages. Works that had circulated unofficially or abroad had to be republished, cited, taught and integrated into research narratives. The Academy's memory role therefore included the re-inscription of damaged scholarly biographies into the visible history of Czech science.

At the same time, guardianship of scholarly memory required honesty about compromise. Institutions under dictatorship are rarely divided neatly between heroes and servants of power. Many scholars protected valuable work through cautious adaptation; others collaborated more actively with ideological expectations; some resisted openly; many lived in morally ambiguous zones of professional survival. A mature institutional memory cannot be built on amnesia or retrospective purity. The Academy's post-1989 humanities had to develop a language capable of recognising both scholarly achievement and political entanglement. This was particularly important for the Academy itself, because its socialist predecessor had been both a site of genuine research excellence and a component of the planned ideological state. To guard memory meant to preserve evidence for this complexity rather than to simplify it into either condemnation or nostalgia.

The Academy's guardianship also extends to philosophical memory. The Institute of Philosophy, restored after 1989, reconnected Czech scholarship with traditions interrupted by political intervention, including phenomenology, Comeniology, classical studies, medieval thought, philosophy of science and modern intellectual history. The legacy of Jan Patočka, in particular, illustrates the link between philosophical research and civic memory. Patočka's writings and public role in Charter 77 made him a figure through whom Czech philosophy entered the moral history of dissent and European debates about responsibility. Yet the Academy's task was not to turn him into a monument. It was to edit, interpret, contextualise

and discuss his thought as philosophy. This is the difference between cultural memory and scholarly memory: the former remembers a name, while the latter reconstructs arguments, texts, contexts and reception (Patočka, 1996; Institute of Philosophy of the CAS, n.d.).

Historical memory after 1989 was also inseparable from the study of totalitarianism, democracy and public life. The Institute of Contemporary History, founded in 1990, became one of the principal sites for the professional study of the period from 1938 to 1989. Its work helped place recent Czech and Czechoslovak history within broader European questions about dictatorship, war, occupation, repression, exile, dissent and transition. Yet its importance cannot be measured only by publications. It offered society an institutional space in which painful memories could be transformed into research questions. This transformation is essential for democratic culture. A society that remembers only through accusation or sentiment remains vulnerable to political manipulation; a society that can research its own traumas gains a more durable form of freedom (Institute of Contemporary History of the CAS, n.d.; Bren, 2010).

The Academy's memory function is not confined to national history in the narrow sense. Czech culture has always been shaped by Central European entanglements, including German, Austrian, Jewish, Slovak, Polish, Hungarian and wider European contexts. The humanities institutes of the Academy are therefore guardians not of a sealed national narrative but of a complex cultural region. This is visible in research on multilingual literary culture, Bohemian lands history, Jewish memory, the Habsburg monarchy, Czech-German relations, exile networks and European intellectual exchange. The national importance of the Academy lies precisely in its ability to show that national culture is historically plural. It guards Czech memory by resisting the temptation to make it simpler than it was (Agnew, 2004; Sayer, 1998).

This plural understanding of memory also affects the interpretation of cultural heritage. The Academy's humanities do not treat heritage only as a collection of monuments, books and anniversaries. Heritage is a field of contested meanings, institutional decisions, linguistic practices, editorial choices and social uses of the past. When a dictionary defines a term, when an archive catalogues a personal fund, when a literary database includes an exile author, when a historian publishes a source edition, heritage is being actively structured. Such work determines what later generations can recognise as part of their cultural inheritance. The Academy's responsibility is therefore both conservative and critical. It conserves materials, but it also makes them available for reinterpretation.

The public dimension of this work became stronger after the Academy adopted a more explicit orientation towards research in the public interest. The humanities fit this orientation naturally, although their usefulness is not always measurable in immediate economic terms. They help society understand language, law, memory, political identity, cultural transmission, historical trauma and democratic institutions. This kind of knowledge may not produce a patent, but it produces civic intelligibility. The Academy's mission statement emphasises research across a broad spectrum of sciences and the humanities while taking into account the needs of Czech society and national culture. In the humanities, those needs are often needs for continuity, interpretation and public reason rather than technological application (Academy of Sciences of the Czech Republic, n.d.).

The Academy also guards memory by creating trusted expert communities. In public debates about history, language, literature or cultural identity, expertise is often challenged by political emotion, media simplification or ideological mobilisation. The Academy's authority does not

come from claiming final ownership of truth, but from sustaining communities trained in evidence, method, peer review and disciplinary debate. This is why long-term institutes matter. They provide continuity beyond electoral cycles, media scandals and commemorative anniversaries. They allow scholars to build projects that require decades rather than months. In this sense, the Academy's guardianship of memory is inseparable from its institutional stability.

The relationship between memory and autonomy remains central. If the Academy were merely an arm of the state, its memory work would risk becoming official history. If it were merely a collection of private researchers, it might lack the capacity to maintain national scholarly infrastructure. Its post-1989 model attempts to hold together public support and scientific autonomy. This balance is particularly important in the humanities, where the objects of research often touch upon national identity, political legitimacy and collective trauma. The Academy must be public enough to serve society, but autonomous enough to disagree with comforting myths. Its guardianship is valuable only because it is scholarly, not ceremonial.

The Academy's role in preserving scholarly memory also reaches beyond Czech society into international scholarship. Digital libraries, bibliographical databases, critical editions and archival guides make Czech materials available to foreign researchers and to Czech studies abroad. They help prevent Czech history and literature from being trapped inside a linguistic or national enclosure. This is crucial for a small-language scholarly culture. Without organised access, foreign knowledge of Czech culture easily becomes dependent on translated fragments, famous names or politically fashionable themes. The Academy's infrastructure allows Czech topics to enter comparative research on Central Europe, nationalism, communism, exile, language culture and literary modernity.

One of the most important consequences of the post-1989 transformation was the replacement of controlled memory with plural memory. Under ideological rule, the state attempted to define which pasts were usable, which names were honourable and which questions were dangerous. The democratic Academy could not and should not impose a single counter-memory. Its function was to create conditions for multiple, evidence-based and critically examined memories to coexist. This included memories of victims and dissidents, but also memories of everyday life, compromise, reform communism, regional culture, minorities and institutions. The Academy's humanities thus helped Czech society move from the politics of silence to the discipline of inquiry.

This does not mean that the Academy's memory work is free of tension. Public expectations often demand quick answers, while scholarly infrastructure moves slowly. Funding systems may prefer short-term projects, while archives, dictionaries and editions require long continuity. Digital access may create new audiences, but it also requires resources, preservation strategies and intellectual curation. Memory politics can make some topics emotionally charged, while scholarly integrity requires patience. The Academy's task is to manage these tensions without abandoning the deeper logic of humanities research. Its guardianship is therefore not a finished achievement but an ongoing institutional practice.

The Academy's guardianship of cultural and scholarly memory is especially visible when seen against the full arc of Czech scientific history. From early learned societies and the national revival through the Czech Academy of Sciences and Arts, the Czechoslovak Academy of Sciences and the modern Czech Academy of Sciences, knowledge institutions have repeatedly carried more than research functions. They have helped define what counted as national

culture, scientific authority, public reason and intellectual continuity. After 1989, this long history could be reinterpreted without the old ideological frame. The Academy could recognise its predecessors while also acknowledging rupture, political dependence and reform. In doing so, it became not only the heir of earlier institutions but also their historian.

Thus, the Academy's role as guardian of cultural and scholarly memory after 1989 should be understood as one of the defining features of its humanities mission. It preserved archives, libraries, dictionaries, bibliographies, editions, databases, scholarly journals and personal fonds, but it also transformed these resources into instruments of democratic self-understanding. Its historians, philosophers, linguists and literary scholars helped Czech society recover suppressed traditions, examine compromised institutions, preserve linguistic and literary inheritance, and reconnect national culture with European and international scholarship. This guardianship was never merely conservative, because memory in a democratic research institution is not the passive protection of relics. It is the active, critical and methodical preservation of the conditions under which a society can continue to know, question and reinterpret itself.

Czech Language, Literature, and Cultural Identity

1. Linguistic Research and National Language Culture

The study of the Czech language within the Academy has always occupied a position that is more than technical, disciplinary or narrowly philological. Czech linguistics has been tied to the history of national self-definition, to the authority of written culture, to the public function of education and to the delicate relation between scholarly description and language cultivation. After 1989, this older connection did not disappear; rather, it had to be reinterpreted in a democratic, plural and increasingly European context. The Czech language was no longer to be defended through the rhetoric of ideological guardianship, nor through a rigid understanding of national purity. It had to be studied as a living historical and social system, shaped by everyday usage, public institutions, media, literature, regional variation, technological change and contact with other languages. The Academy's linguistic work therefore became one of the most visible ways in which the humanities connected national culture with empirical research and public service. In this field, the Academy was not simply a keeper of tradition, but a mediator between tradition and change (Czech Language Institute, n.d.; Sayer, 1998).

The institutional roots of this role reach back to the late 19th century, when the creation of the Czech Academy of Sciences and Arts gave the national language a central place in organised scholarly work. The task of preparing a large explanatory dictionary of Czech was not a merely lexicographical undertaking. It was also a cultural act, because the national language was treated as a foundation of modern Czech intellectual life. The creation of the Office of the Dictionary of the Czech Language in 1911 reflected the belief that a national scholarly institution should document, stabilise and interpret the language through which the nation understood itself. The later transformation of this office into the Czech Language Institute in

1946 widened the programme from dictionary work to dialectology, language history and the study of contemporary standard Czech. When the institute entered the Czechoslovak Academy of Sciences in 1953, it became one of the anchor institutions through which the socialist Academy inherited much older philological and national-cultural obligations (Czech Language Institute, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

The post-1989 transformation gave this inheritance a new political and intellectual meaning. During state socialism, language research did not suffer ideological intervention in exactly the same way as contemporary history, philosophy or sociology, but it was still embedded in a system that preferred centralised authority, regulated public expression and institutional hierarchy. Language cultivation could easily be understood as part of a broader culture of norm, correction and discipline. After the Velvet Revolution, linguistic authority had to be re-legitimated in a different public sphere. The Czech Language Institute could no longer speak as if a scholarly recommendation were an administrative command; instead, it had to explain, advise, contextualise and persuade. This shift did not weaken the institute's role. On the contrary, it made its expertise more publicly meaningful, because democratic society needs language guidance precisely when communication becomes freer, more diverse and more unstable.

The return of František Daneš to the directorship after the Velvet Revolution symbolised this connection between scholarly continuity and democratic renewal. Daneš represented the high tradition of Czech linguistics associated with functional, textual and communicative approaches to language. His post-1989 position was important not because one scholar could determine the future of the discipline, but because his return signalled that linguistic research would not simply continue as an inherited administrative structure. It would reconnect with interrupted lines of professional authority and with broader European linguistic debate. In this sense, the transformation of linguistic research after 1989 was less dramatic than the creation of the Institute of Contemporary History, but no less significant. It showed how a discipline with strong pre-socialist and socialist-era continuity could adapt to a democratic cultural environment without abandoning its accumulated expertise.

The older Prague linguistic tradition remained one of the intellectual backgrounds of this renewal. Czech linguistics had been internationally visible since the interwar period through the Prague Linguistic Circle, whose functional and structural approaches shaped phonology, stylistics, literary theory and the theory of the standard language. Bohuslav Havránek's work on the functional differentiation of the standard language was particularly important because it treated standard language not as a static ideal but as a system serving different communicative functions. This tradition allowed Czech linguistics to resist simple purism and to think about normativity in relation to usage, function, style and social need. After 1989, such ideas became newly relevant because the public sphere was expanding rapidly. Journalism, advertising, political debate, private business, higher education and electronic communication all placed pressure on established forms of standard Czech (Havránek, 1932/1964; Garvin, 1964).

The concept of national language culture therefore had to be modernised. In the 19th century, language culture was often associated with national revival, codification and the struggle for Czech as a full language of education, administration, science and literature. In the 20th century, it became connected with standardisation, schooling, public correctness and the authority of linguistic institutions. After 1989, however, the Czech language entered a

communicative environment in which pluralism, informality and social differentiation became more visible. The rigid opposition between correct and incorrect usage could no longer carry the whole burden of linguistic public service. Linguists had to explain why certain forms are standard, why others are colloquial or regional, how style depends on context, and how language norms change over time. The Academy's contribution was to replace moralised correction with informed interpretation.

This did not mean abandoning the idea of standard Czech. On the contrary, standard Czech remained essential for education, public administration, law, scholarship, journalism and cultural continuity. A modern democratic society needs a shared written and formal language in which institutions can communicate with citizens and citizens can participate in public life. The question was how this standard should be understood. If treated as an untouchable relic, it becomes alien to living speakers; if dissolved completely into everyday variation, it loses its integrative function. Czech linguistics after 1989 had to negotiate this balance with particular care because the Czech language situation includes a strong difference between standard Czech, colloquial forms, regional varieties and the widely discussed phenomenon of Common Czech. The Academy's language research provided the conceptual tools for understanding this complexity without turning it into a cultural panic.

The Czech Language Institute's departments reflect the breadth of this task. Research in grammar, lexicology, lexicography, dialectology, etymology, onomastics, stylistics, sociolinguistics and historical language development allows Czech to be studied as a full linguistic system across time, space and social use. Grammar examines the structure of contemporary Czech and its descriptive models. Lexicology and lexicography monitor vocabulary, neologisms, semantic change and dictionary representation. Dialectology preserves regional speech forms that carry deep historical memory. Etymology connects Czech words with Slavic and broader Indo-European histories. Onomastics studies proper names, which link language with territory, identity, family history and public administration. Stylistics and sociolinguistics examine the use of language in society, media, institutions and everyday interaction (Digital Humanities Czech Academy of Sciences, n.d.).

The importance of dialectology is especially clear in a national culture whose language has often been imagined through the prestige of written standard forms. Dialects and regional speech forms in Bohemia, Moravia and Silesia preserve linguistic histories that cannot be captured by standard grammar alone. They record settlement patterns, social relations, contact with neighbouring languages and local forms of identity. After 1989, regional variation acquired renewed cultural value because democratic society could more openly recognise internal plurality. Dialectological research therefore served both science and cultural memory. It showed that the national language is not a uniform block but a historically layered field. The Academy's work in this area helped protect local linguistic traditions from disappearance or folkloric simplification.

Onomastics also demonstrates the public dimension of linguistic research. Proper names are not merely labels; they carry legal, familial, historical and cultural significance. Personal names, surnames, place names and institutional names often become sites where language, identity and public administration meet. The Czech Language Institute's expert work on names and surnames is therefore part of a broader system of linguistic authority in civic life. Such expertise matters in registration, legal documents, spelling conventions, minority names, foreign names and the adaptation of names into Czech grammatical and orthographic

systems. In this field, the Academy's knowledge becomes practically relevant without ceasing to be scholarly. It helps society manage the everyday consequences of linguistic tradition and change.

The Language Consulting Centre is one of the most visible public interfaces of the Academy's linguistic mission. It assists Czech language users with spelling, inflection, conjugation, word meanings, etymology, usage, sentence formulation and interpretation. This service reveals a distinctive feature of Czech language culture: expert linguistic advice is not confined to academic journals but enters the lives of teachers, editors, journalists, civil servants, students, lawyers, writers and ordinary citizens. The consultation centre also transforms public questions into material for linguistic research, popularisation, codification and statistical analysis. In this sense, the relationship between the institute and society is reciprocal. The institute provides expertise, while public language problems reveal where norms are changing, where uncertainty arises and where research needs to become more communicative (Czech Language Institute, n.d.).

This public service role became more important after 1989 because the democratisation of public speech increased both freedom and uncertainty. Political language changed rapidly as the vocabulary of party orthodoxy disappeared and the language of democracy, civil society, markets, European integration and human rights entered public use. Journalism became more diverse, advertising expanded, private business created new registers, and the internet later transformed the speed and informality of communication. These changes did not simply add new words. They altered the social conditions under which language norms were negotiated. Linguists had to observe how foreign terms, bureaucratic formulas, media clichés, political metaphors and colloquial expressions entered the public sphere. National language culture became less a matter of guarding a closed inheritance and more a matter of helping a society speak precisely under conditions of rapid change.

The contact with English after 1989 is a particularly revealing example. English became increasingly important in business, science, higher education, technology, popular culture and European communication. For Czech language culture, this created both enrichment and anxiety. Borrowings, calques, hybrid constructions and terminology entered Czech at great speed. Some were necessary because new realities required new names; others were fashionable or imitative; still others reflected the globalisation of professional and digital life. The Academy's linguistic role was not to condemn foreign influence mechanically, because Czech has always developed through contact. Its task was to distinguish functional borrowing from unnecessary opacity, to explain adaptation, and to preserve the capacity of Czech to operate as a full language of science, administration, education and culture.

The question of Czech as a language of science is especially important for the Academy. On one hand, internationalisation requires Czech researchers to publish in English, participate in global debates and use international terminology. On the other hand, if Czech loses its ability to express specialised knowledge, national public culture becomes dependent on translation, simplification or foreign-language mediation. Linguistic research therefore belongs to the infrastructure of national scholarly sovereignty. Dictionaries, terminology, academic writing support and language cultivation allow Czech to remain a medium of sophisticated thought. This is not linguistic nationalism in a narrow sense. It is the recognition that a democratic society should be able to discuss complex matters in its own language while remaining open to international exchange.

The development of electronic resources changed the practical form of language culture. The Internet Language Reference Book, online dictionaries, digital lexical archives and other electronic tools made linguistic expertise accessible to a much broader public. Instead of relying only on printed manuals, users could consult electronic resources quickly and repeatedly. This altered the relationship between authority and access. Linguistic guidance became less ceremonial and more integrated into everyday writing practices. Digital resources also made the institute more visible to younger generations who encounter language problems through computers, mobile devices and online communication. The Academy's traditional role in codification thus entered a new technological environment (Czech Language Institute, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

Corpus linguistics introduced an even deeper methodological change. Although the Czech National Corpus is institutionally linked to Charles University rather than the Czech Academy of Sciences, its development has strongly affected Czech linguistic research as a whole. Founded in 1994, the Czech National Corpus project aims to map Czech in written, spoken, historical, regional and genre dimensions through large electronic text collections. It provides authentic language data for research in linguistics, social sciences, humanities and natural language processing. This empirical infrastructure shifted attention from isolated examples and prescriptive intuition towards large-scale evidence about actual usage. It also encouraged cooperation between grammar, lexicography, stylistics, sociolinguistics, computational methods and language teaching (Charles University, n.d.; Institute of the Czech National Corpus, n.d.).

For the Academy's linguistic culture, corpus evidence did not abolish normativity, but it changed its basis. A language recommendation that ignores real usage risks becoming artificial; a recommendation based only on frequency risks losing the social function of the standard language. Corpus data allow linguists to see how forms are distributed across genres, regions, periods and communicative situations. This makes it possible to formulate more nuanced judgements about language change. It also helps distinguish temporary fashion from stable development and private impression from documented tendency. In this sense, corpus linguistics strengthened rather than weakened responsible language cultivation. It made the public norm more empirical.

The Czech National Corpus also widened the cultural archive of Czech. Its resources include written synchronic corpora, web corpora, learner corpora, spoken corpora, dialect corpora, diachronic corpora, parallel corpora and specialised corpora, including materials connected with public speech, science, poetry and the language of the communist regime. Such diversity transforms language into a historical and social dataset. It allows researchers to study not only grammar and vocabulary but also discourse, ideology, register, genre and communicative style. This is important for the Academy's broader humanities mission because language becomes a bridge between linguistics, history, literary studies, sociology and digital humanities. The corpus does not replace archives, dictionaries or editions; it adds a new dimension to them (Czech National Corpus, 2026).

The post-1989 period also encouraged a more sociolinguistic understanding of Czech language culture. Questions of language are inseparable from education, social mobility, region, generation, gender, media and institutional power. The way people speak and write can affect their access to authority, employment, cultural recognition and educational success. Linguistic research therefore has a democratic dimension. It can expose how norms include

and exclude, how standard language is learned, how non-standard forms are evaluated, and how linguistic insecurity is produced. A mature national language culture must not humiliate speakers for variation, but it must also provide access to the standard forms required in public life. The Academy's expertise can help maintain this balance by combining respect for variation with commitment to clear and cultivated communication.

Language teaching and language education form another important area of connection between research and society. The Academy is not primarily a school system, but its linguistic work affects textbooks, teacher training, dictionaries, grammar descriptions, consultation services and public understanding of Czech. After 1989, Czech education had to move away from ideological formulas and towards more open civic and cultural formation. Language education played a central role in this transition because pupils encounter public culture through reading, writing, interpretation and argument. Linguistic research could support this process by clarifying grammar, style, textual coherence, vocabulary and the relation between spoken and written Czech. In this sense, the Academy contributed indirectly to the formation of democratic citizens.

The cultural significance of Czech linguistics is also visible in its relation to literature. Language and literature cannot be separated in the Czech tradition, because the national revival, literary canon and standard language developed in close contact. Literary works influence vocabulary, style and cultural prestige, while linguistic scholarship provides tools for understanding textual form and historical usage. After 1989, the reinterpretation of Czech literature required renewed attention to language variation, exile language, samizdat style, censorship, translation, regional speech and the rhetoric of official discourse. Linguistic research therefore supported literary studies by making the language of texts historically and socially legible. This connection prepares the ground for the later discussion of literary heritage, but it also belongs to language culture itself.

The relation between Czech and Slovak after the dissolution of Czechoslovakia created another important linguistic and cultural question. The split of the federal state in 1993 did not erase mutual intelligibility, shared media memories or personal bilingual experiences. Yet younger generations gradually encountered Slovak differently from those who had lived in the common state. Czech language culture therefore had to reckon with a changed political environment in which Slovak was no longer the second language of a common federation but the language of a neighbouring state with deep historical proximity. This development raised questions about linguistic contact, passive bilingualism, education, media exposure and Central European cultural memory. The Academy's broader humanities context made it possible to understand Czech not in isolation but in relation to Slovak and other neighbouring languages.

The Academy's linguistic work also participates in the protection of historical depth. The study of Old Czech, historical grammar, etymology and earlier textual traditions reminds society that contemporary language is the result of long development. Historical linguistics prevents national language culture from becoming trapped in present-day disputes over correctness. It reveals how forms that now seem natural were once innovations, how meanings shifted, how foreign influence was absorbed, and how written norms emerged from complex cultural processes. This long perspective is intellectually stabilising. It teaches that language change is normal, but also that continuity requires documentation and interpretation. The Academy's

historical linguistic research therefore deepens the public understanding of both change and inheritance.

The status of Czech as a small but fully developed European language gives special importance to institutional linguistic support. Large global languages often rely on vast publishing markets, international academic systems and commercial technologies to maintain their visibility. Smaller languages require deliberate scholarly infrastructure to remain competitive in science, administration, digital communication and cultural production. The Czech Academy's linguistic work is part of this infrastructure. It ensures that Czech has dictionaries, grammars, databases, advisory services, historical records and expert communities capable of responding to modern needs. Without such institutions, language culture would become either fragmented or dependent on informal opinion.

The digital age has made this support more urgent rather than less. Automatic translation, search engines, speech recognition, language models and digital publishing all depend on high-quality linguistic data. Czech can participate effectively in these technologies only if it possesses corpora, dictionaries, annotated resources, terminology and computationally usable descriptions. Although much natural language processing work is conducted at universities and specialised technological centres, the Academy's linguistic and lexicographical resources remain part of the broader ecosystem. The future of national language culture increasingly depends on the connection between classical philology and digital language technology. This is one of the most important transformations of the post-1989 period.

The public authority of the Czech Language Institute also raises a subtle question: how can an expert institution guide language without appearing authoritarian? The answer lies in the distinction between codification, recommendation and explanation. Codification identifies forms accepted as standard in particular contexts. Recommendation advises users on appropriate choices. Explanation shows why variation exists and how meanings, styles or forms differ. A democratic language culture needs all three, but it must avoid reducing language to a system of prohibitions. The Academy's strongest contribution is educational rather than punitive. It helps speakers become more conscious users of their language.

This consciousness is not only grammatical. It is also cultural and civic. Public language can clarify or obscure responsibility; it can include or exclude citizens; it can create trust or manipulation. The study of style, discourse and sociolinguistics therefore belongs to the wider democratic mission of the humanities. After 1989, Czech public life had to learn new vocabularies of law, democracy, market economy, European integration, human rights and civil society. It also had to identify the residues of ideological language inherited from the previous regime. Linguistic research could contribute to this process by analysing public discourse, naming clichés and showing how language shapes political perception.

The Academy's linguistic mission thus stands between memory and modernisation. It preserves the historical depth of Czech, maintains lexicographical and dialectological traditions, and protects the continuity of standard language. At the same time, it responds to new communication technologies, global English, digital corpora, public consultation, sociolinguistic diversity and changing media practices. This duality is precisely what makes linguistic research central to national culture. A language that only preserves itself becomes rigid; a language that only changes loses memory. The Academy helps Czech society live inside this tension without reducing it to fear or fashion.

Thus, linguistic research after 1989 became one of the most important humanities fields through which the Czech Academy of Sciences linked national identity, public culture and modern scholarship. The Czech Language Institute inherited the dictionary-making and language-cultivation traditions of earlier learned institutions, but it redefined them within a democratic, plural and technologically changing society. Its work in grammar, lexicography, dialectology, etymology, onomastics, stylistics, sociolinguistics, historical language development and public consultation helped maintain Czech as a language of education, science, administration, literature and everyday civic life. At the same time, cooperation with corpus-based and digital resources transformed language culture from a primarily prescriptive enterprise into an evidence-based and publicly accessible field of knowledge. The Academy's contribution therefore lay not in freezing the Czech language as a national relic, but in sustaining the scholarly and civic conditions under which it could continue to develop as a living European language.

2. Literary Studies and the Reinterpretation of Czech Cultural Heritage

The reinterpretation of Czech cultural heritage after 1989 cannot be understood without literary studies, because literature had long served as one of the principal languages through which Czech society imagined itself. From the national revival onwards, the literary word was never merely aesthetic; it was connected with language, education, collective memory, political legitimacy and the symbolic continuity of the nation. This gave Czech literary scholarship a public weight that exceeded the boundaries of textual interpretation. After the Velvet Revolution, however, this heritage could no longer be approached through the inherited categories of national celebration or socialist cultural pedagogy. The literary archive had been fractured by censorship, exile, samizdat, ideological criticism, compromised publishing institutions and the selective school canon. The task of the Academy's literary studies was therefore not simply to "restore" Czech literature to a pre-communist form. It had to reinterpret the whole cultural field as a historically divided, multilingual, politically pressured and aesthetically heterogeneous inheritance (Macura, 1995; Holy, 1996; Sayer, 1998).

The Institute of Czech Literature of the Czech Academy of Sciences occupied a central place in this process because it carried both institutional continuity and the memory of institutional distortion. Established in 1947 by the Czech Academy of Sciences and Arts, incorporated into the Czechoslovak Academy of Sciences in 1953, expanded through the Brno branch and the theatre studies centre, and transformed in 1970 into the Institute for Czech and World Literature, it reflected the changing political and cultural conditions of Czech literary scholarship. The adoption of its present name in 1993, connected with a return to the original concept of Czech studies, was therefore symbolically important. It suggested that literary scholarship after 1989 was not merely adding new topics to an old framework, but redefining the object of study itself. Czech literature was to be studied from the earliest period to the present as a complex cultural formation, not as a politically filtered sequence of approved works. The institute's emphasis on literary history, literary theory, lexicography and literary-science information made it a key institution for this reconstruction (Institute of Czech Literature of the CAS, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

The first and most visible post-1989 challenge was the reintegration of authors and texts that had been excluded from official literary life. Communist cultural policy had divided Czech literature into official, tolerated, prohibited, samizdat and exile spheres, although the borders

between them were often porous and historically changeable. Some authors moved between publication and silence; some published abroad while remaining culturally Czech; some appeared in samizdat but not in state publishing houses; some were allowed in limited editions only after compromise or ideological reinterpretation. After 1989, literary studies had to rebuild this broken map. It was not enough to insert the names of banned writers into existing literary histories. Scholars had to reconstruct the conditions of circulation, reception, censorship, readership, editorial mediation and textual variation that had shaped their works (Holy, 1996; Machovec, 2009; Přibáň et al., 2018).

This reconstruction required a change in the concept of the literary canon. Before 1989, the school and public canon had been shaped by a combination of older national tradition and ideological selection. Writers who could be presented as progressive, realist, socially engaged or compatible with official interpretations were privileged, while Catholic, liberal, existential, experimental, dissident and exile voices were often marginalised or suppressed. After 1989, the temptation was to construct a counter-canon based on moral rehabilitation alone. Yet such a solution would have reproduced the old habit of making literature serve a political hierarchy, even if the hierarchy had changed direction. The more difficult task was to create a plural canon in which aesthetic achievement, historical witness, textual complexity and cultural influence could be considered together. Czech literary heritage had to be reopened as a field of arguments rather than stabilised as a new list of heroes.

The recovery of samizdat literature was particularly important because it revealed that literary life under communism had not simply stopped outside official publishing. Samizdat created alternative circuits of writing, copying, editing, binding, distributing, reading and discussing texts. It was literary, political, social and technical at the same time. Its products included poetry, prose, essays, philosophical texts, religious reflections, memoirs, manifestos, journals and almanacs. To study samizdat only as “resistance literature” would be too narrow, because it also created communities, aesthetic experiments, editorial practices and forms of cultural sociability. The Academy’s work on samizdat therefore helped transform an underground memory into a scholarly field, with bibliographies, encyclopaedic entries, archival description and contextual interpretation (Přibáň et al., 2018; Přibáňová, 2021).

Exile literature posed a related but distinct problem. Exile writers were geographically outside the state but not outside Czech cultural history. Their works circulated through foreign publishers, émigré journals, radio broadcasts, smuggled books, personal networks and later translations. They preserved linguistic, political and literary continuities that domestic institutions often could not maintain openly. Yet exile also changed literary identity: writers addressed different audiences, lived in new languages, entered foreign cultural markets and sometimes became more internationally visible than domestically present. After 1989, literary studies had to overcome the artificial separation between domestic and exile literature. This required bibliographical precision and interpretative tact, because exile was not simply a heroic supplement to national literature, but one of the ways in which Czech culture survived its political fragmentation (Bolton, 2012; Czech Literary Bibliography, n.d.).

The reintegration of exile and samizdat also changed the interpretation of official literature. It became impossible to treat officially published works either as simple instruments of the regime or as aesthetically neutral texts untouched by politics. Writers who published in official channels did so under different conditions: some were loyal to the system, some compromised, some used coded language, some withdrew into private themes, some

exploited gaps in censorship, and some shifted position over time. Literary scholarship therefore had to read official literature with the same complexity that it applied to unofficial culture. The division between official and unofficial was historically real, but not analytically sufficient. The value of post-1989 reinterpretation lay in examining how censorship, self-censorship, genre, metaphor, irony, editorial mediation and readership shaped the literary text itself (Holy, 1996; Bren, 2010).

The literary heritage of the 20th century became especially charged because Czech literature had repeatedly encountered political catastrophe. The Nazi occupation, the Holocaust, the Stalinist years, the Prague Spring, the invasion of 1968, normalisation and the final crisis of the regime all left traces in literary form. Some works responded directly through testimony, satire or political reflection. Others registered trauma indirectly through silence, fragmentation, absurdity, grotesque humour, existential unease or the retreat into everyday detail. Post-1989 literary studies had to read these forms not as mere illustrations of history but as specific modes of historical experience. Literature could preserve what administrative documents and political speeches could not: ambiguity, fear, shame, irony, compromised intimacy and the texture of ordinary life under pressure.

The reinterpretation of Czech cultural heritage also meant returning to older periods with new questions. Medieval, early modern and 19th-century literature had not been censored in the same way as contemporary writing, but their interpretation had often been shaped by national teleology. The national revival, in particular, had long been treated as the heroic rebirth of the Czech nation through language and literature. After 1989, scholars could examine it more critically as a cultural construction involving philology, mythology, translation, social ambition, urban culture, political imagination and symbolic invention. This did not diminish the importance of the revival. Rather, it made it more historically intelligible. Czech literary heritage became less a sacred origin story and more a dynamic cultural process (Macura, 1995; Sayer, 1998).

The question of Czech-German relations also gained renewed significance. The literary history of the Bohemian lands cannot be reduced to Czech-language literature alone, because German-language writing, Jewish culture and bilingual intellectual life formed an essential part of the region's cultural landscape. Prague German literature, including figures such as Franz Kafka, Max Brod and their circles, had long complicated national literary categories. After 1989, the broader Europeanisation of Czech cultural memory encouraged literary studies to treat multilingual and interethnic contexts not as peripheral but as constitutive. The Czech canon could therefore be reinterpreted within the wider history of Central Europe, Habsburg culture, Jewish memory, borderland experience and translation. This was one of the most important ways in which literary studies helped move cultural identity beyond a closed national frame (Agnew, 2004; Sayer, 1998).

Literary theory also underwent a necessary repositioning. Under socialism, theory had been shaped by a complex mixture of Marxist vocabulary, structuralist inheritance, semiotics, textual analysis and the uneven reception of Western approaches. Czech structuralism and the Prague School had remained internationally significant, but their domestic institutional position had been affected by political conditions. After 1989, literary scholars could more freely engage with hermeneutics, reception theory, narratology, post-structuralism, gender studies, memory studies, cultural studies and comparative theory. Yet the best work did not merely import theoretical fashions. It used new frameworks to reinterpret Czech materials

while also recovering the specific strength of Czech structuralist and semiotic traditions. The renewal of literary studies therefore involved both internationalisation and the reactivation of domestic theoretical memory.

The Institute of Czech Literature's combination of literary history, theory and lexicography was especially suitable for this task. Lexicographical work in literary studies may seem less visible than interpretative monographs, but it is crucial for reconstructing cultural heritage. Dictionaries of writers, movements, terms, journals, institutions and post-1945 literature create the reference architecture within which later interpretation takes place. They also correct earlier exclusions by documenting authors, editors, publishers and periodicals that had been absent from official cultural memory. The Dictionary of Czech Post-1945 Literature and related databases show how the Academy transformed literary rehabilitation into structured knowledge. In this sense, reinterpretation was not only an essayistic or theoretical activity. It was also archival, bibliographical and lexicographical labour (Digital Humanities Czech Academy of Sciences, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

The Czech Literary Bibliography became one of the most important infrastructures for this reinterpretation. It carries on a long tradition of specialist bibliographical work at the Institute of Czech Literature and systematically maps literary life in the Czech lands from the beginnings of the national revival to the present. Its databases include materials on literary science, periodicals, journals, cultural journalism, scholarly press, book publications, exile literature and associated humanities disciplines. This infrastructure is not only a tool for specialists; it is a cultural map. It allows researchers to trace reception, polemics, translations, reviews, forgotten publications, regional periodicals and the movement of literary ideas across time. Without such bibliographical infrastructure, the reinterpretation of heritage would remain dependent on selective memory and well-known names (Czech Literary Bibliography, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

The Retrospective Bibliography of Czech Literature is especially significant because it preserves a documentary universe that predates and exceeds modern disciplinary boundaries. It covers periodicals published in the Czech lands in Czech, German and Slovak from the beginning of the national revival to the end of the Second World War, excerpting fiction, reviews, literary-scientific studies, essays, reports, comments, polemics, journalism and related materials. Its card catalogue, consisting of hundreds of drawers and approximately 1.75 million citation slips, represents a monumental form of scholarly memory. The ongoing digital accessibility of these materials turns a physical archive into a wider research infrastructure. This project demonstrates that cultural heritage is not only made of canonical books. It is also made of reviews, minor debates, periodical fragments, forgotten images and the everyday printed life of a literary culture (Digital Humanities Czech Academy of Sciences, n.d.).

The digital transformation of literary studies did not replace the older philological virtues of patience, accuracy and textual criticism. Instead, it expanded the scale at which those virtues could operate. Digital bibliographies, databases of literary figures, databases of book editions, digitised journals, rhyme databases, metrics tools and digital archives of popular literature made it possible to ask new questions about networks, circulation, genres, forms and reception. The Institute of Czech Literature's digital resources show that the reinterpretation of heritage now involves both close reading and data organisation. Scholars can still interpret individual poems, novels and essays, but they can also trace patterns across thousands of

publications. This is one of the clearest signs that the Academy's humanities have moved from post-1989 recovery towards 21st-century research infrastructure (Digital Humanities Czech Academy of Sciences, n.d.; Czech Literary Bibliography, n.d.).

The reinterpretation of Czech cultural heritage also required attention to popular literature. Earlier literary histories often privileged high culture, national classics and ideologically significant authors. Yet popular genres, periodical fiction, children's literature, detective stories, science fiction, humour, theatre, song texts and mass readerships are also part of cultural history. They reveal how society imagined morality, adventure, gender, class, nation, modernity and everyday life. The Academy's digital archive of popular literature and related bibliographical resources helped broaden the literary field beyond a narrow canon. This widening is not a lowering of scholarly standards. It is the recognition that cultural identity is produced not only by masterpieces but also by ordinary reading practices.

The relationship between literature and theatre is another important dimension. Czech cultural memory has often been theatrical as well as literary, from the National Theatre as a symbol of the 19th-century national movement to the public role of playwrights and theatre communities in the 20th century. The historical incorporation of the Centre for the Study of Czech Theatre into the Institute of Czech Literature reflected the close relationship between textual and performative culture. After 1989, this relationship acquired renewed importance because figures such as Václav Havel connected drama, dissent and political transformation. Literary studies therefore had to interpret theatre not merely as a branch of literature, but as a public form of cultural communication. Dramatic texts, performances, censorship records, theatre reviews and audience reception all became part of the reinterpretation of Czech heritage.

The figure of Václav Havel illustrates the difficulty of separating literary, political and cultural memory. Havel was a playwright, essayist, dissident and president, and after 1989 he became one of the most recognisable Czech cultural figures internationally. Literary studies could not treat him only as a political symbol, because his dramatic and essayistic work belonged to the history of absurd theatre, intellectual dissent and moral reflection. At the same time, his political role changed the reception of his writings and the symbolic meaning of Czech literature itself. The scholar's task was therefore to resist both hagiography and reduction. Havel's work had to be placed within literary form, theatrical practice, dissident networks, philosophical vocabulary and post-communist public memory (Bolton, 2012; Suk, 2003).

Bohumil Hrabal, Milan Kundera, Josef Škvorecký, Ludvík Vaculík, Ivan Klíma and many other authors posed different but related interpretative problems. Their works crossed borders between official publication, delayed publication, exile reception, foreign translation, domestic myth and international canonisation. Kundera's French and Czech reception, Škvorecký's exile publishing, Hrabal's negotiations with publication conditions, Vaculík's role in samizdat and Klíma's experience of censorship all show how 20th-century Czech literature cannot be interpreted without the history of institutions. Post-1989 literary studies therefore had to reconstruct not only texts but the conditions under which texts became available, unavailable, altered, translated or remembered. This institutional reading of literature was one of the Academy's strongest contributions to cultural reinterpretation (Holy, 1996; Bolton, 2012).

The reinterpretation of heritage also concerned religious and spiritual writing. Catholic authors, theological reflection, religious poetry and spiritual prose had often been marginalised under communist cultural policy, especially where they conflicted with atheistic ideology. After 1989,

these traditions could be re-examined as part of Czech literary culture rather than as external or reactionary residues. This was important because Czech cultural identity has often been simplistically described through secularism or anti-clerical narratives. Literary history shows a more complex picture, with strong religious, philosophical and ethical currents running through modern Czech writing. The recovery of these currents contributed to a richer understanding of national culture.

Gender became another area in which post-1989 reinterpretation gradually widened the field. Earlier literary histories often centred male authors, male critics and male institutions, while women writers were underrepresented or interpreted through narrow biographical categories. Newer scholarship could ask how gender shaped authorship, readership, genre, publishing, criticism and canon formation. Women's writing under socialism, women in samizdat, feminist thought, memoirs, correspondence and neglected 19th- and 20th-century authors all demanded renewed attention. This did not mean applying an external ideological template to Czech literature. It meant recognising that cultural heritage had been structured by social relations that literary scholarship had often left implicit.

The reinterpretation of cultural heritage also involved translation. Czech literature exists not only in Czech but through its translation into other languages and through the translation of foreign literatures into Czech. Translation shapes international reception, canonisation, publishing networks and the self-understanding of small-language cultures. After 1989, the opening of markets and borders changed the conditions under which Czech literature travelled abroad and foreign literature entered Czech readerships. Literary studies increasingly had to consider translation history, publishing mediation and cultural transfer. This was especially relevant for exile literature, Central European studies and the international reception of Czech modernism, dissent and post-communist writing.

The Academy's literary scholarship also helped separate cultural heritage from political nostalgia. After 1989, the recovery of suppressed literature could easily produce a romantic image of the pre-communist or dissident past. Yet literary history is most useful when it shows contradiction. The First Republic was culturally rich but socially and nationally complex. The socialist period was repressive but also produced significant aesthetic works, complicated compromises and unofficial creativity. Exile preserved freedom but also generated distance, fragmentation and loss. The national revival created modern Czech culture but also constructed myths that later needed critical analysis. The Academy's interpretative role was to make these contradictions visible without dissolving cultural identity into scepticism.

This balance between attachment and criticism is central to the humanities. A national literature cannot be studied well by scholars who despise it, but it also cannot be studied honestly by scholars who worship it. The post-1989 Academy had to cultivate a disciplined affection for Czech cultural heritage: serious enough to preserve, edit and interpret it, but critical enough to question its myths and silences. Literary studies contributed to cultural identity precisely by refusing to reduce identity to comfort. They showed that Czech literature is valuable not because it offers a single moral lesson, but because it records a long struggle over language, memory, freedom, belonging and form.

The public role of literary studies changed in this process. Under state socialism, literary criticism and literary history often had to negotiate censorship, ideological expectations and institutional control. After 1989, they entered a more open but also more market-oriented environment. The cultural authority of literature was no longer guaranteed by the symbolic

prestige of dissent or national tradition. Publishers, media, prizes, schools, universities and digital platforms all shaped reception in new ways. The Academy's literary studies therefore had to justify their public relevance not through ideological authority but through expert knowledge, documentation and interpretation. This was a more demanding but healthier form of legitimacy.

The Institute of Czech Literature's function as an information and consultancy centre in literary-science information shows how scholarly expertise can serve both specialised and public users. Researchers, students, teachers, editors, translators, cultural institutions and interested readers all depend on reliable information about authors, works, periodicals, editions and reception. In a digital environment filled with partial, unsourced or simplified information, the Academy's curated resources become even more important. They provide stability without closing interpretation. They allow cultural heritage to remain accessible, but also verifiable.

The reinterpretation of Czech cultural heritage through literary studies therefore belongs to the larger story of the Academy's post-1989 transformation. It illustrates how autonomy, memory, public responsibility and internationalisation converged in the humanities. Literary scholarship had to recover suppressed materials, confront the institutional history of censorship, rebuild reference infrastructures, widen the canon, internationalise methods and speak to a society rethinking its past. The Academy's strength lay in its ability to combine long-term bibliographical and lexicographical labour with new interpretative questions. This combination made it possible to move beyond the first phase of rehabilitation towards a more mature cultural historiography.

Thus, literary studies after 1989 became one of the principal means by which the Czech Academy of Sciences helped reinterpret Czech cultural heritage. The Institute of Czech Literature and its associated bibliographical, lexicographical and digital infrastructures made it possible to reconnect official, samizdat and exile literature, to recover neglected authors and genres, to rethink the national canon, and to place Czech literature within Central European, multilingual and international contexts. This reinterpretation was not a simple act of restoration, because the literary past itself had been fractured by censorship, exile, ideological selection and institutional compromise. The Academy's contribution lay in turning that fracture into a field of disciplined research. It showed that cultural heritage is not a closed inheritance handed down unchanged, but a living archive that must be edited, documented, questioned and read anew by each generation.

3. Editions, Dictionaries, Corpora, and Digital Humanities

The humanities of the Czech Academy of Sciences after 1989 cannot be understood only through interpretations, monographs or public debates about memory. Much of their real power lay in the less spectacular but more durable infrastructure of scholarly work: editions, dictionaries, bibliographies, corpora, archives, catalogues and digital repositories. These instruments do not simply accompany research; they shape what can be researched at all. A historian without reliable editions of sources, a linguist without dictionaries and corpora, or a literary scholar without bibliographical databases is forced to work through fragments, private memory and accidental availability. The Academy's humanities institutes therefore acted not only as centres of interpretation but as producers of the documentary and technical conditions

of knowledge. After the Velvet Revolution, this function acquired new importance because Czech society was recovering materials dispersed by censorship, exile, institutional rupture and ideological selection. The transition to digital humanities did not abolish the older philological and archival mission of the Academy. It gave that mission new instruments, wider audiences and a new technological form (Czech Language Institute, n.d.; Digital Humanities Czech Academy of Sciences, n.d.; Library of the Czech Academy of Sciences, n.d.).

The tradition of scholarly editions has deep roots in Czech academic culture. From the national revival onwards, the publication of older texts, historical documents, correspondence, literary works and linguistic materials was a way of creating a usable national archive. Editions gave written form to cultural continuity. They also made it possible to distinguish between legend, memory and evidence. In the 19th and early 20th centuries, the editing of medieval, early modern and revival-era texts helped define the contours of Czech literary and historical identity. In the 20th century, source editions and critical editions became even more important because political regimes repeatedly interrupted public access to documents, authors and interpretative traditions. After 1989, editions became one of the means through which suppressed or distorted parts of Czech culture could be returned to scholarly circulation. This was not a mechanical act of publication, but a disciplined process of textual criticism, commentary, contextualisation and bibliographical control.

The Academy's edition work belongs to a broader European humanistic tradition in which the reliability of scholarship depends on the reliability of texts. A critical edition is not merely a reprint. It establishes textual variants, clarifies provenance, identifies editorial interventions, provides explanatory notes and situates the work in its historical and intellectual environment. This is especially important in a culture where censorship, samizdat copying, exile publishing and posthumous editions often created multiple versions of the same text. In Czech literary and philosophical studies, the question "which text?" can be as important as the question "what does the text mean?". After 1989, scholars often had to compare official editions, foreign editions, manuscript versions, samizdat copies and later corrected versions. The Academy's philological competence was therefore essential to the reconstruction of cultural heritage.

Dictionaries represent another fundamental layer of this infrastructure. The Czech Language Institute inherited the dictionary-making tradition of the Czech Academy of Sciences and Arts, including the original task of preparing a major explanatory dictionary of the Czech language. This lexicographical mission was never merely technical, because Czech dictionary-making was historically linked to the development of the standard language, national education and the language of scholarship. The Dictionary of Standard Czech Language, published in print between 1960 and 1971 and later made available online, contains nearly two hundred thousand vocabulary entries with explanations and examples of use. Its digital availability changed the practical relation between the public and linguistic authority. A work that had once belonged primarily to libraries, schools and specialists became accessible to a much broader community of users (Czech Language Institute, n.d.).

The online transformation of dictionaries is one of the clearest examples of continuity through technological change. The scholarly principles of lexicography remained the same: evidence, definition, usage, grammatical description, semantic distinction and historical awareness. Yet the medium altered speed, reach and public expectation. Users could consult dictionaries instantly, compare forms, check meanings and move between related resources. This increased the public visibility of the Czech Language Institute and made linguistic scholarship

part of everyday writing, editing, teaching and administrative practice. Digital access also created new responsibilities, because users often expect immediate and authoritative answers even when language usage is variable or changing. The Academy therefore had to combine accessibility with explanation, resisting the reduction of linguistic knowledge to simple commands.

Historical dictionaries deepen this lexicographical mission by connecting modern Czech with earlier stages of the language. The Old Czech Dictionary, compiled at the Czech Language Institute between 1968 and 2008, describes Czech vocabulary from the earliest written records to 1500 and covers the alphabetical range from N to při in twenty-six volumes. Its importance is not limited to medievalists. It preserves the semantic world of earlier Czech and makes visible the historical depth behind contemporary vocabulary, literature, law, religion and culture. Historical lexicography reminds modern users that language is not a fixed possession but a long process of formation, borrowing, semantic change and textual transmission. In a national culture where language has often served as a symbol of continuity, such dictionaries provide the scholarly evidence for that continuity. They prevent national language memory from becoming a myth detached from textual history (Czech Language Institute, n.d.).

Dialect dictionaries perform a different but equally important cultural function. The Dictionary of Czech Dialects records national dialectal vocabulary and phraseology from the last century and a half, with a core of material from the first half of the 20th century. It preserves the linguistic worlds of Czech, Moravian and Silesian dialects, many of which are disappearing under the pressure of mobility, education, media standardisation and demographic change. This work shows that national language culture does not consist only of the standard language. It also includes local speech, regional memory, agricultural vocabulary, family expressions, names for tools, customs, landscape and everyday life. Dialect lexicography therefore becomes a form of cultural preservation. It records not only words but the social worlds in which those words made sense (Czech Language Institute, n.d.).

The relationship between standard dictionaries, historical dictionaries and dialect dictionaries reveals the richness of the Academy's linguistic infrastructure. Together they show Czech as a system that is simultaneously standardised, historical and regionally varied. The standard dictionary supports public communication, education and administration. The historical dictionary preserves older textual layers. The dialect dictionary captures local and regional speech worlds. None of these dimensions is sufficient alone. A language reduced to standard form loses memory and social texture; a language studied only historically loses contact with living usage; a language approached only through dialects may lose its integrative public function. The Academy's lexicographical work is valuable precisely because it holds these dimensions together.

Literary dictionaries and bibliographical databases perform a parallel function for literature. The Dictionary of Czech Post-1945 Literature, developed from earlier printed dictionaries and updated as an electronic resource, is more than a reference list of writers. It helps reconstruct a literary field fragmented by censorship, exile, samizdat, political rehabilitation and changing scholarly interpretation. Post-1945 Czech literature cannot be mapped adequately through school canon or commercial visibility. It requires systematic information about authors, works, editions, literary groups, reception and publication histories. The digital dictionary transforms this information into a public research tool. It allows teachers, students, scholars, translators

and readers to orient themselves within a complex cultural landscape (Digital Humanities Czech Academy of Sciences, n.d.).

The Czech Literary Bibliography is one of the major infrastructures of Czech literary studies. It continues the long bibliographical tradition of the Institute of Czech Literature and systematically records the literary life of the Czech lands from the national revival to the present. Its value lies in the fact that literature is not made only of books. It is also made of reviews, polemics, literary criticism, periodical essays, scholarly articles, interviews, obituaries, cultural journalism, translations, regional publications and minor printed traces. Bibliography turns this dispersed literary life into searchable knowledge. It allows researchers to study reception, networks, forgotten debates and the changing public presence of authors. Without it, literary history would depend too heavily on canonical memory and easily available texts (Czech Literary Bibliography, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

The Retrospective Bibliography of Czech Literature demonstrates the scale of this documentary work. It covers materials from Czech, German and Slovak periodicals published in the Czech lands from the beginnings of the national revival to 1945, including fiction, reviews, literary-scientific studies, journalism, reports, polemics and visual excerpts. Its card catalogue contains approximately 1.75 million citation slips, organised in hundreds of drawers, and has been gradually made accessible online through digitisation. This resource shows that cultural heritage is not only a set of famous works. It is an enormous tissue of periodicals, minor publications, translations, forgotten responses and everyday print culture. The digital opening of such a bibliography changes the geography of research because scholars no longer need to rely exclusively on physical access to a local catalogue (Digital Humanities Czech Academy of Sciences, n.d.).

The significance of these bibliographical projects is methodological as well as practical. Bibliography disciplines interpretation by forcing scholars to confront the material record. A literary critic may construct a brilliant reading of an author, but without bibliographical control it is difficult to know how that author was published, reviewed, translated, censored, ignored or rediscovered. Bibliographies reveal the public life of texts. They show when a work entered debate, where it circulated, who responded to it and how its reception changed over time. For a literature affected by exile and censorship, this is especially important. The act of mapping publication and reception becomes part of cultural reconstruction.

The Digital Humanities portal of the Czech Academy of Sciences illustrates the new form taken by these older scholarly traditions. It brings together databases, tools and digital resources produced by Academy institutes, including literary bibliographies, dictionaries, corpora-related resources, archives, databases of literary figures, databases of book editions, digital archives of popular literature, digitised journals and tools for analysing Czech verse. This diversity shows that digital humanities in the Czech Academy did not emerge as an abstract technological fashion. It grew from concrete disciplinary needs: to preserve texts, structure bibliographical data, analyse language, make collections accessible and connect scattered materials. Digital humanities therefore continued the Academy's historical mission of organising knowledge, but under conditions of electronic access, searchability and data interoperability (Digital Humanities Czech Academy of Sciences, n.d.).

Digital tools devoted to Czech poetry are particularly revealing. Databases of Czech metres, rhyme databases, frequency dictionaries of Czech poetry and related analytical tools make it possible to study poetic form at a scale that traditional reading alone could not achieve. This

does not mean that digital analysis replaces interpretation. A rhyme database cannot explain the emotional force of a poem, and a frequency dictionary cannot determine literary value. However, such tools can reveal patterns of metre, sound, vocabulary and form across large bodies of poetic material. They can support historical poetics, comparative literary studies and the study of genre development. In this way, digital humanities expand rather than diminish the older philological attention to form.

Digital archives of popular literature broaden the cultural field in another direction. Traditional literary scholarship often concentrated on canonical authors, high literature and nationally significant works. Yet popular literature shaped reading habits, imagination, humour, social stereotypes, gender roles and everyday cultural consumption. By preserving and organising materials connected with popular genres, the Academy helps researchers study the full ecology of literary culture. This is important for a democratic cultural history because it refuses to identify heritage only with elite works. Cultural identity is formed by classics, but also by popular fiction, periodical entertainment, children's literature, adventure narratives, humour and mass readerships. Digital preservation makes such materials available for serious scholarship without forcing them into the status of canon.

The Library of the Czech Academy of Sciences provides another essential institutional layer. Its Digital Library contains digitised periodicals and monographs produced by the institutes of the Academy and their predecessors, with materials reaching back to the 19th century. This resource preserves the publication output of academic institutions across political regimes, disciplinary changes and institutional reorganisations. It is therefore indispensable for the history of Czech science and scholarship. Digitised Academy periodicals allow researchers to trace how disciplines developed, how terminology changed, how institutes represented themselves and how scholarly communication evolved. The Digital Library also demonstrates that the Academy's memory is not only archival but published, textual and serial (Library of the Czech Academy of Sciences, n.d.; Library of the Czech Academy of Sciences, n.d.).

The digitalisation of Academy publications also changes access to institutional memory. Earlier, many publications were available only in specialised libraries or through personal scholarly networks. Digital access makes them easier to consult, cite and compare. This is particularly important for researchers outside Prague, foreign scholars of Czech studies and interdisciplinary projects that need access to older journals or monographs. It also protects fragile materials from excessive handling while making their contents more visible. In this sense, the Digital Library performs both preservation and democratisation. It keeps scholarly memory alive by removing unnecessary barriers to consultation.

Corpora represent one of the most transformative forms of humanities infrastructure in the late 20th and early 21st centuries. A corpus is not simply a collection of texts; it is a structured, searchable and often annotated body of language data. Corpus linguistics makes it possible to study actual usage across genres, periods, registers, regions and communicative contexts. For Czech linguistic research, corpus methods created a new empirical foundation for grammar, lexicography, stylistics, sociolinguistics, language teaching, translation studies and natural language processing. They shifted part of linguistic authority from intuition and selected examples towards large-scale evidence. This was a major methodological change in the study of contemporary Czech.

The Czech National Corpus, founded in 1994 at Charles University, became the central Czech infrastructure for corpus-based language research. Although institutionally outside the Czech

Academy of Sciences, it is indispensable for understanding the broader ecosystem in which Academy linguistics and digital humanities operate. The project builds and maintains large electronic corpora of written, spoken, historical, regional and specialised Czech, and it provides access to tools for empirical linguistic inquiry. Its corpora include large synchronic written corpora, reference corpora, spoken corpora, dialectal corpora, learner corpora, parallel corpora and historical materials. Such resources have transformed the study of Czech from a predominantly dictionary-and-grammar-based field into a data-rich research environment (Institute of the Czech National Corpus, n.d.; Czech National Corpus, 2026).

The relation between corpora and dictionaries is especially important. Modern lexicography increasingly depends on corpus evidence because dictionaries need to describe how words are actually used, which collocations are typical, how meanings shift and how register affects usage. Corpus data can reveal frequency, context, semantic patterns, phraseology and stylistic distribution. At the same time, corpora do not automatically produce lexicographical meaning. They require trained interpretation, selection and definition. The best dictionary work therefore combines corpus evidence with scholarly judgement. This relationship between data and expertise is one of the defining features of contemporary humanities infrastructure.

Corpora also affect language culture. In older prescriptive traditions, a disputed form might be judged primarily by codified rules or the authority of grammarians. Corpus evidence allows linguists to ask how widespread the form is, in which genres it appears, whether it is increasing, and whether it remains restricted to informal contexts. This does not mean that frequency equals correctness. It means that recommendations can be more realistic and nuanced. For a democratic language culture, this is crucial. Users need guidance that recognises living usage without dissolving the standard language into statistical description.

The digital turn also made possible new forms of interdisciplinary cooperation. Literary scholars can use corpora and databases to examine vocabulary, genre, poetic form, stylistic change and reception. Historians can use digitised periodicals and bibliographies to trace public discourse, political vocabulary and networks of publication. Linguists can work with computational experts on annotation, tagging, morphology and natural language processing. Archivists can cooperate with database designers on metadata and access. Philosophers and intellectual historians can trace concepts across large textual collections. The humanities thus become more technologically mediated, but also more interconnected.

This interdisciplinarity is one of the reasons why digital humanities fit the modern Academy particularly well. The Academy is organised as a network of specialised institutes, each with its own disciplinary traditions and collections. Digital methods make it possible to connect these traditions without dissolving them. A literary database can link to a bibliography, a digitised journal, an author dictionary and a corpus. An archival description can support institutional history, biography, sociology of science and intellectual history. A dictionary can be used by linguists, teachers, editors, computational researchers and cultural historians. Digital humanities therefore translate institutional plurality into research connectivity.

However, the digital transformation also introduces new risks. Searchability can create the illusion that everything important has been found. Databases may privilege what has been digitised over what remains in physical archives. Metadata categories can shape interpretation invisibly. Users may extract isolated fragments without understanding textual context or provenance. The Academy's responsibility is therefore not only to digitise but to curate. Digital humanities require the same critical virtues as traditional humanities: source criticism,

contextualisation, transparency, citation and awareness of absence. Without these virtues, digital abundance can become another form of distortion.

The Academy's role is especially important because digital resources are expensive, technically fragile and institutionally demanding. Databases must be maintained, updated, migrated, documented and protected. File formats change, software becomes obsolete, interfaces require redesign, and long-term preservation must be planned. A digital resource that is built but not maintained may become unusable within a generation. The Academy's public research status gives it a special responsibility to sustain resources beyond short project cycles. In the humanities, where some scholarly tools remain useful for decades, long-term stewardship is as important as innovation.

The move towards open access and public availability has also changed the social meaning of scholarly infrastructure. Earlier, many dictionaries, bibliographies and source editions circulated mainly among specialists. Digital access allows wider publics to consult them: teachers preparing lessons, journalists checking facts, translators verifying usage, local historians searching periodicals, students writing theses, and readers discovering forgotten authors. This wider access does not simplify the resources themselves. Rather, it requires institutions to design interfaces, explanations and guidance that allow non-specialists to enter scholarly materials responsibly. The Academy's digital humanities therefore have an educational and civic dimension.

The digital humanities also help overcome the fragmentation caused by 20th-century political history. Samizdat texts, exile publications, official journals, censored editions, personal papers, bibliographical slips and institutional records were often separated by geography, legality, medium and political status. Digital projects can reconnect these materials in ways that were not possible when each collection remained physically isolated. They can reveal networks between authors, publishers, reviewers, institutions and readers. They can make exile and domestic culture visible within a single research horizon. In this sense, digital humanities continue the post-1989 work of reintegrating Czech cultural memory.

At the same time, digital access does not remove the need for editorial mediation. A scanned page is not the same as a critical edition. An OCR text is not the same as a reliable transcription. A database entry is not the same as a scholarly interpretation. The Academy's traditions of editing, lexicography and bibliography remain essential because digital materials must be verified, described and contextualised. The future of Czech humanities therefore depends not on replacing philologists with technicians, but on creating scholarly teams in which philological, historical, linguistic and technical expertise cooperate. The digital humanities are strongest when they preserve this balance.

The Academy's dictionaries, editions, bibliographies and digital resources also contribute to internationalisation. Czech is a smaller European language, and foreign scholars often depend on organised reference tools to enter its cultural and linguistic history. Digital resources make Czech materials more accessible to researchers abroad, especially when interfaces, metadata or descriptions are available in English or connected to international infrastructures. This does not eliminate the language barrier, but it lowers the threshold for comparative work. It allows Czech literature, language and history to participate more fully in European humanities research. For the Academy, digital infrastructure is therefore also a form of cultural diplomacy.

The relationship between national culture and digital research is not contradictory. Some might assume that digital humanities weaken national traditions by dissolving texts into data or

placing them in global technical systems. In fact, for smaller cultures, digital infrastructure can strengthen cultural presence by making materials findable, citable and reusable. A language, literature or historical tradition that is not digitally represented risks becoming invisible in contemporary scholarship. The Academy's task is therefore to ensure that Czech cultural heritage is not merely preserved in physical collections but present in the digital knowledge environment. This is one of the new forms of national scholarly responsibility in the 21st century.

The post-1989 humanities thus moved through several stages of infrastructure renewal. The first stage involved recovery: opening archives, restoring authors, publishing sources and rebuilding bibliographical control. The second involved consolidation: creating reliable reference works, dictionaries, databases and scholarly editions. The third involved digital transformation: making resources searchable, interconnected and accessible beyond traditional research rooms. These stages did not replace one another in a simple sequence. They overlapped and continue to coexist. The Academy's achievement lies in maintaining the older forms of scholarly discipline while adapting them to new forms of access and analysis.

Thus, editions, dictionaries, corpora and digital humanities form one of the strongest foundations of the Czech Academy of Sciences' humanities mission after 1989. They transform cultural memory into verifiable knowledge, preserve linguistic and literary heritage, support public language culture, enable empirical research and connect Czech scholarship with international digital infrastructures. Their importance lies precisely in their apparent modesty: they do not always produce immediate public drama, but they determine the conditions under which reliable interpretation becomes possible. The Academy's contribution has been to sustain long-term scholarly tools that outlast political fashion, market cycles and media attention. In doing so, it has shown that the humanities are not only about ideas and narratives, but also about the patient construction of the instruments through which a society can continue to read, speak, remember and understand itself.

History, Memory, and Contemporary Society

1. Research on Modern Czech and Czechoslovak History

Research on modern Czech and Czechoslovak history after 1989 became one of the most intellectually and publicly important areas of the humanities within the Czech Academy of Sciences. It was not merely a matter of adding new facts to an existing national story. The modern period itself had to be reassembled, because its interpretation had been repeatedly shaped by political regimes, ideological vocabularies, state anniversaries, school curricula, commemorative rituals and archival restrictions. The 19th-century national movement, the birth of Czechoslovakia, the First Republic, the Munich crisis, the Protectorate, the post-war settlement, the communist seizure of power, Stalinism, the Prague Spring, normalisation, dissent, the Velvet Revolution, the dissolution of the federation and the post-1993 Czech Republic all became fields of renewed scholarly inquiry. Each of these themes had existed before 1989, but many had been surrounded by silences, moral simplifications or official

interpretative schemes. After 1989, the Academy's historians could treat them as open problems rather than as episodes already fixed by doctrine. Modern history became a laboratory in which Czech society could examine its own political identity, its democratic aspirations, its traumas and its unresolved continuities (Kopeček & Kolář, 2007; Agnew, 2004; Sayer, 1998).

The importance of this field derived partly from the fact that modern Czech history is unusually dense in institutional transformations. In less than a century and a half, the Czech lands moved through the late Habsburg monarchy, the First Czechoslovak Republic, Nazi occupation, restored post-war democracy, communist dictatorship, federal socialism, democratic revolution, peaceful state division and European integration. Each transformation altered the relationship between nation, state, citizenship, language, class, religion, region and political legitimacy. Historians therefore had to resist the temptation to present modern Czech history as a straight line from national revival to democratic statehood. The record was too complicated for such a linear narrative. It contained democratic achievement, authoritarian pressure, imperial inheritance, minority conflict, social modernisation, ideological mobilisation and repeated redefinitions of sovereignty. The Academy's contribution was to support research capable of holding these contradictions together without dissolving them into either national self-congratulation or moral exhaustion.

The Institute of Contemporary History became the most visible institution for the study of the recent modern period. Established in 1990, it was founded in direct response to the post-November need for independent research into Czechoslovak and Czech history from 1938 to the present. Its chronological scope was meaningful: 1938 marked the Munich crisis and the collapse of the First Republic's territorial and political security, while the present remained open because the history of communism, transition and democracy was still unfolding. The institute's creation signalled that contemporary history was not a secondary appendix to older national history. It became a central field for understanding Czech society itself. The institute's motto, "To know the past, to understand the present", expresses this dual orientation: historical research was expected to produce specialist knowledge, but also to illuminate the political and moral conditions of the present (Institute of Contemporary History of the CAS, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

The Institute of History represented another necessary pillar of modern historical research, because contemporary history cannot be separated from longer continuities. The institute, reopened in 1990 after the closure of its socialist predecessor, traced its institutional lineage to the Czechoslovak State Historical Editorial Institute founded in 1920 and incorporated into the Czechoslovak Academy of Sciences in 1953. This continuity mattered because the study of modern Czech history depends on source editions, bibliographies, historical geography, biographical dictionaries and long-term historical infrastructure. The Institute of History offered a broader chronological and methodological framework within which modern events could be linked to medieval, early modern and 19th-century formations of statehood, culture and national identity. The modern period therefore appeared not as an isolated political drama but as part of a longer Czech and Central European historical field (Institute of History of the CAS, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

The Masaryk Institute and Archives added a third essential dimension by connecting research on modern history with archives of political thought, intellectual life, scientific institutions and the Academy itself. Its collections include archival fonds of the Czechoslovak Academy of

Sciences and the Czech Academy of Sciences, as well as materials related to earlier scholarly institutions and personal papers. This means that modern Czech history can be studied through state politics, but also through the history of experts, institutions, correspondence, academic communities and documentary practices. The Masaryk tradition is especially important because Tomáš Garrigue Masaryk stands at the intersection of philosophy, sociology, democratic politics and national statehood. Research on Masaryk, Edvard Beneš, the First Republic and democratic political culture provided post-1989 Czech society with more than symbolic rehabilitation. It provided a scholarly route back to the foundations and tensions of Czech democracy (Masaryk Institute and Archives of the CAS, n.d.; Masaryk Institute and Archives of the CAS, n.d.).

One of the most important post-1989 changes was the movement from official national narrative to problem-oriented historiography. Under the communist regime, the modern past had often been ordered around class struggle, anti-fascist legitimacy, the leading role of the Communist Party and the supposed historical necessity of socialism. After 1989, historians were free to dismantle these interpretative frameworks, but the mere reversal of ideological signs would not have been sufficient. A democratic historiography had to ask different questions: how institutions actually functioned, how political culture changed, how social groups experienced transformation, how citizens adapted to pressure, how memory was constructed, and how the Czech and Slovak parts of the common state interacted. This change encouraged the development of political history, social history, cultural history, intellectual history, memory studies, oral history and the history of everyday life. Modern history became less a sequence of great dates and more an investigation of structures, practices and meanings.

The 19th century and the national movement remained indispensable for understanding the modern Czech project. The national revival had created not only literature and linguistic identity, but also a framework in which culture, politics and scholarship were closely intertwined. After 1989, historians could examine this period more critically, without simply reproducing revivalist mythology or socialist reinterpretations. The Czech nation could be studied as a historical construction formed through language, education, associations, print culture, political representation and competition within the Habsburg monarchy. This perspective did not weaken the significance of national revival. It made that significance more historically precise. The modern Czech nation appeared as a product of cultural labour, institutional imagination and social mobilisation, rather than as an ancient essence waiting to awaken (Macura, 1995; Sayer, 1998).

The First Czechoslovak Republic became another crucial object of reinterpretation. After 1989, it was often remembered as a democratic model and moral predecessor of the restored Czech democracy. This memory had strong foundations: the First Republic represented parliamentary democracy, cultural pluralism, educational expansion and international recognition. Yet historical research had to move beyond idealisation. It examined party politics, social inequality, nationality conflicts, Slovak autonomy, the position of Germans, Hungarians, Jews and Ruthenians, economic modernisation, agrarian politics, liberal institutions and the vulnerabilities of the state in the European crisis of the 1930s. The Republic could thus be appreciated without being mythologised. Its history became not only an object of nostalgic return, but a field for understanding the conditions under which democracy is built, strained and endangered (Agnew, 2004; Orzoff, 2009).

The Munich crisis of 1938 and the destruction of the First Republic remained among the most emotionally charged subjects of modern Czech history. Earlier interpretations had often used Munich as a symbol of betrayal, national vulnerability and Western failure. Post-1989 historiography did not discard these moral and political dimensions, but it placed them in wider diplomatic, military, social and Central European contexts. Historians could examine the international system, appeasement, Czechoslovak defence planning, minority politics, propaganda, public fear and the psychological shock of territorial dismemberment. Munich was no longer simply a national trauma repeated in commemorative language. It became an event through which scholars could analyse the fragility of small-state sovereignty, the crisis of interwar democracy and the transformation of European power before the Second World War.

The history of the Protectorate and the Second World War acquired a similarly expanded frame. Research after 1989 could address Nazi occupation, resistance, collaboration, repression, everyday survival, forced labour, cultural policy, the Holocaust and the relationship between Czech society and German power with greater archival and methodological freedom. The earlier anti-fascist narrative had preserved important elements of resistance memory, but it had often simplified the complexity of occupation society and underplayed the specificity of Jewish persecution. The post-1989 field became more attentive to local administration, social behaviour, moral ambiguity and the bureaucratic mechanisms of violence. It also situated Czech wartime experience within broader European histories of occupation, genocide and collaboration. This internationalisation was essential because the Protectorate was both a Czech national experience and part of Nazi Europe.

The post-war years between 1945 and 1948 emerged as one of the most difficult fields of interpretation. They were not merely a transition from war to communism, but a period of restoration, revenge, democratic hope, social radicalisation, ethnic transformation and growing dependence on the Soviet sphere. The expulsion and transfer of the German population, property confiscations, the National Front system, retributive justice, the reconstruction of political parties and the rising power of the Communist Party all required renewed study. Earlier official narratives had treated many of these developments as historically justified stages on the way to socialist renewal. Post-1989 historiography was able to ask more uncomfortable questions about violence, legality, national homogenisation and the moral costs of post-war state-building. The period became a key site for understanding how democratic language and authoritarian tendencies could coexist in the immediate aftermath of war (Frommer, 2005; Kopeček & Kolář, 2007).

The communist seizure of power in February 1948 and the Stalinist period became central to the new historiography of dictatorship. Historians could reconstruct political mechanisms, party strategy, security apparatuses, show trials, collectivisation, persecution of churches, restructuring of education, cultural control and the transformation of the economy. The study of Stalinism also forced historians to examine the social sources of communist power. The regime was not imposed only from above or from abroad; it also mobilised sections of society through promises of justice, advancement, national security and social equality. This did not diminish the violence of the dictatorship. It made the dictatorship historically intelligible as a system that combined coercion, ideology, opportunity and institutional transformation. Such research helped Czech society move beyond a simple image of communism as either foreign imposition or domestic destiny.

The 1960s and the Prague Spring became another major field of modern historical research. Under normalisation, the Prague Spring had been condemned or silenced; after 1989, it became available for detailed reconstruction. Historians examined reform communism, economic reform, the transformation of cultural life, debates inside the Communist Party, the role of intellectuals, the media, Slovak federalisation, civic participation and the international dimensions of the crisis. The Soviet-led invasion of August 1968 could then be studied not only as a military act but as the violent interruption of a complex reform process. This approach allowed historians to ask what kind of socialism the reformers imagined, what social forces supported them, and why the experiment was both promising and vulnerable. The Prague Spring thus became a subject of institutional, intellectual and social history rather than only a national symbol (Williams, 1997; Institute of Contemporary History of the CAS, n.d.).

Normalisation after 1969 demanded a different kind of historical imagination. It was not defined only by mass terror, although repression, purges, surveillance and exclusion were central to its operation. It also involved routine adaptation, career strategies, consumer aspirations, private retreat, cultural coding, selective compromise and the management of public language. Historians increasingly studied normalisation as a social order with its own forms of stability, fear and negotiation. This approach helped explain why the regime lasted for two decades after 1968 and why its collapse in 1989 was at once sudden and deeply prepared by long-term exhaustion. The study of normalisation also brought the history of everyday life into modern Czech historiography. It asked how people lived inside a regime that demanded loyalty but often received only ritual conformity (Bren, 2010; Vaněk & Mücke, 2016).

Dissent became one of the most prominent subjects of post-1989 research, but it also required careful contextualisation. Charter 77, samizdat, underground culture, religious activism, ecological initiatives and human rights networks were central to the moral history of late socialism. Yet scholarship had to avoid turning dissent into a simplified national conscience detached from social context. Historians examined the networks, internal disagreements, international contacts, philosophical language, legal arguments and everyday risks of dissent. They also asked why dissent remained socially limited, how it communicated with broader society and how it later influenced the political culture of the Velvet Revolution. This approach preserved the moral importance of dissent while transforming it into a serious historical field (Bolton, 2012; Kopeček, 2019).

The Velvet Revolution itself became an object of historical research almost immediately after it occurred. This presented a methodological challenge because historians were studying events that many of them had witnessed personally and that still shaped political legitimacy. Jiří Suk's detailed work on the revolutionary months from November 1989 to June 1990 showed how the fall of communist power involved negotiation, improvisation, symbolic action, institutional uncertainty and the interaction of civic movements with old state structures. Research on 1989 therefore moved beyond the image of a spontaneous moral uprising without political complexity. It examined Civic Forum, student mobilisation, party negotiations, security institutions, public demonstrations, media, federal politics and the emergence of new democratic elites. The revolution became history not by losing its emotional force, but by becoming available to source-based analysis (Suk, 2003; Judt, 2005).

The dissolution of Czechoslovakia in 1992–1993 opened another field of modern historical inquiry. The separation of the Czech Republic and the Slovak Republic was peaceful, but it raised profound questions about federalism, national identity, political representation,

constitutional design and the legacy of the common state. Historians and social scientists examined why a state that had survived occupation, communism and revolution did not continue after democratic renewal. The issue was not reducible to nationalist conflict. It involved party politics, economic reform, different visions of sovereignty, constitutional negotiation and the changing meaning of Czechoslovakism. Research on the dissolution helped place Czech history in relation to Slovak history rather than treating Slovak development as a secondary background to Czech statehood (Leff, 1997; Innes, 2001).

The post-1993 Czech Republic gradually became part of contemporary history as well. Historians began to study democratic consolidation, market transformation, restitution, privatisation, European integration, NATO accession, EU membership, constitutional culture, regional development and changing public memory. This field overlapped with political science, sociology and economics, but historical research added long perspective and archival sensitivity. It showed that post-socialist transformation was not only a technical transition from plan to market or dictatorship to democracy. It was also a struggle over memory, institutions, social expectations, expertise and national self-understanding. By extending contemporary history into the post-1989 period, the Academy helped prevent the present from appearing historically weightless.

Modern Czechoslovak history also required sustained attention to the Czech-Slovak relationship. For much of the 20th century, the Czech and Slovak histories were institutionally joined but socially and culturally distinct. The common state contained asymmetries of economic development, political influence, language, regional identity and historical memory. Under communism, federalisation after 1968 changed the constitutional structure but did not fully resolve deeper questions of equality and sovereignty. After 1989, these questions returned in democratic form. Historians therefore had to examine Czechoslovakia not only as a Czech national achievement but as a shared and contested political project. This was essential for avoiding a Prague-centred narrative of the common state.

The Academy's research on modern history also became increasingly comparative. Czech experience was placed alongside Polish, Hungarian, East German, Austrian, Slovak and broader Central European developments. This comparative perspective was crucial for studying nationalism, state socialism, post-war violence, dictatorship, dissent, transition and Europeanisation. It allowed historians to distinguish what was specific to the Czech lands from what belonged to wider regional patterns. It also helped Czech historiography enter international debates rather than remaining confined to national self-explanation. The Institute of Contemporary History's projects and public research profile reflect this outward orientation, especially in fields such as politics, institutions, power, democracy, everyday life in dictatorship and post-1989 transformation (Institute of Contemporary History of the CAS, n.d.; Institute of Contemporary History of the CAS, n.d.).

The history of institutions became especially important for the Academy's self-understanding. Modern Czech and Czechoslovak history is not only the history of parties, governments and revolutions. It is also the history of schools, universities, academies, courts, churches, cultural organisations, factories, trade unions, scientific institutes, archives and publishing houses. These institutions shaped the everyday experience of modernity and the practical operation of power. The archival fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences make it possible to study the scientific sector itself as part of modern history. The Academy therefore became both subject and object of historical research. Its historians could

examine how scholarly autonomy was created, restricted, defended and reformed across regimes (Masaryk Institute and Archives of the CAS, n.d.).

The role of oral history expanded the range of modern historical evidence. Many experiences of war, persecution, everyday socialism, dissent, exile and transition cannot be understood through official documents alone. Oral testimony captures memory, emotion, retrospective meaning and the language through which people narrate their lives. The Centre for Oral History, associated with the Institute of Contemporary History, contributed to the professionalisation of this field in the Czech context. Oral history was particularly important for studying ordinary people, marginalised groups and social experiences that state archives recorded only indirectly. It also made visible the tension between memory and documentation, which is central to modern historical research (Vaněk & Mücke, 2016; Digital Humanities Czech Academy of Sciences, n.d.).

Modern history research also had to deal with the public visibility of its findings. The subjects studied by historians of the 20th century were not emotionally neutral. They touched on family memory, property, political legitimacy, collaboration, victimhood, national pride and personal reputation. Historians were often expected to provide quick judgements, especially in debates about communism, the security services, lustration, collaboration or the expulsion of Germans. The Academy's role was to offer expertise without becoming a tribunal. This required a disciplined distinction between moral seriousness and prosecutorial simplification. Historical research could illuminate responsibility, but it had to do so through evidence, context and comparison.

The study of modern Czech and Czechoslovak history also transformed the concept of national memory. Earlier national narratives often privileged statehood, language, democratic tradition and resistance. Post-1989 research added occupation, minority experiences, post-war violence, dictatorship, exile, compromise, everyday life and the fragility of democratic institutions. This did not destroy national memory. It made it more adult. A democratic society does not need a flawless past; it needs a past it can examine without fear. The Academy's historians contributed to this maturation by replacing inherited certainties with documented complexity.

The disciplinary identity of modern history changed accordingly. It became less isolated from sociology, political science, anthropology, literary studies, law, economics and philosophy. The study of communism required knowledge of institutions, ideology, surveillance, social policy and everyday culture. The study of transition required attention to law, markets, political parties, elites and public discourse. The study of memory required concepts from cultural studies and psychology as well as archival skill. This interdisciplinary character did not weaken history as a discipline. It allowed historians to treat modern society as a complex historical organism rather than a sequence of political events.

The research agenda of the Institute of Contemporary History demonstrates this development. Its focus on politics, institutions and power includes the Communist Party, the Prague Spring, parliamentarianism, security services, armed forces and political transformation after 1989. Such themes show how contemporary history bridges dictatorship and democracy, institutional continuity and change, national development and Europeanisation. They also show why the Academy's study of modern history cannot be reduced to memory politics. It is a systematic investigation of power, social processes and institutional practices from the late

interwar crisis to the contemporary Czech state (Institute of Contemporary History of the CAS, n.d.).

The modern history of the Czech lands also remains inseparable from European integration. The post-1989 return to Europe was not only a diplomatic slogan but a historiographical problem. It required scholars to reconsider Czech history within the broader history of Central Europe, empire, democracy, fascism, communism and European institutions. Research on EU accession and Europeanisation connected contemporary Czech history with questions of sovereignty, law, identity and policy transfer. At the same time, historical scholarship could challenge simplified claims that Czech history had simply "returned" to a natural Western path after 1989. The Czech lands had always been European, but their European history was marked by imperial structures, borderlands, occupation, ideological division and post-socialist transformation.

In the longer view, research on modern Czech and Czechoslovak history after 1989 helped redefine the Academy's public role. The Academy was no longer merely a centralised research body inherited from the socialist system. It became an autonomous institution capable of examining the very historical conditions that had shaped it. In modern history, this meant asking difficult questions about the relationship between scholarship and power, between memory and evidence, and between national culture and democratic critique. The Academy's historians did not produce a final narrative of the Czech 20th century. They created the conditions for an open, source-based and plural understanding of it.

Thus, research on modern Czech and Czechoslovak history became one of the decisive humanities fields in the post-1989 Czech Academy of Sciences. It reconstructed the modern past from the national movement and the First Republic through occupation, communism, the Prague Spring, normalisation, dissent, revolution, state dissolution and democratic transformation. It developed new institutional centres, especially the Institute of Contemporary History, while drawing on the broader capacities of the Institute of History and the Masaryk Institute and Archives. Its importance lay not only in correcting earlier ideological distortions, but in changing the very questions historians asked: how institutions function, how societies remember, how democracy survives, how dictatorship becomes ordinary, and how national identity is formed through conflict as well as continuity. In this sense, modern historical research became a central mechanism through which Czech society learned to interpret its recent past without surrendering either to myth or to amnesia.

2. Totalitarianism, Democracy, and Collective Memory

The relationship between totalitarianism, democracy and collective memory became one of the most difficult and revealing themes in Czech humanities research after 1989. The end of communist rule did not simply remove an authoritarian regime from political life; it also released a long conflict over the meaning of the 20th century. Czech society had to confront Nazi occupation, communist dictatorship, Stalinist violence, post-war ethnic transformation, the Prague Spring, normalisation, dissent and the negotiated character of the Velvet Revolution. These were not only historical topics but moral and political resources through which new democratic identities were formed. The Academy's historians entered this field at a moment when society wanted clarity, but the documents, memories and institutional continuities often pointed towards ambiguity. Their task was therefore not to weaken the moral

distinction between dictatorship and democracy, but to prevent that distinction from becoming an excuse for simplified history (Kopeček & Kolář, 2007; Bren, 2010; Suk, 2003).

The concept of totalitarianism had particular force in the Czech post-1989 environment because it offered a language for rejecting both Nazism and communism as systems of anti-democratic power. It named not only repression but the ambition of a regime to dominate public institutions, political language, collective memory, social organisations and individual behaviour. Yet for historians the term also required caution. If used too broadly, it could flatten the historical differences between Nazi occupation, Stalinist terror, late-socialist normalisation and the bureaucratic authoritarianism of the 1970s and 1980s. If used too narrowly, it could fail to capture the structural violence and ideological ambition of communist rule. Czech scholarship therefore had to work with "totalitarianism" as both a political memory term and an analytical problem. It could not simply adopt the concept as a slogan, but neither could it ignore its place in democratic self-definition (Arendt, 1951/1973; Gleason, 1995; Institute for the Study of Totalitarian Regimes, n.d.).

The founding of the Institute of Contemporary History in 1990 created a professional academic space for this difficult work. The institute was established to conduct independent research into Czech and Czechoslovak history after 1938, precisely the period in which democracy, dictatorship, occupation and state socialism collided most violently. Its role differed from that of commemorative institutions or political bodies. It did not exist to pronounce official moral verdicts, although its research inevitably entered public debates about responsibility, victimhood and democratic identity. Rather, it was expected to investigate the structures and experiences of recent history through archives, oral testimony, comparative methods and public scholarship. This gave the Academy a distinctive position in the field of memory: it was close enough to society to understand the urgency of the past, but institutionally committed to scholarly autonomy and critical distance (Institute of Contemporary History of the CAS, n.d.; Digital Humanities Czech Academy of Sciences, n.d.).

Collective memory differs from professional history, although the two constantly interact. Memory is selective, affective, identity-forming and often transmitted through families, schools, anniversaries, monuments, films, museums and political rhetoric. History is also shaped by values and questions, but it is disciplined by source criticism, contextualisation, argument and revision. After 1989, Czech democracy needed both memory and history. Memory gave moral urgency to the rejection of dictatorship; history prevented memory from hardening into myth. The Academy's contribution lay precisely in mediating between these two modes of relating to the past. It could not replace public memory, but it could examine how memory was formed, used, contested and sometimes manipulated (Halbwachs, 1950/1992; Assmann, 2011; Verovšek, 2016).

The memory of Nazi occupation occupied a special place in this field because it predated communist rule and had been incorporated into socialist legitimacy after 1948. Communist historical narratives frequently presented the regime as the culmination of anti-fascist struggle, thereby turning the memory of resistance into a source of party authority. After 1989, historians had to disentangle the real history of occupation, resistance and persecution from its later instrumentalisation. This meant studying the Protectorate, collaboration, everyday survival, the Holocaust, forced labour, repression and local institutions without allowing anti-fascist memory to remain the property of any single political tradition. Democratic historiography had to preserve the moral clarity of anti-Nazi resistance while also examining

the social complexity of occupation society. The result was a broader understanding of totalitarian violence as both an external occupation regime and a field of local choices, constraints and responsibilities.

The communist period created a different memory problem because many of its actors, victims, beneficiaries and bystanders remained present in post-1989 society. Unlike the Nazi occupation, communist rule had not ended with military defeat and external liberation. It ended through a negotiated revolutionary process in which old institutions, former party members, dissidents, experts and pragmatic reformers all participated in the transition. This made collective memory politically delicate. The new democracy rejected the communist monopoly of power, but it also inherited personnel, buildings, archives, habits and social expectations from the previous system. Historians therefore had to examine dictatorship not as an alien layer simply removed in 1989, but as a social order that had entered institutions, careers, language and everyday life (Suk, 2003; Judt, 2005).

Stalinism was the clearest case of totalitarian violence in Czechoslovak communism. Political trials, executions, imprisonment, forced labour camps, collectivisation, church persecution, ideological campaigns and the restructuring of education and culture revealed the regime's aspiration to remake society through fear and mobilisation. After 1989, archival access allowed historians to reconstruct the mechanisms of repression and the social worlds of victims, perpetrators and institutions. Yet even here, research had to go beyond the catalogue of crimes. It had to ask how violence was legitimised, how party cadres understood their mission, how ordinary citizens responded, and how social advancement and coercion interacted. The history of Stalinism thus became not only a moral indictment but an inquiry into the mechanisms through which a political project becomes a system of domination.

The Prague Spring complicated the memory of communism because it showed that the communist movement had contained reformist energies as well as authoritarian structures. For many Czechs and Slovaks, 1968 remained a memory of hope, public debate, cultural liberation and the possibility of "socialism with a human face". For others, it was evidence that communism could not reform itself without collapsing under Soviet pressure. After 1989, historians had to study the Prague Spring without reducing it either to democratic anticipation or to communist illusion. The movement involved reform politicians, economists, writers, journalists, students, Slovak federalists and citizens who imagined different futures. Its defeat by invasion and subsequent normalisation created one of the deepest fractures in modern Czech memory (Williams, 1997; Bren, 2010).

Normalisation after 1969 was especially challenging for collective memory because its violence was often quieter than that of Stalinism. It relied on purges, surveillance, career exclusion, censorship, ritual loyalty, professional pressure and the management of social conformity. Many people did not experience it as spectacular terror but as a world of compromises, silences and limited private freedoms. This made moral judgement both necessary and difficult. A society could not simply classify everyone as victim, collaborator or opponent. Historians of normalisation therefore explored grey zones: the everyday practices through which people adapted to power, preserved private dignity, benefited from the system or withdrew from public life. This scholarship helped Czech society understand dictatorship as a structure of ordinary life, not only as a series of dramatic acts of repression (Bren, 2010; Vaněk & Mücke, 2016).

The study of dissent played a central role in the democratic memory of late socialism. Charter 77, underground culture, samizdat, religious opposition, ecological activism and human rights initiatives became symbols of civic courage. Yet professional history had to preserve dissent from becoming a simple legend. Dissent was morally important, but socially limited; it contained different ideological tendencies, personal tensions and strategic disagreements; it depended on international attention, informal networks and the language of law and responsibility. Research on dissent therefore deepened democratic memory by showing how difficult, fragile and often lonely civic resistance could be. It also prevented the post-1989 public from imagining that the whole nation had been dissident in retrospect (Bolton, 2012; Kopeček, 2019).

Collective memory after 1989 was strongly shaped by the question of victimhood. Victims of Nazism, political prisoners of communism, persecuted clergy, expelled Germans, collectivised farmers, dismissed scholars, surveilled dissidents, Roma communities, Jewish survivors and many others could claim recognition from the democratic public sphere. These claims were not identical and sometimes conflicted. Some memories had long been publicly honoured; others had been suppressed; still others remained socially uncomfortable. Historians had to resist competitive victimhood while acknowledging real suffering. The Academy's research could help by placing each group's experience into documented historical contexts rather than into a hierarchy of moral visibility. Such work was essential for a plural democratic memory.

The politics of memory became more visible as the Czech Republic consolidated democracy and entered Euro-Atlantic institutions. Public debates about lustration, security archives, communist symbols, school teaching, monuments, anniversaries and the legal status of the communist regime all showed that memory was a political language. Different parties and civic groups used the past to define patriotism, responsibility and democratic legitimacy. Scholars could not pretend that their work existed outside these debates. Yet they had to maintain a difference between political use of history and historical research. This distinction was not a retreat from public life; it was the condition of meaningful public expertise (Kopeček & Kolář, 2007; Činátl, 2013).

The creation of the Institute for the Study of Totalitarian Regimes and the Security Services Archive in 2007 institutionalised a state-supported memory agenda outside the Academy. The relevant law defined tasks connected with the study and documentation of the Nazi period and the period of communist totalitarian power, including the activities of security services, persecution and resistance. This development demonstrated that memory of dictatorship had become a matter of public policy. It also created a new institutional environment in which Academy historians worked alongside, and sometimes in critical relation to, official memory institutions. The distinction mattered. A state memory institute may have a legal mandate to document totalitarian regimes, while an Academy institute must preserve the broader academic logic of inquiry, comparison and debate (Act No. 181/2007 Coll., 2007; Institute for the Study of Totalitarian Regimes, n.d.).

Security-service archives played a decisive role in this memory landscape. Files of the State Security and related organs seemed to offer direct access to hidden structures of power, collaboration and surveillance. Yet historians had to approach them critically because they were produced by institutions of control. Reports could contain distortions, ambitions, misunderstandings, fabricated claims or bureaucratic self-justification. A person's presence

in a file did not automatically explain motive, degree of agency or moral responsibility. The Academy's historical method was therefore indispensable for preventing the archive from becoming a substitute for judgement. The documentary record of repression had to be read both as evidence and as a product of repressive power.

Lustration intensified the tension between archive, democracy and memory. The new democratic state sought to protect public institutions from certain forms of continuity with the communist security and party apparatus. This was a legitimate problem for a post-authoritarian democracy, but its practical implementation relied on documents created by the previous regime. The paradox was obvious: democracy used the paperwork of dictatorship to define public trust. Historians did not control lustration policy, but their work helped society understand its assumptions, limits and consequences. The scholarly reading of files introduced complexity into a public field that often demanded simple exposure (David, 2003; Williams, 2003).

Oral history added another dimension to collective memory. The experiences of dictatorship, occupation, persecution and transition are not preserved only in official documents. They also live in voices, gestures, silences, family stories and retrospective narratives. The development of oral history in the Czech Republic after 1989 helped capture experiences that archives often recorded only indirectly or through the language of institutions. The Centre for Oral History associated with the Institute of Contemporary History contributed to the professionalisation of this method. Oral testimony did not replace documents; it complicated them. It made clear that memory is not a defect of history but one of its sources, provided it is interpreted critically (Vaněk & Mücke, 2016; Mücke, 2017).

The broader Czech memory environment also included civic projects such as Memory of Nations, which collected testimonies of people who lived through 20th-century totalitarian regimes. Such projects enlarged the public archive of memory and made personal narratives accessible to schools, journalists and citizens. The Academy's role was different but complementary. It could use oral testimony within broader research designs, compare it with archival evidence, and interpret it through social and political history. This relationship between civic memory and academic history is one of the defining features of post-1989 Czech historical culture. Public testimony gives history emotional immediacy; scholarly analysis gives it structure and context.

Democracy itself became an object of memory. The First Republic, the Prague Spring and the Velvet Revolution all served as reference points for democratic identity, but each carried different meanings. The First Republic represented parliamentary statehood and international recognition; the Prague Spring represented reform, participation and interrupted hope; the Velvet Revolution represented civic mobilisation and peaceful transition. Yet none of these memories could be treated as a perfect democratic model. The First Republic had nationality conflicts and social tensions, the Prague Spring remained inside a socialist horizon, and the Velvet Revolution involved negotiation with the old regime. Historical scholarship helped democracy remember its own traditions without turning them into legends (Orzoff, 2009; Suk, 2003).

The memory of the expulsion of Germans after the Second World War remained one of the most difficult issues in Czech collective memory. For decades it had been framed primarily as the outcome of Nazi aggression and the restoration of national justice. After 1989, historians could more openly examine violence, property confiscation, administrative procedures,

international agreements and the transformation of borderlands. This did not mean ignoring the trauma of Munich, occupation and Nazi crimes. It meant recognising that victimhood in one historical context does not remove moral questions in another. The study of the expulsion therefore became a test of democratic memory's maturity: could Czech society examine suffering caused by Czechs without abandoning the memory of suffering endured by Czechs? (Frommer, 2005; Kopeček & Kolář, 2007).

The Holocaust also required renewed attention within Czech memory. Communist narratives had often absorbed Jewish suffering into general anti-fascist martyrdom, thereby obscuring the specificity of genocide. After 1989, historians, museums, schools and cultural institutions increasingly addressed the Jewish history of the Czech lands, the Protectorate, deportations, property confiscation, survivor memory and post-war restitution. This work connected Czech history to broader European and global Holocaust studies. It also challenged national narratives that had treated the wartime past mainly through Czech resistance and suffering. The democratic memory of the Holocaust required both empathy and precise historical reconstruction.

The memory of Roma communities posed another challenge. Roma experiences of persecution, social exclusion, forced assimilation, labour camps, sterilisation practices, post-war marginalisation and contemporary discrimination were often peripheral in national historical narratives. The inclusion of Romani histories in contemporary research signalled a widening of collective memory beyond dominant national groups. It also showed that democracy requires attention to those whose memories have been structurally neglected. The Institute of Contemporary History's research profile, including Romani histories and marginalised groups, reflects this broader turn. In this context, collective memory becomes not only a story of state and nation but a field of social justice and historical visibility.

The study of collective memory also required attention to education. School textbooks, curricula and teachers transmit historical narratives to new generations, often long after scholarly debates have changed. After 1989, Czech schools had to teach communism, occupation, the Holocaust, the First Republic, 1968 and 1989 in a society where parents and grandparents carried different memories. This made history education a crucial site of democratic formation. Academic historians could contribute by producing reliable research, participating in public debate, advising educational projects and warning against ideological simplification. The classroom became one of the places where the distinction between memory and history mattered most.

Museums, monuments and anniversaries formed another arena of collective memory. Public commemoration often requires condensed symbols, while historical scholarship works through complexity. Anniversaries of 1918, 1938, 1948, 1968 and 1989 repeatedly brought historians into public discussion. The Academy's role was not to deprive commemoration of emotion, but to enrich it with context. A commemorative culture without scholarship becomes ritualised; scholarship without public memory becomes socially thin. The strongest democratic memory emerges when these two forms of engagement correct one another.

The digital age transformed collective memory by multiplying access to documents, photographs, testimonies, databases and digitised publications. Digital archives allow citizens and researchers to encounter the past outside traditional reading rooms. They also create new dangers: decontextualised documents, viral fragments, politicised images and algorithmic selection can intensify memory conflicts. The Academy's digital humanities infrastructure

therefore has a memory function as well as a technical function. It helps create reliable, curated and citable resources in an environment where historical fragments circulate rapidly and often without context. Digital access strengthens democracy only when it is accompanied by critical literacy.

The concept of collective memory also helped Czech historians move beyond institutional history alone. It allowed them to ask how societies remember, forget, commemorate, silence and reinterpret. Memory studies brought together history, sociology, anthropology, political science, literary studies and psychology. This interdisciplinary character suited the Academy's broader humanities structure. It made possible research on commemorative practices, public discourse, political uses of the past, family memory, oral testimony, cultural representation and the symbolic geography of monuments. Modern history became inseparable from the study of how modern history is remembered.

At the same time, historians had to defend the specificity of their discipline within memory studies. Not every memory is historically accurate, and not every emotionally powerful narrative is a reliable account of the past. The historian's task is not to humiliate memory but to test it, contextualise it and understand its formation. This is especially important in societies emerging from dictatorship, where memories may carry trauma, shame, self-justification or political expectation. The Academy's expertise consisted in treating memory as evidence, not as a substitute for evidence. This distinction helped preserve the integrity of historical research.

The tension between democracy and memory also appears in the problem of nostalgia. Some citizens remembered late socialism not primarily through repression but through employment security, social predictability, housing, childhood, family life or cultural consumption. Such nostalgia could irritate anti-communist memory, but historians had to study it seriously. Nostalgia does not prove that dictatorship was benign; it reveals how people remember their own lives inside political systems. Research on everyday life helps explain why memories of communism are often ambivalent, especially across generations. A democratic society gains depth when it can understand such ambivalence without allowing it to excuse authoritarian power.

The Academy's historians also contributed to the Europeanisation of Czech memory. The memory of communism became part of broader European debates about totalitarianism, human rights, transitional justice and the moral geography of the 20th century. Czech scholars participated in comparative discussions about East Central Europe, Soviet domination, dictatorship, resistance and post-communist transformation. This European context was important because Czech memory could not remain purely national. Nazism and communism were transnational systems, and their remembrance became part of European political culture. At the same time, Czech historians had to ensure that European memory frameworks did not erase local specificity.

The relationship between totalitarianism and democracy therefore remained dynamic rather than settled. Democracy defined itself partly through the rejection of totalitarian rule, but it also had to confront its own limitations, exclusions and inherited structures. The study of the past became a way of testing democratic maturity. Could the new society examine collaboration without vengeance, victimhood without competition, resistance without mythology, and dictatorship without nostalgia? Could it recognise that democracy is not guaranteed by

memory alone, but requires institutions, critical education, public debate and legal culture? The Academy's humanities helped articulate these questions with historical precision.

The importance of collective memory was also visible inside the Academy itself. The Academy inherited institutes, archives and personnel from the Czechoslovak Academy of Sciences, which had operated within the socialist system. Its post-1989 self-definition therefore required institutional memory as well as national memory. Historians could study purges after 1968, ideological control, scholarly adaptation, international isolation, research excellence and reform after the Velvet Revolution. This internal memory prevented the Academy from presenting itself only as a guardian of society's past. It also made the Academy a subject of historical accountability.

The study of totalitarianism, democracy and collective memory thus placed the Academy at the centre of a broader democratic conversation. Its historians did not have the final word on public memory, and they did not control political uses of the past. Yet they provided disciplined knowledge in a field where emotional and political pressures were intense. Their work helped distinguish between evidence and accusation, between commemoration and explanation, between moral judgement and historical simplification. In this respect, the Academy's role was not merely academic. It was civic, because democracy depends on the ability to argue about the past without surrendering either to amnesia or to propaganda.

Thus, research on totalitarianism, democracy and collective memory became a defining part of the Czech Academy of Sciences' humanities mission after 1989. It connected the study of Nazi occupation, communist dictatorship, Stalinism, the Prague Spring, normalisation, dissent, revolution and post-socialist transformation with broader questions of public memory and democratic identity. The Academy's contribution lay in maintaining scholarly autonomy within a highly politicised memory landscape. It did not deny society's need for moral clarity, but it insisted that moral clarity must be supported by evidence, context and methodological discipline. By doing so, Czech contemporary history helped transform the rejection of totalitarian rule from a political declaration into a sustained culture of democratic historical reflection.

3. The Social Role of Historical Expertise

The social role of historical expertise after 1989 became one of the most important dimensions of the Czech Academy of Sciences' humanities mission. In a democratic society emerging from dictatorship, historians were not asked only to produce monographs, archival editions or specialist articles. They were also expected to help society understand what had happened, why it had happened, who had been responsible, how institutions had functioned and how the past should be remembered without becoming a new instrument of political simplification. This placed historical expertise in a difficult position between scholarship and public demand. The public often wanted clarity, moral judgement and accessible narratives, while professional history required source criticism, contextualisation and awareness of ambiguity. The Academy's historians therefore had to develop a form of public authority different from the authority claimed by ideological historiography under state socialism. Their authority had to rest not on political loyalty, but on method, evidence, transparency and the willingness to revise interpretations when sources demanded it (*Kopeček & Kolář, 2007*; *Suk, 2003*).

The first social function of historical expertise was corrective. After decades of ideological selection, censorship and official memory, Czech society needed reliable knowledge about events, institutions and persons that had been distorted or silenced. Historians helped reconstruct the history of political trials, forced collectivisation, persecution of churches, post-war violence, the security services, exile, samizdat, dissent, normalisation and the Velvet Revolution. This corrective role was necessary, but it was also dangerous if reduced to exposure alone. A democratic public sphere cannot live permanently in the mode of revelation, scandal and denunciation. Historical expertise had to move from uncovering hidden facts towards explaining structures, motives, contexts and consequences. In this sense, the social role of historians was not only to say what had been concealed, but to show how a society could understand concealed facts without turning them into another mythology.

The Institute of Contemporary History became a central institution for this public function. Founded in 1990, it developed as a workplace of the Czech Academy of Sciences devoted to contemporary Czech and Czechoslovak history from 1938 to the present in an international context. Its research agenda included political institutions, power structures, the Communist Party, the Prague Spring, security services, parliamentarianism, social transformation and post-1989 democracy. Such topics were inherently public because they concerned the moral and institutional biography of the modern Czech state. The institute's formulation "To know the past, to understand the present" captures the social logic of this work. Historical expertise was not presented as antiquarian knowledge, but as a means of interpreting the present through disciplined investigation of the recent past (*Institute of Contemporary History of the CAS, n.d.*; *Institute of Contemporary History of the CAS, n.d.*).

The Academy's mission as a whole supported this public orientation. The Czech Academy of Sciences defines its work as research across the natural, technical and social sciences and the humanities, while taking into account the needs of Czech society and national culture. This formulation is particularly significant for historical research. The "needs of society" in history are not identical with political convenience or public comfort. They include the need for accurate knowledge, critical memory, institutional self-understanding, cultural continuity and the ability to discuss difficult subjects without manipulation. Historians therefore serve society best when they do not simply confirm what society already wants to hear. Their public usefulness often lies in complicating inherited assumptions (*Academy of Sciences of the Czech Republic, n.d.*).

Historical expertise after 1989 also became essential for transitional justice. Lustration, rehabilitation, restitution, court cases, access to security files and the public evaluation of communist officials all required some relationship to the documentary past. Historians were not judges, prosecutors or legislators, but their work informed the wider moral and evidentiary environment in which such decisions were made. They clarified institutional contexts, explained the structure of the Communist Party and security apparatus, reconstructed mechanisms of coercion and warned against naïve readings of repressive archives. This role required care because historical interpretation could affect reputations, legal claims and public trust. The historian's task was not to replace legal procedure, but to provide the contextual intelligence without which legal and political decisions risk becoming crude or symbolic (*David, 2003*; *Williams, 2003*).

The opening of security-service archives made this role especially visible. Public debate often treated files of the State Security as if they offered direct access to truth. Historians had to

explain that such documents were produced by institutions of surveillance and control, and therefore carried the categories, ambitions and distortions of those institutions. A file could reveal contact, observation or pressure, but it could not by itself explain conscience, intention or degree of agency. Historical expertise was needed to distinguish evidence from bureaucratic inscription. This did not relativise collaboration or repression. It made the study of collaboration and repression more accurate by refusing to adopt the secret police's language as the final language of democratic judgement.

The second social function of historical expertise was educational. Post-1989 schools faced the difficult task of teaching a past that parents and grandparents had experienced differently and remembered emotionally. The history of communism, the Prague Spring, normalisation, dissent and 1989 could not be taught as distant material. It entered classrooms through family stories, political opinions, media debates and commemorative rituals. Academic historians contributed by producing research, textbooks, public lectures, documentary resources and interpretative frameworks that could help teachers avoid both nostalgia and simplistic anti-communist catechism. Historical education in a democracy requires more than a list of crimes and anniversaries. It requires students to understand how institutions, ideologies and social practices make dictatorship possible, and how democratic culture depends on critical memory.

The public role of historians was also connected with anniversaries. Dates such as 1918, 1938, 1945, 1948, 1968, 1969, 1977, 1989 and 1993 repeatedly brought historians into media, museums, schools and public ceremonies. Anniversaries have emotional and symbolic power, but they also risk compressing historical complexity into slogans. The Academy's historians could use anniversaries as opportunities for public education rather than ritual repetition. They could explain the First Republic without mythologising it, Munich without reducing Czech history to betrayal, 1945 without ignoring post-war violence, 1968 without romanticising reform communism, and 1989 without overlooking negotiation and institutional continuity. In this way, historical expertise helped transform commemoration into reflection.

Museums and exhibitions formed another arena in which historical expertise entered social life. Exhibitions on occupation, communism, exile, everyday life, scientific institutions or the Velvet Revolution require narrative choices, selection of objects, captions, chronology, visual interpretation and ethical framing. Historians contribute not only facts but judgement about representation. They help determine what should be shown, how documents should be contextualised and how visitors should encounter traumatic or controversial material. This is especially important in histories of violence and repression, where aesthetic presentation can easily become sensational or sentimental. Professional expertise helps museums preserve seriousness without becoming inaccessible.

The media environment after 1989 created new opportunities and pressures. Historians appeared in newspapers, television, radio, documentaries, podcasts and online platforms. This broadened the reach of academic knowledge, but it also demanded compression, clarity and sometimes conflict. Media formats often privilege direct answers, strong statements and personalised dispute. Historical scholarship, by contrast, proceeds through qualification, evidence and slow accumulation. Academy historians therefore had to learn how to speak publicly without abandoning the complexity of their work. The social role of expertise in the media is not to turn historians into commentators on every political quarrel. It is to provide historically grounded orientation when the past is invoked in public argument.

Digital communication intensified this challenge. Online archives, databases, digitised periodicals and documentary portals made historical materials accessible to a much wider public. At the same time, decontextualised images, isolated documents, conspiracy narratives and politically motivated fragments circulated more quickly than scholarly interpretation. Historical expertise in the digital age therefore includes curation, explanation and source literacy. The Academy's digital humanities resources, library collections and research databases contribute to this civic infrastructure. They provide reliable points of access in a public sphere where historical information is abundant but not always trustworthy. The historian's role becomes partly that of a guide through documentary excess.

The social role of historical expertise also involves protecting society from the misuse of analogy. Public debates often compare contemporary political conflicts with Munich, 1948, normalisation or 1989. Such analogies can illuminate patterns, but they can also distort present choices by forcing them into emotionally loaded historical scripts. Historians are useful precisely because they can show where analogies work and where they fail. They can explain that every present crisis has historical echoes but also specific causes, actors and institutions. This is a modest but crucial democratic service. It prevents history from becoming a warehouse of rhetorical weapons.

Expertise in modern history also contributes to policy debates, although not in the same way as economics or public administration. Historians can clarify the long-term effects of institutional reforms, centralisation, regional inequality, minority policy, education, security structures and state-society relations. They can show how past decisions shaped present administrative habits and public expectations. In the Czech case, the history of federalism, local government, national minorities, property relations, scientific institutions and public administration remains relevant to contemporary governance. Historical expertise does not produce technical policy formulas. It provides temporal depth, reminding decision-makers that institutions carry memory and that reforms act upon inherited structures.

The Academy's historians also serve society by preserving institutional memory. Modern states and public institutions often prefer simplified narratives of their own development. The archives of the Czechoslovak Academy of Sciences, the Czech Academy of Sciences and other scholarly bodies allow historians to reconstruct how scientific institutions functioned under different regimes. This includes research achievements, international cooperation, ideological pressure, purges, personnel decisions, reforms and adaptation. Such work matters because institutions without critical memory easily become celebratory or defensive. Historical expertise helps the Academy and other institutions understand themselves as historical actors rather than timeless administrative entities (*Masaryk Institute and Archives of the CAS, n.d.*).

The history of science is especially important in this regard. The Academy's own past includes learned societies, national scholarly institutions, the Czechoslovak Academy of Sciences, political control after 1948, normalisation after 1968, the transformation after 1989 and modern public research governance. Historians of science can examine how knowledge was produced under changing political, financial and ideological conditions. They can ask how researchers protected autonomy, how disciplines were reorganised, how international contacts were managed and how scientific authority was linked to the state. This research has a social function because it shows that science itself is historically situated. It also protects science from the false image of complete separation from society.

Historical expertise also contributes to local and regional memory. National history is often narrated from Prague and through central institutions, but Czech society is made of regions, towns, borderlands, industrial zones, villages and local communities with different experiences. The history of the Sudeten borderlands, Moravia, Silesia, industrial Ostrava, rural collectivisation, regional dialects, local resistance and local post-war violence all require grounded historical work. Academy historians may not replace local historians, but they can provide methods, comparative frameworks and scholarly infrastructure. Regional history is socially important because it allows citizens to see their own places within wider historical processes.

The role of oral history expanded the democratic reach of historical expertise. Oral history brought the voices of witnesses, workers, dissidents, former party members, prisoners, women, migrants, Roma, regional actors and ordinary citizens into the research field. It allowed historians to study not only what institutions recorded, but how people remembered, narrated and interpreted their own lives. The Institute of Contemporary History and its associated oral history work helped professionalise this field in the Czech context. Oral history also has a strong public function because it gives citizens a sense that their lives are part of history. Yet the historian must still interpret testimony critically, comparing memory with documents and social context (*Vaněk & Mücke, 2016*; *Mücke, 2017*).

Historical expertise is also important in confronting nostalgia. Memories of state socialism are not uniform. Some people remember repression, surveillance and fear; others remember youth, employment stability, social security, housing, popular culture or family life. Historians must be able to explain this plurality without converting it into either apology or condemnation. Nostalgia can reveal social disappointment in the present, generational difference or the selective nature of memory. It does not prove that dictatorship was acceptable. Historical expertise allows society to understand why authoritarian pasts can be remembered ambivalently and why democratic memory cannot be built only on moral instruction (*Bren, 2010*; *Kopeček, 2008*).

The social role of historical expertise also includes giving language to victims without reducing them to victimhood. Political prisoners, persecuted clergy, Holocaust survivors, collectivised farmers, expelled populations, dissidents, surveilled citizens and marginalised communities all require recognition. Yet historical research must also preserve their agency, social context and individuality. Victims are not only symbols of suffering; they are historical actors with biographies, choices, relationships and voices. The Academy's historical work can help prevent public memory from turning suffering into abstraction. It can also show that recognition of one group's suffering need not erase another's.

The public use of history is particularly sensitive where Czech memory intersects with German, Jewish, Slovak, Roma and broader Central European histories. Historical expertise helps society avoid a narrow national self-image. The expulsion of Germans, the Holocaust, Czech-Slovak relations, minority policies and borderland transformations all require research that crosses linguistic, archival and national boundaries. This is one of the Academy's important social functions: it connects Czech public memory with European historical scholarship. A mature national memory does not fear comparison. It becomes stronger when it can situate itself within wider histories of violence, democracy, migration, nationalism and state-building.

Historical expertise also supports democratic resilience. Authoritarian politics often manipulates history by creating myths of betrayal, purity, decline or national humiliation.

Democratic societies require citizens capable of recognising such manipulation. Historians contribute by showing that the past is complex, that institutions matter, that freedoms are fragile and that political language has consequences. This role is not party-political in the narrow sense. It is civic. Historical knowledge helps citizens understand how democratic institutions can be weakened, how conformity can become ordinary and how public truth can be eroded.

The Academy's historians must nevertheless avoid becoming moral instructors detached from scholarship. Their credibility depends on research, not on virtue signalling. The more publicly sensitive the topic, the more important it is that historians show their sources, methods and uncertainties. Expertise cannot demand trust while hiding its procedures. In post-1989 Czech society, where official truth had been discredited, this transparency was especially important. Historical authority had to be rebuilt through openness rather than command.

The relationship between historians and the state therefore remains delicate. Public institutions may fund research, request expertise, support commemorations or create memory laws. Historians can cooperate with the state, but they must not become its narrative service. The Academy's autonomy is crucial here. Because it is a public research institution rather than a ministry, court or political party, it can provide expertise while retaining critical distance. This allows it to serve society without simply serving power. The distinction is one of the foundations of democratic historical culture.

The social role of historical expertise also includes international communication. Czech modern history is not always well understood abroad, and simplified images of Czechoslovakia, communism, 1968 or 1989 often circulate internationally. Academy historians contribute to international scholarship by publishing in foreign languages, participating in comparative projects and translating Czech questions into broader European debates. This internationalisation has a public function at home as well. It prevents national history from becoming provincial and allows Czech society to see its own experience in relation to other histories of dictatorship, democracy and transformation.

At the same time, historians must translate international concepts carefully into Czech contexts. Terms such as totalitarianism, transitional justice, civil society, memory politics, everyday life, post-socialism and populism can illuminate Czech history, but they can also obscure local specificity if applied mechanically. Historical expertise requires conceptual mediation. Academy researchers are well placed for this because they work between domestic archives and international debates. Their social role includes protecting Czech history both from national isolation and from careless theoretical importation.

The Academy's historical expertise also contributes to the long-term preservation of evidence. Public debates may focus on interpretation, but interpretation depends on archival survival, cataloguing, digitisation, editions and bibliographies. The social function of history therefore begins before any public lecture or media comment. It begins with conserving documents, organising collections, preparing source editions and maintaining databases. This infrastructure allows future citizens and scholars to ask questions that the present may not yet know how to formulate. In this sense, historical expertise serves society across generations.

The COVID-19 period showed, in another way, that contemporary history is not only about distant political regimes. Historians and oral historians began documenting social experiences of crisis, public health measures, institutional responses and everyday uncertainty. This demonstrated that the Academy's historical expertise can respond to current events without

becoming journalism. Contemporary history begins when society recognises that the present is already producing archives, memories and future questions. The historian's task is to preserve and interpret these traces before they disappear. This expands the social meaning of historical expertise beyond commemoration of established pasts.

Historical expertise also affects the ethics of public speech. Historians know that words such as "fascism", "communism", "occupation", "collaboration", "resistance", "genocide", "revolution" and "normalisation" carry heavy historical meanings. When used carelessly, they flatten public discourse. The historian's contribution is partly semantic: to clarify what these terms meant in particular contexts and what they can responsibly mean today. This is another link between historical expertise and democratic culture. A society that uses historical terms carelessly becomes vulnerable to emotional manipulation.

The social role of historians is therefore not reducible to popularisation, although popularisation is important. It includes education, archival stewardship, public consultation, institutional memory, media explanation, civic warning, international comparison, conceptual clarification and ethical contextualisation. The Academy's historians operate in a space where research and public life meet, but they must preserve the difference between them. Their public speech is valuable because it comes from scholarly discipline. If that discipline is abandoned, expertise becomes opinion; if public communication is abandoned, expertise becomes socially isolated.

Thus, the social role of historical expertise in the Czech Academy of Sciences after 1989 lay in transforming historical knowledge into a democratic public resource without reducing it to political utility. Academy historians helped correct ideological distortions, interpret archives, support education, inform public debates, preserve institutional memory, contextualise anniversaries, professionalise oral history and connect Czech experience with European scholarship. Their task was not to provide society with a final authorised narrative of the past. It was to maintain the conditions under which the past could be investigated, discussed and revised responsibly. In this sense, historical expertise became one of the quiet foundations of Czech democratic culture: it taught that freedom requires not only access to memory, but also the discipline to interpret memory critically.

Sociology, Economics, Law, and Political Research

1. Social Transformation after 1989 as a Research Object

The social transformation after 1989 became one of the most important research objects for the social sciences of the Czech Academy of Sciences. It was not a narrow topic belonging only to sociology, economics or political science, because the transformation changed nearly every institutional and everyday dimension of Czech society. The fall of the communist regime altered property relations, class structures, labour markets, political representation, law, public administration, family strategies, educational pathways, social expectations and the moral vocabulary of citizenship. It also changed the status of expertise itself, because social scientists were no longer expected to explain society within the limits of Marxist-Leninist

doctrine or administrative planning. They could now investigate a rapidly changing society whose direction was uncertain and whose outcomes were deeply contested. The post-1989 transformation therefore became both an object of research and the condition under which research itself had to be reorganised (*Večerník & Matějů, 1999*; *Machonin, 1997*; *Elster, Offe, & Preuss, 1998*).

The Academy's social sciences entered the democratic period with a complicated inheritance. Under state socialism, sociology had been suppressed, revived, politically supervised and partially institutionalised in different phases, while economics had been closely tied to planning, reform debates and the official language of socialist development. Legal research had worked within a constitutional order in which the leading role of the Communist Party limited the autonomy of law, and political analysis could not openly study power competition in the liberal-democratic sense. After 1989, these fields had to redefine their professional identity. They had to reconnect with international theories, methods and standards, but they also had to study a local transformation whose speed and social consequences had few direct precedents. The Academy's role was therefore double: it had to modernise its own social-scientific disciplines while using them to understand the modernisation, disruption and re-stratification of Czech society.

The transformation was often described in the language of transition: from dictatorship to democracy, from plan to market, from state ownership to private property, from ideological monopoly to plural public life, and from Soviet bloc integration to European and global integration. Yet social research gradually showed that transition was not a simple movement from one fixed model to another. It involved conflicts over privatisation, inequality, welfare, justice, political trust, regional development, public administration, civil society and national identity. The end point was not immediately known, and the process was shaped by institutions inherited from socialism as well as by new market and democratic rules. Czech society did not begin again from zero in November 1989. It carried forward habits, skills, networks, inequalities, memories and expectations formed under the previous regime (*Stark & Bruszt, 1998*; *Szelényi & Szelényi, 1995*).

Sociology was especially well placed to study this process because transformation was lived not only in parliaments and ministries but in households, workplaces, schools, neighbourhoods and family biographies. The Institute of Sociology of the Academy of Sciences became one of the principal centres for monitoring changing social structure, values, political attitudes and public opinion. Large surveys conducted after 1989 investigated demographic and family status, education, cultural capital, economic position, income, consumption, mobility, political preferences, value orientations and subjective perceptions of social hierarchy. These studies helped transform social change from journalistic impression into empirical knowledge. They also made it possible to compare the late socialist structure with the emerging post-socialist order (*Večerník, 2002*; *Machonin, Tuček*, & *Gatnar, 1995*).

The project on the transformation of social structure in Czechoslovakia was particularly important because it addressed one of the central questions of the early 1990s: what kind of society was emerging from state socialism? Late socialist Czechoslovakia had often been described as relatively egalitarian, although this egalitarianism concealed differences in power, access, networks, education and informal advantage. The shift to market capitalism made inequalities more visible and more measurable. Income differences widened, new occupational hierarchies emerged, entrepreneurship became a route to mobility, and property

ownership acquired new significance. Sociologists had to ask whether these inequalities represented normal differentiation in a market society, the reproduction of old advantages in new forms, or the emergence of new class divisions. The answer was not ideological but empirical, requiring survey data, longitudinal comparison and theoretical analysis (*Večerník, 1996*; *Matějů & Kreidl, 2001*).

Class became a renewed object of inquiry after 1989, but it could no longer be treated through the rigid categories of official Marxism. Under socialism, class language had been ideologically saturated, often used to legitimise party power rather than analyse social reality. After the transition, sociologists had to rebuild class analysis in relation to education, occupation, income, ownership, cultural capital, labour-market position and subjective identification. This required dialogue with Western stratification theory as well as attention to post-socialist specificity. The new class structure did not simply copy Western capitalism, because it emerged from socialist employment patterns, state assets, restitution, voucher privatisation, professional networks and the rapid revaluation of skills. Research on class therefore became one of the most important ways of understanding the social consequences of the economic transformation.

The labour market was another central field of research. State socialism had promised full employment, although this promise was embedded in low productivity, hidden unemployment, rigid allocation and limited occupational choice. After 1989, unemployment became a visible social fact, and labour-market participation was reshaped by privatisation, restructuring, foreign investment, regional decline, new professions and changing gender roles. Economists and sociologists studied employment insecurity, wage differentiation, human capital, regional labour markets and the social effects of industrial restructuring. The transformation of work affected not only income but identity. Many citizens experienced the new market order through the loss of stable employment, the need for retraining, the rise of entrepreneurship or the discovery that formerly secure skills no longer guaranteed status.

Family and household research revealed another dimension of transformation. Economic reform changed household strategies, consumption, housing, intergenerational support and gender relations. Families had to adapt to price liberalisation, changing welfare provisions, new labour-market opportunities and increased uncertainty. The transition also altered life-course expectations, including marriage, fertility, parenthood, education and housing acquisition. Sociologists could therefore study transformation not only as institutional reform but as a reorganisation of everyday security. The household became a site where macroeconomic change was translated into decisions about work, children, migration, consumption and care. This was one of the reasons why longitudinal and survey-based research became so important in the early post-socialist decades.

Public opinion research became another crucial instrument of social diagnosis. The Czech public had entered democracy with high expectations, but attitudes towards reform, parties, markets, inequality, corruption, Europe and social justice changed over time. The Public Opinion Research Centre within the Institute of Sociology offered a systematic way of monitoring these changes. Public opinion data were especially important because democratic legitimacy depends not only on formal institutions but also on trust, participation and perceived fairness. Surveys could reveal whether citizens accepted market reforms, how they evaluated political institutions, how they viewed social inequality, and whether they trusted the

direction of post-1989 development. In this sense, public opinion research became part of the empirical infrastructure of democracy (*Linek, 2010*; *Večerník, 2002*).

The study of values was closely connected with public opinion. Post-socialist transformation was not only a change in institutions; it was a change in moral expectations. Citizens had to reinterpret responsibility, success, equality, freedom, solidarity, entrepreneurship, welfare and civic participation. Sociologists investigated whether Czech society became more individualistic, more meritocratic, more tolerant of inequality, more distrustful of politics or more open to European identity. Such questions could not be answered through ideological assertion. They required repeated surveys and comparison with other societies. International programmes such as the European Values Study, International Social Survey Programme and European Social Survey helped place Czech developments into a wider comparative framework.

Economics within the Academy also underwent a profound transformation. Before 1989, economic research had been constrained by the institutional logic of the planned economy, although reform debates and technical analysis had existed within limits. After the Velvet Revolution, the central research questions changed rapidly: privatisation, price liberalisation, macroeconomic stabilisation, enterprise restructuring, banking reform, labour markets, public finance, foreign investment and the formation of market institutions became urgent topics. The Economics Institute of the Academy and its cooperation with CERGE created a more internationally oriented research environment. Economic transformation was no longer analysed mainly as a political programme; it became a field of empirical and theoretical research connected with global economics (*Myant, 2003*; *Hanousek & Kočenda, 2011*).

The creation and development of CERGE-EI was especially important because it connected Czech economics with international graduate training, peer-reviewed research and global academic standards. The post-socialist transformation needed economists who could work with modern microeconomics, macroeconomics, econometrics, public finance, labour economics and institutional analysis. It also needed a new generation of researchers able to publish internationally and participate in policy debates without being confined to the intellectual habits of the planned economy. The Academy's economic research thus belonged to the broader rebuilding of Czech expertise after 1989. It helped replace ideological economics with analytical economics, though always within a social context marked by political choice and public consequence (*CERGE-EI, n.d.*; *Economics Institute of the CAS, 2024*).

Privatisation became one of the most controversial research objects of the transformation. It was presented politically as a necessary route from state ownership to market efficiency, but its social and institutional effects were uneven. Voucher privatisation, restitution, foreign investment, enterprise restructuring and the emergence of new owners changed the distribution of wealth and power. Economists examined efficiency, corporate governance, ownership concentration, banking links and the performance of firms. Sociologists and political scientists asked how privatisation affected legitimacy, inequality, elite formation and public trust. The transformation of property therefore linked economics with social stratification and political culture. It showed that markets are not simply mechanisms but institutional orders with social consequences (*Kočenda & Valachy, 2001*; *Myant, 2003*).

Legal research faced its own transformation. The rule of law after 1989 could not be established merely by replacing old statutes with new ones. The legal order had to absorb

constitutional change, human rights, property restitution, commercial law, administrative reform, judicial independence, European law and the legacy of socialist legality. The Institute of State and Law of the Academy had to analyse law not as an ideological instrument of the socialist state, but as an autonomous normative order within a democratic constitutional framework. This required renewed attention to legal theory, constitutionalism, private law, public law, international law and later European Union law. Legal research thus became central to understanding how political transformation becomes institutionalised (*Kühn, 2011*; *Blahož, Balaš, & Klíma, 2007*).

The legal dimension of transformation was visible in restitution and rehabilitation. The new democracy had to address confiscated property, political persecution, unjust convictions and the moral injuries of the communist regime. These processes required law to mediate between history and justice. Legal scholars could examine the limits of retroactivity, the meaning of legality under dictatorship, the status of former state acts, and the relationship between moral wrong and legal remedy. Such questions showed that post-1989 transformation was not only forward-looking. It also involved a legal reckoning with the past. Law became one of the principal languages through which society attempted to repair, or at least acknowledge, historical injustice.

Constitutional transformation added another layer. The Czech Republic had to define its institutions after the dissolution of Czechoslovakia, while also anchoring democracy, separation of powers, fundamental rights and judicial review. The creation of the Constitutional Court and the development of constitutional jurisprudence gave legal research new significance. Scholars studied how constitutional principles operated in practice, how courts interpreted rights, and how Czech constitutionalism related to European legal standards. The rule of law became a research problem as well as a political aspiration. It required attention to institutions, legal culture, judicial reasoning and public trust in law (*Kühn, 2011*).

Political research was not concentrated in a single Academy institute in the same way as sociology or economics, but it developed across sociology, contemporary history, law and related fields. The study of political parties, elections, public opinion, parliamentarianism, state institutions, democratic consolidation and political culture became an important part of the post-1989 social-scientific agenda. Political transformation had to be understood not only through constitutional rules but through behaviour, attitudes and organisational structures. Researchers examined the emergence of parties, the role of Civic Forum and its successors, electoral volatility, left-right self-placement, trust in institutions and the changing meaning of citizenship. The Czech case offered a particularly rich example of peaceful democratic transition combined with rapid economic reform and state dissolution (*Kitschelt et al., 1999*; *Linek, 2010*).

The study of civil society was another important post-1989 theme. Dissident discourse had emphasised civil society as a moral alternative to the party-state, but after 1989 civil society had to become an institutional and sociological reality. Researchers investigated associations, NGOs, civic participation, volunteering, protest, local initiatives and the relationship between citizens and the state. The results were often more ambivalent than the revolutionary rhetoric. Civic participation did not automatically flourish, distrust remained high in some areas, and political parties quickly occupied much of the democratic space. This made civil society an

important research object because it revealed the distance between the moral imagination of 1989 and the practical sociology of democracy.

Inequality gradually became one of the strongest themes linking sociology and economics. The early transition was often justified by the promise that temporary hardship would lead to prosperity and freedom. Over time, researchers could observe how social differences accumulated in income, education, housing, health, regional opportunity and labour-market security. Some inequalities reflected new meritocratic mechanisms; others reproduced inherited advantages or emerged from policy choices. The Czech Republic remained more egalitarian than some other post-socialist societies, but the transformation still produced meaningful social differentiation. Research on inequality therefore challenged both nostalgic images of socialist equality and celebratory images of market success (*Večerník, 2009*; *Matějů & Kreidl, 2001*).

Regional transformation also demanded attention. The benefits and costs of post-1989 change were not distributed evenly across the Czech lands. Prague and some dynamic urban regions benefited from services, foreign investment, administration, universities and international connections. Industrial and peripheral regions experienced restructuring, unemployment, demographic decline or lower educational opportunity. The study of regional inequality linked sociology, economics, geography and political behaviour. It also helped explain later differences in trust, voting patterns and attitudes towards European integration. Transformation was therefore not a single national experience but a spatially differentiated process.

Gender research revealed another set of transformations. State socialism had promoted women's employment and formal equality, but it had also maintained gendered divisions of care, politics and authority. After 1989, market reform, welfare change, unemployment, entrepreneurship and changing family policies affected women and men differently. Researchers studied gender roles, labour-market inequality, family policy, political representation and the relationship between paid and unpaid work. The transformation of gender relations showed that democracy and marketisation did not automatically produce equality. It also demonstrated that social research had to examine hidden forms of inequality that were not always visible in the language of class or income alone (*Hašková & Uhde, 2009*).

The study of education became equally important. Education was a key mechanism through which post-socialist mobility, inequality and cultural capital were reproduced. The expansion of higher education, changes in school governance, private educational options and new labour-market demands altered the relationship between family background and opportunity. Sociologists studied whether the transformation opened educational mobility or strengthened advantages for families with greater resources. This question was central because education was one of the main promises of democratic and market transformation: talent and effort were expected to matter more than political loyalty. Empirical research could test how far that promise was realised.

Migration and minority research gradually became more important as Czech society changed demographically and culturally. The Czech Republic moved from a society strongly shaped by emigration and relative ethnic homogeneity after the post-war expulsions towards a society with new immigration, foreign workers, refugees, Roma inclusion debates and European mobility. Public opinion research tracked attitudes towards foreigners, national groups and minority coexistence. Sociological and legal research examined integration, citizenship,

discrimination, labour migration and social policy. These topics showed that transformation after 1989 was not only the internal reorganisation of a post-communist society. It also involved the Czech Republic's entry into a more mobile and plural European environment.

The European Union became both an object and framework of research. Before accession in 2004, European integration shaped law, public administration, economic policy, political discourse and national expectations. After accession, it influenced governance, funding, labour mobility, regulatory standards, regional development and public identity. Economists studied convergence, trade, labour mobility and public finance; legal scholars examined European law and constitutional pluralism; sociologists studied European identity, trust and public attitudes; political researchers analysed parties, institutions and policy adaptation. European integration therefore transformed the research agenda itself. It forced Czech social sciences to study Czech society as part of a multi-level European order (*Vachudova, 2005*; *Fawn, 2000*).

Data infrastructure became essential for the study of transformation. Surveys, archives, longitudinal datasets, public opinion series and international comparative data allowed researchers to move beyond impressionistic accounts. The Czech Social Science Data Archive, established at the Institute of Sociology in 1998 and later connected with European data infrastructure, became an important tool for preserving and sharing social science data. This changed the culture of research by making datasets reusable, comparable and publicly documented. The transformation of society could be studied across time because data were archived rather than lost in individual projects. In this respect, social science infrastructure performed a role similar to archives and dictionaries in the humanities (*Czech Social Science Data Archive, n.d.*; *Večerník, 2002*).

The methodological transformation of the social sciences was itself part of the post-1989 story. Researchers had to adopt survey methodology, econometrics, comparative political analysis, legal theory, qualitative interviews, panel data, international datasets and interdisciplinary research designs. The rebuilding of disciplines required training, translation, international cooperation and competition for grants. Younger scholars increasingly entered international networks, while older scholars carried local knowledge of socialist institutions and early transformation. The strongest research emerged where these generations and methods interacted. Czech social science after 1989 was not merely imported Western theory applied to local material. It was a process of methodological renewal grounded in a unique historical case.

The Academy's social sciences also contributed to public debate. Researchers commented on inequality, pensions, education, public opinion, labour markets, corruption, legal reform, elections, European integration and social policy. This public role could be difficult because policy debate often demands immediate answers, while research requires qualification and evidence. Yet the Academy's public research status gave its institutes a special responsibility to provide independent expertise. Social scientists were expected neither to become politicians nor to withdraw into technical analysis. Their task was to help society diagnose itself with greater accuracy.

The concept of "social diagnosis" is especially useful for understanding this role. A doctor does not create the illness by naming it; a social scientist does not create inequality, distrust or institutional weakness by studying them. Diagnosis makes problems visible, measurable and discussable. After 1989, Czech society needed such diagnosis because transformation

produced winners and losers, hopes and disappointments, new freedoms and new vulnerabilities. The Academy's research helped identify these processes before they hardened into political myths. It showed that democracy requires empirical self-knowledge as well as constitutional design.

The transformation after 1989 also became a comparative case for international scholarship. Czech society was often discussed as one of the more successful post-communist transformations, with relatively stable democracy, lower inequality than some neighbours, and eventual integration into NATO and the European Union. Yet Czech research complicated this external image by examining corruption, distrust, regional disparities, social exclusion, party instability and dissatisfaction with politics. International comparison was therefore not only a way of presenting Czech success abroad. It was also a way of identifying hidden problems at home. The Academy's social sciences contributed to this comparative understanding by producing data and analysis that could speak beyond national boundaries.

The study of social transformation gradually changed over time. In the 1990s, the dominant questions concerned transition, privatisation, class formation, political institutions and immediate social costs. In the 2000s, attention shifted more strongly towards European integration, welfare reform, inequality, public policy and democratic consolidation. In the 2010s and 2020s, new questions emerged around populism, migration, ageing, digitalisation, climate policy, pandemic consequences and the social effects of global crises. Yet these later questions remained connected to the transformation period because they developed within the institutions, inequalities and political cultures created after 1989. The transformation did not end as a research object; it became the historical background of contemporary Czech society.

Thus, social transformation after 1989 became a central research object through which the Czech Academy of Sciences' social sciences redefined their purpose, methods and public relevance. Sociology studied class, mobility, values, public opinion, family, inequality and social structure; economics examined market institutions, privatisation, labour markets and policy consequences; legal research analysed constitutionalism, restitution, rule of law and Europeanisation; political research explored parties, institutions, trust, participation and democratic consolidation. Together these fields transformed the post-communist transition from a political slogan into a complex empirical and theoretical object. Their significance lay not only in explaining what changed after 1989, but in showing that freedom, markets and democracy are not abstract destinations. They are social processes that must be measured, interpreted, criticised and continually understood.

2. Public Policy, Governance, Inequality, and European Integration

The study of public policy, governance, inequality and European integration became one of the most important ways in which the social sciences of the Czech Academy of Sciences moved beyond the first post-1989 agenda of transition. In the early 1990s, the dominant question was how to move from state socialism to democracy and market capitalism. By the late 1990s and especially after the Czech Republic's accession to the European Union in 2004, the research agenda became more complex. Scholars no longer studied transformation only as a dramatic rupture with the communist past, but as a long process of institutional adaptation, social differentiation and policy learning. Public policy became a field in which social expectations,

legal norms, economic constraints and political decisions met. Governance became a way of analysing how power was exercised not only by the central state, but also by municipalities, regions, courts, agencies, expert bodies, European institutions and civil society. Inequality became a test of the social consequences of freedom and market reform. European integration became both a research object and a framework that reshaped Czech law, administration, politics and social science itself (*Večerník, 2009*; *Vachudova, 2005*; *Potůček, 2004*).

The post-1989 Czech state had to learn democratic policy-making while simultaneously carrying out economic reform, institutional rebuilding and international integration. This meant that public policy was not a settled administrative routine, but part of the transformation itself. Decisions on privatisation, pensions, housing, education, health care, taxation, regional development, labour regulation, social benefits and local government were made under conditions of uncertainty and political urgency. Social scientists could therefore study policy not only through formal programmes, but through implementation, unintended consequences, public legitimacy and institutional learning. The Academy's research helped reveal that policy is not merely a technical instrument applied to society from above. It is a social process in which expert knowledge, political conflict, administrative capacity and public trust interact.

Governance became an especially useful concept because the Czech Republic after 1989 was not governed by a single hierarchical centre in the way imagined by the socialist planned state. Power became dispersed across elected institutions, ministries, courts, municipalities, regional governments, independent agencies, political parties, employers, trade unions, civic organisations, European bodies and international markets. The study of governance allowed researchers to ask how decisions were coordinated, how conflicts were mediated, how responsibility was distributed and how public authority was made legitimate. This was particularly important in a country with thousands of municipalities, strong local identities and a post-communist distrust of centralised power. The social sciences therefore moved from studying "the state" in the abstract to studying the concrete arrangements through which public decisions were produced and implemented (*Illner, 2003*; *Kostelecký, 2005*).

Local and regional governance became one of the most significant fields in this respect. After 1989, the Czech Republic restored municipal self-government and later created regional self-government, thereby changing the territorial structure of public authority. These reforms were not merely administrative. They affected local democracy, service provision, regional development, political representation and the ability of citizens to influence public decisions. Researchers at the Institute of Sociology studied local government cooperation, municipal fragmentation, endogenous development potential, regional disparities and the social capital of communities. Such work showed that democratic governance is not secured only by national elections. It also depends on the capacity of local institutions to solve problems, cooperate and represent citizens effectively (*Illner, 2003*; *Bernard, 2012*).

Municipal fragmentation created a distinctive Czech problem of governance. Many municipalities are small, and smallness can preserve local identity and proximity between citizens and representatives, but it can also weaken administrative capacity, professional expertise and development planning. Inter-municipal cooperation therefore became an important topic for social research. Scholars examined whether small municipalities could provide services, attract investment, manage infrastructure and participate in regional development without losing democratic responsiveness. The question was not whether local self-government was good or bad, but how it could function under conditions of unequal

resources. This made governance a matter of institutional design and social geography at the same time.

The spatial dimension of inequality became increasingly important as the transformation matured. In the early 1990s, inequality was often discussed in terms of income, class and labour-market position. Later, researchers paid more attention to place: metropolitan growth, suburbanisation, peripheral decline, housing markets, regional labour opportunities, access to education and the geography of political attitudes. The department of local and regional studies at the Institute of Sociology placed social and spatial inequalities among its key research concerns. This was crucial because social hierarchies are not distributed evenly across territory. A person's opportunities depend not only on education and occupation, but also on whether they live in Prague, a prosperous regional centre, a declining industrial area, a small municipality or an internally marginalised locality (*Ouředníček, Temelová, & Pospíšilová, 2011*; *Bernard, 2012*).

Metropolitan governance illustrates the connection between policy, inequality and spatial change. Prague and other metropolitan areas concentrate employment, higher education, services, cultural capital, research institutions and political influence. At the same time, metropolitan expansion produces housing pressure, commuting, suburbanisation, segregation and unequal access to public goods. Research on governance in metropolitan areas therefore asks how institutional structures and specific policies affect socio-spatial inequality. This is not a purely urban-planning question. It is a question of social justice, because metropolitan development can distribute opportunities unevenly between centre, suburbs, peripheries and different social groups. The Czech case also invites comparison with Western Europe, North America and other Central European societies, where metropolitan governance has long been tied to debates on inequality and cohesion (*Sýkora & Bouzarovski, 2012*; *Ouředníček et al., 2011*).

Housing policy became one of the most visible areas where social transformation and inequality met. The post-1989 shift from state-regulated housing allocation to a more market-based housing system involved restitution, privatisation of municipal housing, rent deregulation, mortgage expansion, suburbanisation and growing differences between owners, tenants and new entrants to the housing market. Sociological research on housing affordability, Prague's housing market and socio-economic access to housing showed that property reform could produce new inequalities even in a society that had inherited relatively broad housing security from socialism. Housing is not only a commodity. It is a condition of family formation, intergenerational mobility, spatial belonging and social security. Research on housing therefore linked public policy with everyday life in a particularly direct way (*Lux, 2009*; *Lux & Sunega, 2014*).

Inequality after 1989 was never only economic. It involved education, gender, region, ethnicity, health, housing, family background, labour-market position and cultural capital. The Czech Republic remained comparatively less unequal than many post-socialist countries, but the social meaning of inequality changed because the moral language of society changed. Under socialism, official discourse emphasised equality while concealing privileges connected with party position, networks and access. After 1989, inequality became more visible and partly legitimised through the language of merit, entrepreneurship and individual responsibility. Social scientists had to examine where meritocratic differentiation ended and structural

disadvantage began. This question became one of the central problems of Czech sociology (*Matějů & Kreidl, 2001*; *Večerník, 2009*).

Education was one of the crucial mechanisms through which inequality was reproduced or challenged. Democratic transformation promised that social advancement would depend less on political loyalty and more on talent, effort and education. Yet educational opportunity remained strongly influenced by family background, parental education, cultural resources and regional conditions. Sociological research therefore examined access to secondary and higher education, the expansion of tertiary education, social selection, educational aspirations and the relationship between credentials and labour-market outcomes. These questions were central to public policy because education is both a private route to mobility and a public investment in human capital. If educational inequalities harden, democratic society risks reproducing privilege under the language of merit.

Gender inequality formed another important policy field. The transition to democracy and market economy did not automatically create gender justice. Women's employment, childcare, parental leave, wage gaps, political representation, work-life balance, flexible work and the distribution of unpaid care all became subjects of research. Gender studies within the Institute of Sociology contributed to the analysis of equal opportunities policies, especially in relation to European standards and EU accession. This research showed that European integration could function as a normative and policy pressure for gender equality, but also that formal compliance did not guarantee deep social change. Gender equality therefore became a field where law, policy, workplace culture and everyday family practices had to be studied together (*Hašková & Uhde, 2009*; *Čermáková et al., 2000*).

Work-life balance became one of the clearest examples of a policy problem requiring sociological expertise. Flexible work, parental responsibilities, employer practices, social policy and gender relations all interact in shaping how individuals and families organise their lives. Research on work-life balance exposed the gap between formal rights and real possibilities. It also revealed how public policy can support or constrain gender equality through childcare provision, parental leave design, labour regulation and employer incentives. Such research moved social science beyond description towards policy relevance. It did not dictate one political solution, but it clarified the consequences of different institutional arrangements.

The Roma question and the broader issue of social exclusion also became central to public policy and inequality research. Roma communities faced long-term disadvantages in education, housing, labour markets, health, public perception and relations with local authorities. These inequalities could not be explained only by individual behaviour; they were connected with discrimination, segregation, regional disadvantage, institutional practices and historical marginalisation. Social research helped make these structural dimensions visible. It also challenged the majority society's tendency to interpret social exclusion through moral stereotypes. In this field, expert knowledge had a strong democratic function because it translated a politically sensitive issue into a matter of rights, institutions and social policy.

Public opinion research was indispensable for understanding governance and policy legitimacy. The Public Opinion Research Centre provided long-term data on citizens' trust in institutions, political attitudes, satisfaction, value orientations and perceptions of social problems. Such research matters because policy failure is not only a technical matter; it is also a failure of trust, communication and legitimacy. A reform may be economically rational but

politically fragile if citizens perceive it as unfair, corrupt or incomprehensible. Conversely, public support may exist for policies that are difficult to implement institutionally. Public opinion research therefore became part of the democratic feedback system, helping scholars and policymakers understand how society interprets governance (*Linek, 2010*; *Červenka, 2020*).

Trust became one of the key themes of post-1989 political and sociological research. The communist regime had damaged trust in official institutions, but the new democracy did not automatically create high confidence in parties, parliament, government, courts or public administration. Corruption scandals, party instability, economic uncertainty and unmet expectations all affected political trust. At the same time, interpersonal trust, social capital and civic participation influenced the quality of local governance and democratic cooperation. Research on trust and European integration showed that confidence in domestic and European institutions cannot be understood separately. Citizens evaluate the European Union partly through national political experience and evaluate domestic institutions partly through comparison with European standards (*Mishler & Rose, 2001*; *Linek, 2010*).

European integration reshaped the Czech research agenda in several ways. Before accession, it was a process of conditionality, legal approximation, administrative reform and political aspiration. After accession, it became a permanent framework of governance. EU membership affected public law, economic policy, regional development, social policy, gender equality, migration, environmental regulation, research funding and the circulation of expertise. For social scientists, this meant that Czech society could no longer be studied only within national borders. Laws, policies and public expectations were increasingly embedded in multi-level governance. European integration therefore transformed both the object of research and the conceptual tools required to study it (*Vachudova, 2005*; *Schimmelfennig & Sedelmeier, 2005*).

Legal research played a crucial role in analysing Europeanisation. The Institute of State and Law of the Academy had to engage with the relationship between Czech constitutional order, European Union law, international law and domestic legal culture. EU accession required not only the adoption of legal norms but the transformation of administrative practices, judicial reasoning and regulatory frameworks. Legal scholars examined how European law interacted with Czech constitutional principles, how courts interpreted supranational obligations, and how the rule of law operated in a multi-level legal order. European integration thus made governance legally plural. The Czech state remained sovereign, but its legal and policy environment became deeply interconnected with European institutions (*Kühn, 2011*; *Bobek, 2012*).

European integration also reshaped economic research. EU membership affected trade, competition, public finance, labour mobility, structural funds, regional development, regulation and convergence. Economists could study how Czech firms adapted to the single market, how foreign direct investment shaped productivity, how EU funds affected regional development, and how fiscal and monetary policy operated in relation to European constraints. The Economics Institute and CERGE-EI contributed to internationally oriented economic research capable of linking Czech issues with broader empirical and theoretical debates. In this context, public policy became increasingly evidence-based and comparative. Czech economic problems could be studied alongside those of other EU members, especially in Central and Eastern Europe (*Hanousek & Kočenda, 2011*; *Fidrmuc, 2003*).

The IDEA think tank at CERGE-EI represented a particularly clear example of the movement from academic economics towards policy-oriented expertise. Its analyses addressed education, labour markets, public finance, pensions, taxation, public administration, family policy, the pandemic, migration and other socially relevant questions. This form of expert work did not replace academic research, but translated it into formats more usable for policymakers, journalists and citizens. It showed that the Academy's contribution to public policy could include rapid analytical responses as well as long-term scholarly projects. The challenge was to maintain academic rigour while entering a public sphere that often demands concise conclusions and immediate relevance.

Regional development and cohesion policy became one of the strongest links between European integration and domestic inequality. EU structural and cohesion funds were intended to reduce disparities, support infrastructure, strengthen competitiveness and promote regional development. Yet their effects depended on administrative capacity, local governance, project design and political priorities. Social scientists could therefore examine not only how much money flowed into regions, but how it was used, who benefited, and whether it reduced or reproduced inequalities. European policy became meaningful only through domestic institutions. This made regional governance a core field of research on Europeanisation.

The study of public administration was also essential. Post-communist governance required professional, transparent and accountable administration, but the Czech state inherited bureaucratic habits from socialism and developed new problems in the transition period. Administrative reform, decentralisation, civil service law, public procurement, regulatory agencies and policy coordination all became research concerns. Good governance could not be reduced to electoral democracy. It required competent institutions capable of implementing policy fairly and predictably. Social-scientific and legal expertise helped identify where administrative capacity was weak and where institutional reform was necessary.

Corruption became a recurring theme in Czech public debate and research. It was often interpreted as a moral failure of individuals, but social science showed that corruption also reflects institutional incentives, weak oversight, party financing, public procurement rules, opaque ownership structures and low trust. Research on governance therefore had to address corruption as a systemic problem rather than a collection of scandals. This was important for European integration as well, because EU norms and funds increased attention to transparency, accountability and audit. The Academy's social sciences could contribute by connecting public perceptions of corruption with institutional analysis and policy design.

The politics of inequality became increasingly visible in electoral behaviour. Social and regional disparities influenced voting patterns, party support and attitudes towards democracy, Europe and migration. Researchers studied electoral geography, political participation, Senate and parliamentary elections, party competition and the persistence or change of voting patterns across Czech territory. Such research revealed that policy outcomes shape political behaviour over time. Regions that feel neglected or groups that experience insecurity may express dissatisfaction through distrust, abstention or support for protest parties. The study of inequality therefore became inseparable from the study of democratic governance (*Linek, 2010*; *Kostelecký, 2015*).

The relationship between expertise and policy was not without tension. Policymakers may seek clear recommendations, while researchers often identify trade-offs, uncertainties and

unintended consequences. Social scientists may be invited to legitimise policies already chosen, rather than to shape policy through evidence. Expert knowledge can also become politically contested when it touches on pensions, taxes, gender equality, housing, migration or regional redistribution. The Academy's value lies in its relative autonomy. It can provide policy-relevant knowledge without becoming a department of government. This autonomy is essential because evidence-informed policy requires researchers who can criticise as well as advise.

The COVID-19 pandemic later demonstrated the importance of social-scientific policy expertise beyond the traditional transformation agenda. Questions of public trust, risk communication, family stress, education disruption, labour-market vulnerability, state capacity and public compliance became central to crisis governance. Economists, sociologists and legal scholars all had roles in analysing the social effects of emergency measures and the distribution of burdens. The pandemic showed that governance is not only a matter of ordinary administration but also of social resilience. It also revealed that inequality can intensify rapidly when crisis affects households, workers, children and regions unevenly.

Climate and energy policy introduced another layer of Europeanised governance and inequality. The Czech Republic's industrial structure, coal regions, energy dependence, household costs and EU climate commitments created difficult policy choices. A socially blind ecological transition could deepen regional and class inequalities; a delayed transition could create economic and environmental risks. Although climate policy is often associated with natural sciences and technology, its success depends on social acceptance, governance, compensation, labour-market adaptation and public trust. The Academy's social sciences are therefore increasingly necessary for understanding the societal conditions of environmental transformation.

Migration and integration policy also linked Czech governance with European and global processes. The Czech Republic had to respond to labour migration, EU mobility, refugee crises and changing public attitudes towards foreigners. These issues tested administrative capacity, public communication, education systems, labour markets and local integration. Sociological research could distinguish between perception and reality, between prejudice and measurable social processes, and between short-term political mobilisation and long-term demographic change. European integration made migration policy a multi-level issue, shaped by domestic politics, EU frameworks and international crises.

Public policy research also benefited from data infrastructures. The Czech Social Science Data Archive, public opinion series, European Social Survey, International Social Survey Programme and other comparative datasets provided evidence for studying values, trust, inequality, identity and policy preferences. Data infrastructure is not only a technical matter. It creates the possibility of cumulative research and public accountability. When data are archived, documented and accessible, claims about society can be tested and compared. This is one of the ways in which the Academy supports evidence-informed governance.

The social sciences of the Academy thus stood between long-term research and immediate public relevance. Sociology diagnosed inequalities, public attitudes and social processes; economics analysed incentives, markets and policy costs; legal research examined rules, rights and institutional frameworks; political research interpreted governance, representation and Europeanisation. Together these fields formed a knowledge infrastructure for democratic society. They did not eliminate political conflict, and they could not decide normative

questions on behalf of citizens. But they made conflict more informed by showing what is at stake, who is affected and what consequences different policies may have.

The study of public policy, governance, inequality and European integration also changed the meaning of expertise itself. Under socialism, expertise had often been subordinated to plan targets and ideological priorities. After 1989, expert knowledge became more plural, competitive and internationally connected, but also more exposed to public scepticism. The Academy had to earn trust through methodological quality, transparency and public communication. Its social-scientific work showed that democratic expertise should not command society from above. It should provide citizens and policymakers with reliable knowledge for making difficult choices.

Thus, the research agenda of public policy, governance, inequality and European integration became a mature stage in the Academy's post-1989 social sciences. It moved beyond the initial narrative of transition and examined the concrete functioning of democratic capitalism, local and regional governance, social stratification, legal Europeanisation, public trust and policy capacity. The Academy's contribution lay in connecting empirical data with institutional analysis and public relevance. It showed that democracy is not only a constitutional form, markets are not only economic mechanisms, and European integration is not only a diplomatic orientation. All three are lived through policies, inequalities, institutions and everyday expectations. By studying these processes, the Academy helped Czech society understand not only where it had come from after 1989, but how it was being governed, divided, integrated and transformed in the present.

3. The Academy's Contribution to Social Diagnosis and Expert Knowledge

The contribution of the Czech Academy of Sciences to social diagnosis and expert knowledge after 1989 should be understood as one of the central functions of its social sciences. Social diagnosis means more than the description of social facts. It is the disciplined identification of processes, risks, inequalities, expectations and institutional weaknesses that may not yet be fully visible in political debate or everyday experience. In this sense, sociology, economics, law, psychology and political research helped Czech society look at itself with greater empirical precision. They translated scattered impressions into data, public anxiety into research questions, and political slogans into analysable institutional problems. The Academy's role was not to govern society directly, nor to replace democratic decision-making with expert rule. Its task was to provide the kind of independent knowledge without which democratic choices become vulnerable to myth, improvisation and ideological simplification (*Academy of Sciences of the Czech Republic, n.d.*; *Potůček, 2004*; *Večerník, 2009*).

This role became especially important because post-1989 Czech society experienced a double movement. It became freer, more plural and more open to international comparison, but also more exposed to uncertainty, inequality, political distrust and economic risk. Citizens had to interpret new phenomena such as unemployment, private ownership, regional differentiation, party competition, European integration, migration, public opinion polling, market-based housing and changing welfare institutions. These were not merely political issues; they were changes in the texture of everyday life. The Academy's social sciences helped convert this experience into knowledge that could be compared, measured and debated. Social diagnosis therefore became one of the instruments through which the post-socialist society could

understand the consequences of its transformation (*Večerník & Matějů, 1999*; *Machonin, 1997*).

The Institute of Sociology was especially important in this process because it developed empirical tools for observing contemporary Czech society. Established in its present form in 1990, it conducted ongoing and one-time empirical surveys, comparative research, public opinion surveys and case studies, using both quantitative and qualitative methods. Its research covered social stratification, values, family, gender, public opinion, local and regional development, education, migration, religion, trust, political attitudes and social inequality. This made the institute one of the Academy's principal centres of social diagnosis. It did not merely analyse society from a theoretical distance. It built the empirical infrastructure that allowed Czech social change to be observed across time (*Institute of Sociology of the CAS, n.d.*; *Večerník, 2002*).

The Public Opinion Research Centre played a special role because it monitored the changing attitudes of Czech citizens on political, economic and social questions. Public opinion surveys are not a substitute for democracy, but they are an important democratic instrument. They reveal how citizens evaluate institutions, reforms, parties, living conditions, international developments and social problems. They also show that public opinion is not a fixed national temperament but a changing field shaped by events, expectations and trust. In a post-authoritarian society, such knowledge has particular value because official declarations no longer define what society is supposed to think. The Academy's public opinion research helped make citizens' attitudes visible without reducing them to propaganda or anecdote (*Public Opinion Research Centre, n.d.*; *Linek, 2010*).

Public opinion research also gave society a temporal mirror. A single survey can indicate a mood, but time series can reveal patterns, turning points and long-term shifts. Trust in constitutional institutions, satisfaction with the political situation, attitudes towards Europe, perceptions of inequality, evaluations of economic conditions and views on public problems acquire meaning when they are followed over years. This makes it possible to distinguish between temporary reactions and deeper tendencies. The social role of such research is therefore not merely informational. It helps citizens, journalists, policymakers and scholars see whether Czech democracy is accumulating trust, losing confidence, polarising or stabilising. Social diagnosis depends precisely on this capacity to observe society in motion.

The Czech Social Science Data Archive gave this diagnostic function a deeper infrastructural form. By acquiring, processing, documenting, preserving and making available digital data from social science research, it helped ensure that social knowledge would not disappear after individual projects ended. Data archiving is not a technical accessory to research; it is a condition of cumulative social science. It allows future researchers to reanalyse survey data, compare periods, test new hypotheses and teach empirical methods. In this respect, the data archive performs for sociology and political research a function comparable to that of archival collections, dictionaries and bibliographies in the humanities. It preserves the empirical memory of society (*Czech Social Science Data Archive, n.d.*).

The international dimension of data infrastructure was also important. Czech social science became more credible and useful when its data could be compared with European and global research. Participation in international survey programmes and European data infrastructures helped place Czech developments within broader patterns of post-socialist transformation, democratic consolidation, value change and social inequality. This comparison protected

Czech research from provincialism. It also protected public debate from the illusion that Czech problems were either entirely unique or simply identical to those of other countries. Good social diagnosis requires comparison because only comparison reveals whether a phenomenon is local, regional, European or global.

Economics contributed another form of expert knowledge. After 1989, economic expertise was urgently needed because the transformation from plan to market involved price liberalisation, privatisation, banking reform, public finance, labour markets, taxation, pensions, education, innovation and integration into European and global markets. The Economics Institute of the Czech Academy of Sciences, operating as a joint workplace with CERGE of Charles University, helped connect Czech economics with international research standards. Its role was not only to explain the transition retrospectively. It trained and sustained a community capable of analysing contemporary policy through modern economic theory, econometrics and empirical evaluation. This was a major change from the ideological and administrative economics of the planned system (*CERGE-EI, n.d.*; *Economics Institute of the CAS, 2024*).

The IDEA think tank at CERGE-EI illustrates how Academy-based economic expertise could enter public debate without becoming partisan political commentary. It focused on policy-relevant research, evaluation and recommendations grounded in data, facts, impartial interpretation and modern economic theory. Its analyses addressed education, pensions, taxation, labour markets, family policy, public administration, research funding, pandemic effects and other socially significant issues. This form of expertise is important because modern public policy often requires not only general principles but careful assessment of incentives, costs, distributional effects and unintended consequences. The Academy's contribution lay in providing evidence-based economic reasoning in a public environment where economic debates could easily become ideological (*Institute for Democracy and Economic Analysis, n.d.*).

Legal expertise added a different but equally necessary dimension. The Institute of State and Law served as a centre of non-university legal research, examining law, legal theory, legal informatics, constitutional questions, European law, public law, private law and international cooperation. After 1989, legal knowledge was indispensable because democratic transformation required more than political will. It required legal continuity, constitutional order, rights protection, administrative legality, judicial independence, property regulation and later integration into European Union law. Legal expertise helped translate political transformation into normative institutions. It also clarified the limits of political action by reminding society that democracy depends on rules as well as elections (*Institute of State and Law of the CAS, n.d.*; *Kühn, 2011*).

The social diagnostic function of legal research became especially visible in questions of transitional justice, restitution, lustration and constitutionalism. These were not merely technical legal issues. They concerned the relationship between past injustice and present legality. Legal scholars had to ask how far a democratic state could repair past wrongs, how it should treat acts committed under a non-democratic legal order, and how rights could be protected without undermining legal certainty. Such questions required both legal doctrine and historical consciousness. The Academy's legal research helped society understand that justice after dictatorship cannot be reduced to moral desire; it must be articulated through sustainable legal principles (*David, 2003*; *Kühn, 2011*).

Psychology expanded the Academy's expert contribution by examining individual and social functioning, personality, development, social behaviour, health, political attitudes and cross-cultural questions. The Institute of Psychology brought attention to dimensions that cannot be captured by economics or legal research alone: trust, motivation, identity, stress, values, life-course development, social perception and the psychological conditions of democratic life. This mattered because transformation was not only institutional; it was also psychological. Citizens had to adapt to uncertainty, choice, competition, public disagreement and changing norms. Social diagnosis is incomplete if it measures institutions and income but ignores the human capacities and vulnerabilities through which those institutions are experienced (*Institute of Psychology of the CAS, n.d.*; *Klicperová-Baker, 1999*).

The psychological study of democracy was particularly relevant in a society emerging from authoritarianism. Democracy is not sustained only by constitutions; it also requires tolerance, trust, responsibility, willingness to participate, acceptance of pluralism and resistance to manipulation. Political psychology could therefore help explain why citizens support or distrust institutions, how authoritarian attitudes persist, how collective identities are formed, and why social frustration may produce anti-democratic temptations. Such research joined psychology with sociology and political science. It showed that expert knowledge about democracy must include both institutional design and the psychological dispositions of citizens (*Klicperová-Baker, 1999*; *Linek, 2010*).

The Academy's contribution to expert knowledge was strengthened by its position as a public non-university research institution. This position gave its institutes a special balance: they were supported as part of the public research system, but they were not ministries, political parties or commercial consultancies. Their authority depended on scientific autonomy, peer review, long-term research and public credibility. This mattered because expert knowledge is valuable only when it is trusted as independent. If expertise becomes merely the language of government, it loses critical force; if it becomes purely private opinion, it loses institutional responsibility. The Academy's social sciences occupied a middle ground between public relevance and scholarly autonomy.

Strategy AV21 made this public orientation more explicit by framing Academy research around problems and challenges of contemporary society. Its emphasis on interdisciplinary research in the public interest gave social sciences an opportunity to cooperate with natural sciences, technical fields, medical research and humanities. Problems such as ageing, health, education, energy, artificial intelligence, public policy, social resilience and democratic trust cannot be solved by a single discipline. The social sciences contribute by asking how technologies are governed, how policies are received, how risks are distributed, and how citizens understand expert recommendations. In this sense, social diagnosis became part of a broader interdisciplinary architecture (*Academy of Sciences of the Czech Republic, n.d.*).

The COVID-19 pandemic revealed the importance of this architecture. Although virology, medicine and epidemiology were central, the crisis also involved public trust, legal restrictions, economic compensation, family stress, education disruption, misinformation, risk communication and compliance with public measures. Economists analysed the effects of restrictions and support schemes; sociologists examined public attitudes and inequalities; psychologists studied stress and behaviour; legal scholars considered emergency powers and rights; communication experts addressed the public interpretation of scientific knowledge. The

crisis showed that expert knowledge is not a luxury added to governance after decisions are made. It is part of the capacity to govern under uncertainty.

The same applies to other long-term challenges. Ageing requires demographic, economic, psychological, legal and policy expertise. Housing affordability requires sociology, economics, law and regional studies. Educational inequality requires survey data, policy evaluation, family sociology and labour-market analysis. Climate transition requires technological knowledge, but also social acceptance, regional compensation and governance. Digitalisation and artificial intelligence require computer science, ethics, law, labour economics and social research. The Academy's social sciences therefore contribute by identifying the human and institutional dimensions of problems that might otherwise be treated as purely technical.

Inequality remained one of the most important objects of social diagnosis. It is not enough to know that a society is growing economically; one must know who benefits, who is left behind, which regions decline, which households face insecurity, and how inequalities are reproduced through education, housing, gender, health and labour markets. Academy research helped show that Czech inequality is multidimensional. Income measures are necessary, but they do not capture the full picture of social disadvantage. Spatial inequality, educational selection, housing insecurity, family background and exclusion from networks may be just as important. Social diagnosis therefore prevents policy from mistaking aggregate success for general well-being (*Večerník, 2009*; *Lux & Sunega, 2014*).

Public trust became another central diagnostic indicator. Trust in parliament, government, courts, media, experts, science, the European Union and fellow citizens affects how society responds to reform, crisis and conflict. Low trust can weaken even technically sound policies, while misplaced trust can expose society to manipulation. The Academy's social sciences helped examine trust as an empirical phenomenon rather than a moral complaint. Public opinion surveys, political research and psychological studies all contributed to understanding why trust rises or falls. This was especially important in a post-communist context, where distrust of official authority had deep historical roots (*Mishler & Rose, 2001*; *Linek, 2010*).

Expert knowledge also had to face the problem of populism and anti-expert sentiment. Democratic societies may need expertise, but citizens may also suspect experts of elitism, detachment or political bias. This tension intensified when expert recommendations touched on painful issues such as taxation, pensions, vaccination, migration, climate policy, housing or budget constraints. The Academy could not solve this tension by simply asserting authority. It had to communicate methods, data and uncertainty more clearly. The social role of expertise depends not only on being correct, but on being intelligible and accountable to the public.

This is why public communication became part of the Academy's expert mission. Press releases, policy briefs, public lectures, media commentary, databases, open data and educational resources all helped bring research into social circulation. Yet communication had to avoid oversimplification. The public value of the Academy lies in its ability to explain complexity without hiding behind jargon. In the social sciences, this means showing why a policy may help one group while burdening another, why public opinion may be contradictory, why legal solutions have limits, and why economic efficiency does not automatically equal social justice. Expert knowledge becomes socially useful when it clarifies choices rather than pretending that choices do not exist.

The Academy's contribution to expert knowledge was also generational. It trained young researchers through doctoral cooperation, international projects, methodological workshops

and research infrastructures. This mattered because expertise is not only a set of reports; it is a professional community capable of renewing itself. Post-1989 Czech social sciences had to build a new generation able to work with international literature, advanced methods and Czech empirical material. The sustainability of social diagnosis depends on such generational renewal. Without it, expertise becomes dependent on a few senior voices and loses methodological vitality.

Internationalisation strengthened expert knowledge by exposing Czech research to comparison and peer evaluation. Participation in European data infrastructures, international survey programmes, economic research networks, legal scholarship and comparative policy studies helped raise standards and expand relevance. It also allowed Czech society to be studied as part of broader European processes rather than as an isolated national case. At the same time, Academy researchers could contribute Czech evidence to international debates on post-socialist transformation, inequality, democracy, trust and Europeanisation. Expert knowledge therefore flowed in both directions: Czech research learned from the world and offered the Czech case to the world.

The Academy's social sciences also helped protect society from the illusion of purely technical governance. Many public problems appear technical because they involve budgets, legal provisions, indicators or administrative mechanisms. Yet behind these technical forms are social choices: who pays, who benefits, whose risks matter, whose voice is heard, and which future is preferred. Sociology, economics, law and psychology make these choices visible. They do not remove political responsibility, but they prevent responsibility from being hidden behind technical language. This is one of the most important democratic functions of expert knowledge.

At the same time, expert knowledge must recognise its limits. Social systems are complex, and evidence rarely eliminates uncertainty completely. Policies may have unintended consequences; public attitudes may change; data may be incomplete; international models may not fit local contexts. The Academy's strongest contribution lies not in pretending to possess final answers, but in cultivating disciplined uncertainty. Good expertise states what is known, what is probable, what is contested and what remains unknown. This intellectual modesty is not weakness. It is a condition of trustworthy advice.

The Academy's contribution to social diagnosis also included memory of transformation. By preserving data, studies, reports and analyses from the 1990s onwards, it created a record of how Czech society changed across decades. This record allows later researchers to ask whether early promises were fulfilled, which reforms had long-term effects, and how citizens' expectations evolved. The social sciences therefore provide historical depth for the present. They show that contemporary problems are rarely sudden; they often grow from earlier institutional choices, demographic trends and social inequalities.

The interaction between social sciences and humanities is important here. Historians study the past, while sociologists and economists often study the present, but the boundary is porous. Post-1989 transformation is now historical as well as sociological. Public opinion time series are archives of democratic experience. Economic datasets are sources for the history of capitalism. Legal debates reveal the institutionalisation of values. Psychological research records changing forms of subjectivity. The Academy's broader humanities and social-science environment allows these forms of knowledge to speak to one another.

The contribution of expert knowledge also extends to national self-understanding. Czech society often describes itself through narratives of scepticism, pragmatism, egalitarianism, secularism, small-state vulnerability, democratic tradition or distrust of authority. Social science can test, complicate or historicise these self-images. It can show where they correspond to data and where they function as myths. This is not an attack on national identity. It is a form of intellectual maturity. A society capable of examining its self-descriptions is better prepared to respond to change.

The Academy's social-scientific expertise therefore became part of democratic culture in a broad sense. Democracy requires elections, parties and rights, but it also requires knowledge of social conditions. Citizens cannot deliberate well if they do not understand inequality, trust, institutional performance, demographic change, economic trade-offs or legal constraints. Policymakers cannot govern well if they rely only on intuition, ideology or short electoral cycles. The Academy's role was to sustain a public reservoir of evidence and interpretation. This reservoir did not determine policy, but it improved the conditions under which policy could be made.

Thus, the Academy's contribution to social diagnosis and expert knowledge after 1989 lay in creating a durable system of independent, empirical and interdisciplinary understanding of Czech society. The Institute of Sociology, the Public Opinion Research Centre, the Czech Social Science Data Archive, the Economics Institute and IDEA, the Institute of State and Law, the Institute of Psychology and related research teams all helped identify social risks, institutional weaknesses, inequalities, public attitudes, legal dilemmas and policy consequences. Their work showed that a democratic society cannot rely only on memory, political will or economic growth. It needs instruments for observing itself, questioning itself and correcting itself. In this sense, the Academy's social sciences became one of the quiet but essential foundations of Czech democratic governance: they turned social experience into evidence, evidence into interpretation, and interpretation into a resource for public reason.

References

Academy of Sciences of the Czech Republic. (n.d.). *Mission of the CAS*. CAS.

Academy of Sciences of the Czech Republic. (n.d.). *Strategy AV21: Top research in the public interest*. CAS.

Act No. 181/2007 Coll. (2007). *Act on the Institute for the Study of Totalitarian Regimes and the Security Services Archive, and on amendments to some acts*. Parliament of the Czech Republic.

Act No. 341/2005 Coll. (2005). *Act of 28 July 2005 on public research institutions*. Parliament of the Czech Republic.

Act No. 499/2004 Coll. (2004). *Act on archives and records management and on the amendment to some other acts*. Parliament of the Czech Republic.

Agnew, H. (2004). *The Czechs and the lands of the Bohemian Crown*. Hoover Institution Press.

Arendt, H. (1973). *The origins of totalitarianism*. Harcourt Brace Jovanovich. Original work published 1951.

Assmann, A. (2011). *Cultural memory and Western civilization: Functions, media, archives*. Cambridge University Press.

Bernard, J. (2012). Prostorové vzorce rozvinutosti venkovských obcí Česka [Spatial patterns of development in rural municipalities in Czechia]. *Geografie, 117*(1), 72–94.

Blahož, J., Balaš, V., & Klíma, K. (2007). *Srovnávací ústavní právo* [Comparative constitutional law]. ASPI.

Bobek, M. (2012). Landtová, Holubec, and the problem of an uncooperative court: Implications for the preliminary rulings procedure. *European Constitutional Law Review, 8*(1), 54–89.

Bolton, J. (2012). *Worlds of dissent: Charter 77, the Plastic People of the Universe, and Czech culture under communism*. Harvard University Press.

Bren, P. (2010). *The greengrocer and his TV: The culture of communism after the 1968 Prague Spring*. Cornell University Press.

CERGE-EI. (n.d.). *About CERGE-EI*. Center for Economic Research and Graduate Education — Economics Institute.

Čermáková, M., Hašková, H., Křížková, A., & Linková, M. (2000). *Souvislosti a změny genderových diferencí v české společnosti v 90. letech* [Contexts and changes in gender differences in Czech society in the 1990s]. Sociologický ústav AV ČR.

Červenka, J. (2020). *Důvěra ústavním institucím a spokojenost s politickou situací* [Trust in constitutional institutions and satisfaction with the political situation]. Public Opinion Research Centre, Institute of Sociology of the CAS.

Charles University. (n.d.). *The Czech National Corpus: Research infrastructure for empirical language-oriented inquiry*. Charles University.

Činátl, K. (2013). *Naše české minulosti aneb Jak vzpomínáme* [Our Czech pasts, or how we remember]. Nakladatelství Lidové noviny.

Czech Language Institute. (n.d.). *Electronic dictionaries and resources*. Institute of the Czech Language of the CAS.

Czech Language Institute. (n.d.). *General information and contacts: Language Consulting Centre*. Institute of the Czech Language of the CAS.

Czech Language Institute. (n.d.). *History*. Institute of the Czech Language of the CAS.

Czech Language Institute. (n.d.). *Internet Language Reference Book*. Institute of the Czech Language of the CAS.

Czech Language Institute. (n.d.). *Slovník nářečí českého jazyka (Dictionary of Czech Dialects)*. Institute of the Czech Language of the CAS.

Czech Language Institute. (n.d.). *Slovník spisovného jazyka českého (Dictionary of Standard Czech Language)*. Institute of the Czech Language of the CAS.

Czech Language Institute. (n.d.). *Staročeský slovník (Old Czech Dictionary)*. Institute of the Czech Language of the CAS.

Czech Literary Bibliography. (n.d.). *Czech Literary Bibliography*. Institute of Czech Literature of the CAS.

Czech Literary Bibliography. (n.d.). *Literary Samizdat and Exile Bibliography Section*. Institute of Czech Literature of the CAS.

Czech National Corpus. (2026). *Corpora of the Czech National Corpus project*. Czech National Corpus.

Czech Social Science Data Archive. (n.d.). *Who we are*. Institute of Sociology of the CAS.

David, R. (2003). Lustration laws in action: The motives and evaluation of lustration policy in the Czech Republic and Poland, 1989–2001. *Law & Social Inquiry, 28*(2), 387–439.

David, R. (2003). Lustration laws in action: The motives and evaluation of lustration policy in the Czech Republic and Poland, 1989–2001. *Law & Social Inquiry, 28*(2), 387–439.

Digital Humanities Czech Academy of Sciences. (n.d.). *Dictionary of Czech post-1945 literature*. Library of the CAS.

Digital Humanities Czech Academy of Sciences. (n.d.). *Information sources of digital humanities*. Library of the CAS.

Digital Humanities Czech Academy of Sciences. (n.d.). *Institute of the Czech Language of the CAS, v. v. i.* Library of the CAS.

Digital Humanities Czech Academy of Sciences. (n.d.). *Institute of Contemporary History of the CAS, v. v. i.* Library of the CAS.

Digital Humanities Czech Academy of Sciences. (n.d.). *Institute of Czech Literature of the CAS, v. v. i.* Library of the CAS.

Digital Humanities Czech Academy of Sciences. (n.d.). *Institute of History of the CAS, v. v. i.* Library of the CAS.

Digital Humanities Czech Academy of Sciences. (n.d.). *Retrospective Bibliography of Czech Literature of the Institute of Czech Literature of the CAS*. Library of the CAS.

Digital Humanities Czech Academy of Sciences. (n.d.). *Set of bibliographic databases: Czech Literary Science*. Library of the CAS.

Economics Institute of the CAS. (2024). *Annual report of the Economics Institute of the Czech Academy of Sciences for 2024*. Economics Institute of the CAS.

Elster, J., Offe, C., & Preuss, U. K. (1998). *Institutional design in post-communist societies: Rebuilding the ship at sea*. Cambridge University Press.

Fawn, R. (2000). *The Czech Republic: A nation of velvet*. Harwood Academic Publishers.

Fidrmuc, J. (2003). Economic reform, democracy and growth during post-communist transition. *European Journal of Political Economy, 19*(3), 583–604.

Franc, M., & Mádlová, V. (2014). *The history of the Czech Academy of Sciences in pictures / Dějiny Akademie věd v obrazech* [The history of the Academy of Sciences in pictures]. Academia.

Franc, M., Dvořáčková, V., et al. (2019). *Dějiny Československé akademie věd I (1952–1962)* [History of the Czechoslovak Academy of Sciences I, 1952–1962]. Academia.

Frommer, B. (2005). *National cleansing: Retribution against Nazi collaborators in postwar Czechoslovakia*. Cambridge University Press.

Garvin, P. L. (Ed.). (1964). *A Prague School reader on esthetics, literary structure, and style*. Georgetown University Press.

Gleason, A. (1995). *Totalitarianism: The inner history of the Cold War*. Oxford University Press.

Halbwachs, M. (1992). *On collective memory* (L. A. Coser, Ed. & Trans.). University of Chicago Press. Original work published 1950.

Hanousek, J., & Kočenda, E. (2011). Foreign news and spillovers in emerging European stock markets. *Review of International Economics, 19*(1), 170–188.

Hašková, H., & Uhde, Z. (Eds.). (2009). *Women and social citizenship in Czech society: Continuity and change*. Institute of Sociology of the Academy of Sciences of the Czech Republic.

Havránek, B. (1964). The functional differentiation of the standard language. In P. L. Garvin (Ed.), *A Prague School reader on esthetics, literary structure, and style* (pp. 3–16). Georgetown University Press. Original work published 1932.

Holy, J. (1996). *Writers under siege: Czech literature since 1945*. Sussex Academic Press.

Illner, M. (2003). Thirteen years of reforming subnational government in the Czech Republic. In N. Kersting & A. Vetter (Eds.), *Reforming local government in Europe: Closing the gap between democracy and efficiency* (pp. 261–281). Leske + Budrich.

Innes, A. (2001). *Czechoslovakia: The short goodbye*. Yale University Press.

Institute for Democracy and Economic Analysis. (n.d.). *About us*. IDEA at CERGE-EI.

Institute for the Study of Totalitarian Regimes. (n.d.). *About us*. Institute for the Study of Totalitarian Regimes.

Institute of Contemporary History of the CAS. (n.d.). *About us*. Institute of Contemporary History of the CAS.

Institute of Contemporary History of the CAS. (n.d.). *Politics, institutions, power*. Institute of Contemporary History of the CAS.

Institute of Czech Literature of the CAS. (n.d.). *About the Institute*. Institute of Czech Literature of the CAS.

Institute of Czech Literature of the CAS. (n.d.). *History of the Institute of Czech Literature*. Institute of Czech Literature of the CAS.

Institute of Czech Literature of the CAS. (n.d.). *Institute of Czech Literature of the CAS, v. v. i.* Czech Digital Humanities.

Institute of History of the CAS. (n.d.). *About us*. Institute of History of the CAS.

Institute of History of the CAS. (n.d.). *History of the institute and specialization*. Institute of History of the CAS.

Institute of Philosophy of the CAS. (n.d.). *About us*. Institute of Philosophy of the CAS.

Institute of Psychology of the CAS. (n.d.). *Personality and social psychology*. Institute of Psychology of the CAS.

Institute of Sociology of the CAS. (n.d.). *About the Institute*. Institute of Sociology of the CAS.

Institute of State and Law of the CAS. (n.d.). *Institute of State and Law of the Czech Academy of Sciences*. Institute of State and Law of the CAS.

Institute of the Czech National Corpus. (n.d.). *Institute of the Czech National Corpus*. Faculty of Arts, Charles University.

Institute of the Czech National Corpus. (n.d.). *Research profile*. Faculty of Arts, Charles University.

Judt, T. (2005). *Postwar: A history of Europe since 1945*. Penguin Press.

Kitschelt, H., Mansfeldová, Z., Markowski, R., & Tóka, G. (1999). *Post-communist party systems: Competition, representation, and inter-party cooperation*. Cambridge University Press.

Klicperová-Baker, M. (1999). Ready for democracy? Civic culture and civility with a focus on Czech society. *Czech Sociological Review, 7*(2), 141–168.

Kočenda, E., & Valachy, J. (2001). Secondary privatization in the Czech Republic: Changes in ownership and enterprise performance in voucher-privatized firms. *Emerging Markets Review, 2*(1), 43–64.

Kopeček, M. (2008). In search of "national memory": The politics of history, nostalgia and the historiography of communism in the Czech Republic and East Central Europe. In M. Kopeček (Ed.), *Past in the making: Historical revisionism in Central Europe after 1989* (pp. 75–95). Central European University Press.

Kopeček, M. (2019). Human rights facing a national past: Dissident "civic patriotism" and the return of history in East Central Europe, 1968–1989. *East European Politics and Societies, 33*(4), 853–875.

Kopeček, M., & Kolář, P. (2007). A difficult quest for new paradigms: Czech historiography after 1989. In S. Antohi, B. Trencsényi, & P. Apor (Eds.), *Narratives unbound: Historical studies in post-communist Eastern Europe* (pp. 173–248). Central European University Press.

Kostelecký, T. (2005). Political behaviour in metropolitan areas in the Czech Republic between 1990 and 2002: Patterns, trends and the relation to suburbanisation and its socio-spatial patterns. *Sociologický časopis / Czech Sociological Review, 41*(3), 433–455.

Kostelecký, T. (2015). Geografie volební podpory politických stran v České republice v letech 1992–2013 [The geography of electoral support for political parties in the Czech Republic, 1992–2013]. *Sociologický časopis / Czech Sociological Review, 51*(1), 99–131.

Křen, M. (2015). Recent developments in the Czech National Corpus. In *Proceedings of the Slovko 2015 Conference*. Slovak National Corpus.

Kühn, Z. (2011). *The judiciary in Central and Eastern Europe: Mechanical jurisprudence in transformation?* Martinus Nijhoff.

Leff, C. S. (1997). *The Czech and Slovak Republics: Nation versus state*. Westview Press.

Library of the Czech Academy of Sciences. (n.d.). *About the library*. Library of the CAS.

Library of the Czech Academy of Sciences. (n.d.). *The Digital Library of the Czech Academy of Sciences*. Library of the CAS.

Linek, L. (2010). *Zrazení snu? Struktura a dynamika postojů k politickému režimu a jeho institucím a jejich důsledky* [A betrayed dream? The structure and dynamics of attitudes towards the political regime and its institutions and their consequences]. Sociologické nakladatelství.

Lux, M. (Ed.). (2009). *Housing policy and housing finance in the Czech Republic during transition: An example of the schism between the still-living past and the need of reform*. IOS Press.

Lux, M., & Sunega, P. (2014). Public housing in the post-socialist states of Central and Eastern Europe: Decline and an open future. *Housing Studies, 29*(4), 501–519.

Machonin, P. (1997). *Social transformation and modernisation: On building theory of societal changes in the post-communist European countries*. Sociologické nakladatelství.

Machonin, P., Tuček, M., & Gatnar, L. (1995). *Česká společnost v transformaci: K proměnám sociální struktury* [Czech society in transformation: On changes in social structure]. Sociologické nakladatelství.

Machovec, M. (2009). The types and functions of samizdat publications in Czechoslovakia, 1948–1989. *Poetics Today, 30*(3), 435–455.

Macura, V. (1995). *Znamení zrodu: České národní obrození jako kulturní typ* [The sign of birth: The Czech national revival as a cultural type]. H & H.

Masaryk Institute and Archives of the CAS. (n.d.). *About the Institute*. Masaryk Institute and Archives of the Czech Academy of Sciences.

Masaryk Institute and Archives of the CAS. (n.d.). *Archive collections and databases*. Masaryk Institute and Archives of the Czech Academy of Sciences.

Masaryk Institute and Archives of the CAS. (n.d.). *Fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences*. Masaryk Institute and Archives of the CAS.

Masaryk Institute and Archives of the CAS. (n.d.). *Masaryk Institute and Archives of the CAS, v. v. i.* Digital Humanities CAS.

Matějů, P., & Kreidl, M. (2001). Rebuilding status consistency in a post-communist society: The Czech Republic, 1991–1997. *Innovation: The European Journal of Social Science Research, 14*(1), 17–34.

McGillivray, B. (2020). *Computational approaches to historical language change*. Oxford University Press.

Mishler, W., & Rose, R. (2001). What are the origins of political trust? Testing institutional and cultural theories in post-communist societies. *Comparative Political Studies, 34*(1), 30–62.

Mücke, P. (2017). Wor(l)ds of Czech oral history, 1990–2015. *Bulletin de l'AFAS, 43*.

Myant, M. (2003). *The rise and fall of Czech capitalism: Economic development in the Czech Republic since 1989*. Edward Elgar.

National Archives. (n.d.). *A guide for visitors*. National Archives of the Czech Republic.

Orzoff, A. (2009). *Battle for the Castle: The myth of Czechoslovakia in Europe, 1914–1948*. Oxford University Press.

Ouředníček, M., Temelová, J., & Pospíšilová, L. (Eds.). (2011). *Atlas sociálně prostorové diferenciace České republiky* [Atlas of socio-spatial differentiation of the Czech Republic]. Karolinum.

Patočka, J. (1996). *Heretical essays in the philosophy of history* (E. Kohák, Trans.). Open Court.

Potůček, M. (2004). The capacity to govern in Central and Eastern Europe. *Slovak Sociological Review, 36*(1), 5–20.

Přibáň, M., et al. (2018). *Český literární samizdat 1949–1989: Edice, časopisy, sborníky* [Czech literary samizdat 1949–1989: Editions, journals, almanacs]. Academia; Ústav pro českou literaturu AV ČR.

Přibáňová, A. (2021). Czech samizdat archives: The past and the present. *Zagadnienia Rodzajów Literackich, 64*(3), 25–36.

Public Opinion Research Centre. (n.d.). *Public Opinion Research Centre*. Institute of Sociology of the Czech Academy of Sciences.

Sayer, D. (1998). *The coasts of Bohemia: A Czech history*. Princeton University Press.

Schimmelfennig, F., & Sedelmeier, U. (Eds.). (2005). *The Europeanization of Central and Eastern Europe*. Cornell University Press.

Schreibman, S., Siemens, R., & Unsworth, J. (Eds.). (2016). *A new companion to digital humanities*. Wiley Blackwell.

Stark, D., & Bruszt, L. (1998). *Postsocialist pathways: Transforming politics and property in East Central Europe*. Cambridge University Press.

Suk, J. (2003). *Labyrintem revoluce: Aktéři, zápletky a křižovatky jedné politické krize: Od listopadu 1989 do června 1990* [Through the labyrinth of revolution: Actors, plots and crossroads of a political crisis from November 1989 to June 1990]. Prostor.

Sýkora, L., & Bouzarovski, S. (2012). Multiple transformations: Conceptualising the post-communist urban transition. *Urban Studies, 49*(1), 43–60.

Szelényi, I., & Szelényi, S. (1995). Circulation or reproduction of elites during the postcommunist transformation of Eastern Europe. *Theory and Society, 24*(5), 615–638.

Terras, M., Nyhan, J., & Vanhoutte, E. (Eds.). (2013). *Defining digital humanities: A reader*. Ashgate.

Vachudova, M. A. (2005). *Europe undivided: Democracy, leverage, and integration after communism*. Oxford University Press.

Vachudova, M. A. (2005). *Europe undivided: Democracy, leverage, and integration after communism*. Oxford University Press.

Vaněk, M., & Mücke, P. (2016). *Velvet revolutions: An oral history of Czech society*. Oxford University Press.

Večerník, J. (1996). *Markets and people: The Czech reform experience in a comparative perspective*. Avebury.

Večerník, J. (2002). Monitoring the transition in the Czech Republic: Data, surveys and studies. *Czech Sociological Review, 38*(3), 365–380.

Večerník, J. (2009). *Czech society in the 2000s: A report on socio-economic policies and structures*. Academia.

Večerník, J., & Matějů, P. (Eds.). (1999). *Ten years of rebuilding capitalism: Czech society after 1989*. Academia.

Verovšek, P. J. (2016). Collective memory, politics, and the influence of the past: The politics of memory as a research paradigm. *Politics, Groups, and Identities, 4*(3), 529–543.

Williams, K. (1997). *The Prague Spring and its aftermath: Czechoslovak politics, 1968–1970*. Cambridge University Press.

Williams, K. (2003). Lustration as the securitization of democracy in Czechoslovakia and the Czech Republic. *Journal of Communist Studies and Transition Politics, 19*(4), 1–24.

Part Six.

Strategy AV21, Innovation, and Science in the Public Interest

Chapter Thirteen

Strategy AV21: From Classical Academy to Public-Interest Research Institution

The Origins and Rationale of Strategy AV21

1. Why the Academy Needed a New Strategic Format

By the beginning of the second decade of the 21st century, the Czech Academy of Sciences had already passed through the most dramatic stages of its post-socialist transformation. It had survived the institutional rupture of the early 1990s, the dissolution of the Czechoslovak Academy of Sciences, the creation of a new republican academy, the redefinition of its legal status, and the long adjustment to competitive funding, international evaluation, and European research frameworks. Yet survival and stabilisation were no longer enough. The Academy faced a different kind of question: not whether it should exist, but how it should explain its necessity in a society where science was increasingly expected to justify itself in public, economic, environmental, technological, and cultural terms. The old academic language of excellence, disciplinary continuity, and institutional prestige remained important, but it no longer fully answered the demands placed upon a national research institution in a democratic, market-oriented, and globally connected state. The Academy therefore needed a new strategic format because its legitimacy had to be expressed not only through publications, institutes, and scholarly authority, but also through visible responses to the problems of contemporary society. Strategy AV21 emerged from this need to translate the Academy's traditional strengths into a modern public mission (*Czech Academy of Sciences, 2015*; *Czech Academy of Sciences, 2017*).

The deeper logic of this turn becomes clearer when it is placed against the earlier history of the Academy as an institution moving between autonomy and public responsibility. The learned societies of the Czech lands had long cultivated science as a component of national culture, while the socialist ČSAV had placed scientific work inside a state-directed structure whose public mission was ideologically prescribed. After 1989, the restored principle of academic freedom required a sharp break with political tutelage, and this break was essential for the credibility of Czech science. However, autonomy alone could not provide a sufficient institutional narrative forever. In a democratic system, publicly funded research must continuously articulate why freedom of inquiry matters for society as a whole. The Academy had to avoid two opposite dangers: being absorbed into short-term governmental utility on the one hand, and appearing as an isolated corporative body on the other. Strategy AV21 was one way of holding these two dangers apart by presenting autonomy and social usefulness as complementary rather than contradictory values.

The Academy's need for a new format was also connected with the changing political economy of research after 1993. The post-socialist research system increasingly operated through project competition, grant agencies, international benchmarks, bibliometric indicators, and policy expectations associated with innovation. These mechanisms pushed institutes towards

measurable outputs, but they did not automatically create a coherent national research agenda. Individual teams could be excellent, individual institutes could be productive, and yet the Academy as a whole could still struggle to present a unified public profile. Strategy AV21 addressed precisely this gap between dispersed excellence and institutional visibility. It offered a framework in which the Academy could show not only that its institutes performed high-level research, but also that their work could be coordinated around broad challenges requiring long-term intellectual investment. In this sense, the strategy was not merely an administrative instrument; it was a form of institutional self-description adapted to a new research environment (*Czech Academy of Sciences, 2016*; *Czech Academy of Sciences, 2017*).

The problem was intensified by the internal structure of the Academy itself. AV ČR is not a university with faculties, students, and a unified teaching mission, nor is it a sectoral research agency organised around one policy field. It is a network of highly specialised public research institutes, each with its own disciplinary traditions, leadership, research culture, and international links. This decentralised structure gives the Academy considerable scientific strength, because it protects expert communities and allows them to develop long-term research programmes. At the same time, it makes institutional coordination difficult, especially when social problems do not respect the boundaries between physics, biology, sociology, history, computer science, medicine, linguistics, law, and environmental research. Strategy AV21 responded to this structural difficulty by creating a programme-based layer above individual institutes without abolishing their autonomy. It was therefore a strategic format designed for an academy composed of strong institutes rather than for a centralised research bureaucracy.

The wider transformation of science also made such a format necessary. Since the late 20th century, research policy has increasingly emphasised the production of knowledge in contexts of application, interaction with stakeholders, and responsiveness to uncertain social environments. The influential discussions of “Mode 2” knowledge production, the “triple helix” of university–industry–government relations, and the public value of research did not mean that basic science had disappeared. Rather, they showed that the social organisation of research had become more porous, more collaborative, and more exposed to public evaluation (*Gibbons et al., 1994*; *Nowotny et al., 2001*; *Etzkowitz & Leydesdorff, 2000*; *Bozeman, 2007*). The Czech Academy could not ignore this shift, especially after the Czech Republic’s integration into the European Research Area. A classical academy organised mainly around disciplinary excellence needed a language through which it could participate in this broader transformation without losing its identity. Strategy AV21 supplied such a language by connecting top-level research with public interest.

This did not mean that the Academy suddenly became an applied research organisation in a narrow sense. On the contrary, the official formulation of Strategy AV21 explicitly preserved the centrality of basic research as the foundation of scientific development. The novelty lay elsewhere: in the effort to make basic research visible as a source of long-term solutions, intellectual preparedness, and societal resilience. Contemporary challenges such as climate change, energy transition, demographic ageing, digital vulnerability, public health crises, food security, disinformation, cultural memory, and technological sovereignty cannot be solved by immediate application alone. They require deep knowledge, theoretical imagination, historical understanding, experimental capacity, and interdisciplinary translation. Strategy AV21 therefore allowed the Academy to argue that fundamental science was not remote from public

interest, but one of its most durable conditions. This was a crucial repositioning of the Academy's public image (*Czech Academy of Sciences, 2017*).

The timing of Strategy AV21 was significant. The programme framework was completed at the end of 2014, and the Academy Assembly approved it in December of that year. The first stage began with fourteen research programmes, ranging from the digital era and nuclear power systems to health, ecosystems, public policies, communication, memory, and European statehood. This initial set already revealed the underlying institutional ambition: to show that the Academy's research spectrum could be reorganised around problems that were both scientifically complex and publicly recognisable. The selection of themes also demonstrated that Strategy AV21 was not limited to technology or industrial innovation. It included social sciences and humanities from the beginning, which was essential for avoiding a reduced understanding of public interest as merely economic usefulness. The Academy thus framed contemporary challenges as intellectual, cultural, political, environmental, and technological at the same time (*Czech Academy of Sciences, 2015*).

This breadth was especially important in the Czech context, where the history of the Academy had repeatedly been shaped by the relation between science and national society. During the national revival, scholarly work had helped to construct cultural identity, language, historical memory, and the symbolic infrastructure of the Czech nation. Under socialism, science had been subordinated to a state ideology that claimed to represent collective progress, while often restricting intellectual freedom. After 1989, the Academy had to rebuild trust by distancing itself from ideological control and re-establishing international standards. Strategy AV21 represented a further stage in this long history. It suggested that public responsibility could no longer be understood as obedience to the state, nor as a romantic national mission, but as expert engagement with the complex problems of an open society. In this way, the strategy transformed an older tradition of service to society into a democratic and interdisciplinary form.

The financial and political environment also encouraged the Academy to sharpen its public argument. Annual reporting from the mid-2010s stressed that institutional funding formed only a limited part of the Academy's total budget and that Czech public research operated under pressure to prove efficiency and relevance. In such circumstances, a research institution cannot rely solely on inherited prestige. It must demonstrate why stable support for long-term research is not a privilege, but a public investment. Strategy AV21 helped the Academy make this case by presenting research programmes that were legible to policymakers, entrepreneurs, public institutions, and citizens. The Academy could point to energy, health, public policy, natural hazards, materials, food, digitalisation, and memory as areas where its institutes generated knowledge with social significance. The strategy therefore functioned partly as a defence of institutional funding, but it did so by expanding the language of responsibility rather than by retreating into corporate self-protection (*Czech Academy of Sciences, 2016*).

The new strategic format also answered a communication problem. Modern academies cannot assume that society automatically understands the value of specialised research. The more advanced science becomes, the more difficult it is for non-specialists to see the connection between a laboratory, an archive, a field station, a mathematical model, a linguistic corpus, or a historical edition and their own lives. Strategy AV21 created a bridge between expert work and public intelligibility. Its programmes gave names, narratives, and thematic

frames to research that might otherwise remain hidden inside institute reports and disciplinary journals. This did not simplify the science itself, but it made its public meaning easier to communicate. The strategy thus became a device of scientific translation: not translation from Czech into English or from theory into popularisation only, but translation from institutional complexity into social visibility.

The Academy also needed a framework capable of encouraging cooperation across institute boundaries. In a conventional academy, institutes often build their strength by deepening specialisation. This is intellectually productive, but it can also create silos. Climate research may require atmospheric physics, ecology, economics, legal analysis, and social behaviour; digitalisation may involve computer science, ethics, psychology, linguistics, security studies, and political communication; health research may connect molecular biology, epidemiology, demography, medical technologies, and public policy. A strategic format based on programmes made it possible to organise such connections without dissolving the disciplinary bases on which they depended. Strategy AV21 therefore did not replace institutes with programmes; it overlaid the institute structure with a collaborative matrix. This matrix was one of the main institutional innovations of the strategy (*Czech Academy of Sciences, 2017*).

The programme-based format was also more flexible than a traditional long-term institutional plan. The official materials emphasised that programmes could be adjusted according to interim results, new societal needs, and the attained level of knowledge. This flexibility mattered because contemporary challenges change faster than classical institutional structures. A rigid academy can protect continuity, but it may respond too slowly to emergent problems. A purely project-based system can react quickly, but it may lack depth and stability. Strategy AV21 attempted to combine both qualities: the long-term capacities of Academy institutes and the adaptive logic of thematic programmes. This combination gave AV ČR a way to remain recognisably academic while becoming more strategically responsive.

The five-year programme logic also introduced a moderate form of strategic discipline. Programmes were not simply informal networks or occasional cooperation between friendly researchers. They required coordination, approval, reporting, evaluation, and institutional support. The role of coordinators was especially important because they connected research teams, institute directors, Academy leadership, public communication, and external partners. In this respect, Strategy AV21 created a new layer of academic leadership. It did not only rely on directors of institutes or disciplinary authorities, but also on researchers capable of synthesising problems across fields and presenting them to wider audiences. Such figures became mediators between scholarship, management, and public relevance. The Academy therefore needed Strategy AV21 not only as a plan, but as a mechanism for cultivating new forms of institutional agency.

The strategy was also a response to the growing expectation that research institutions should cooperate with universities, public administration, industry, and international partners. The post-1989 Academy had already developed many such links, but Strategy AV21 made them more visible and programmatic. Its programmes were open to partners beyond the Academy, including universities, businesses, governmental and regional administration, foreign research groups, and public-sector organisations. This openness was not a marginal feature; it was central to the strategy's attempt to define public-interest research. The Academy's knowledge was to remain scientifically independent, but it was not to remain socially enclosed. The new format gave institutional legitimacy to cooperation without making cooperation synonymous

with subordination to external demand (*Czech Academy of Sciences, 2015*; *Czech Academy of Sciences, 2017*).

This balance was delicate because the Academy had to protect its basic research culture. In many countries, the rhetoric of innovation has sometimes reduced science to short-term economic output. For an academy with strong traditions in mathematics, physics, biology, history, philology, philosophy, archaeology, and social research, such a reduction would have been intellectually damaging. Strategy AV21 avoided this danger by using the phrase "top research in the public interest" rather than "applied research for the market". The formula was broad enough to include technology transfer, industrial cooperation, and practical application, but it was also broad enough to include cultural memory, democratic governance, communication, identity, and historical understanding. This semantic choice was institutionally important. It allowed the Academy to engage with innovation policy while preserving a richer conception of public value.

The public-interest formula also helped the Academy distinguish itself from universities. Czech universities are central to education, professional training, and a large part of national research. The Academy, however, is primarily a research institution with concentrated capacities for long-term inquiry. Its public role therefore cannot be explained through teaching alone, although Academy researchers are often connected with doctoral education and university cooperation. Strategy AV21 gave the Academy a distinct public identity: not a university, not a ministry, not a grant agency, not a commercial laboratory, but a national knowledge institution capable of mobilising specialised research for major societal questions. This identity strengthened the Academy's position within the Czech research and innovation system. It also helped explain why a separate academy remained necessary in the 21st century.

The strategy further responded to the problem of fragmentation between excellent research and national priorities. Modern research policy often asks institutions to contribute to strategic priorities, but the priorities themselves can be broad, unstable, or politically formulated. The Academy needed a way to engage with national priorities without becoming merely an executor of policy documents. Strategy AV21 did this by interpreting social relevance through the Academy's own research capacities. Programmes were designed in relation to trends in world science, social relevance, and national priorities of oriented research, experimental development, and innovation, but their scientific content remained grounded in the institutes. In this sense, the strategy was neither a top-down political plan nor a loose catalogue of existing projects. It was a negotiated format through which the Academy translated public priorities into researchable intellectual agendas (*Czech Academy of Sciences, 2017*).

The need for such translation was especially visible in fields where public problems are intellectually complex but politically urgent. Energy policy, for example, cannot be reduced to engineering, because it also involves risk, regulation, economics, public trust, environmental consequences, and geopolitical vulnerability. Public health cannot be reduced to biomedicine, because it also includes demography, behaviour, communication, inequality, and institutional preparedness. Digital transformation cannot be reduced to computer science, because it affects labour, education, privacy, democracy, language, media, and culture. Cultural memory cannot be reduced to heritage preservation, because it shapes identity, conflict, public debate, and the interpretation of political experience. Strategy AV21 allowed the Academy to organise

research around precisely these hybrid problems. It recognised that the most important public questions are rarely owned by a single discipline.

The creation of Strategy AV21 should therefore be read as part of the Academy's broader modernisation after the post-socialist transition. Earlier reforms had concentrated on legal status, governance, evaluation, funding, internationalisation, and the restructuring of institutes. By the 2010s, however, the challenge had shifted towards strategic articulation. The Academy had to show how its dispersed capacities formed a coherent answer to the 21st century. This was a different type of reform: less dramatic than institutional dissolution or legal transformation, but perhaps more subtle in its long-term consequences. It changed how the Academy spoke about itself, how it organised cooperation, and how it presented the relationship between fundamental research and social need. Strategy AV21 was therefore a reform of institutional imagination as much as of research management.

The strategy also reflected an awareness that public trust in expert institutions could no longer be taken for granted. Across Europe, the early 21st century brought new forms of scepticism towards elites, science, media, and state institutions. The expansion of digital communication increased access to knowledge, but also accelerated misinformation, polarisation, and distrust. In such a climate, academies could not limit themselves to producing knowledge for specialist communities. They had to participate more actively in explaining evidence, uncertainty, method, and the social meaning of expertise. Strategy AV21 did not solve this problem by itself, but it gave the Academy a stronger basis for public communication. It made the Academy's research easier to connect with questions that citizens could recognise as part of their own world.

At the same time, Strategy AV21 was not a public-relations campaign detached from research substance. Its credibility depended on the real scientific capacities accumulated inside Academy institutes over decades. Without strong institutes, laboratories, archives, field research, theoretical schools, instrumentation, and expert communities, the strategy would have been only a slogan. The point was not to invent public relevance artificially, but to reveal and organise relevance that already existed in many parts of the Academy. This is why the strategy could include both advanced materials and historical memory, both diagnostics and public policy, both digital risks and communication. It drew from the Academy's existing breadth and gave that breadth a strategic architecture. The new format therefore depended on continuity as much as on innovation.

The Academy also needed Strategy AV21 because the older distinction between "basic" and "applied" research was becoming increasingly insufficient. Many of the most valuable scientific contributions begin as fundamental inquiry and only later acquire practical significance. Conversely, many applied challenges force researchers to rethink basic concepts, methods, and models. A rigid separation between curiosity-driven research and social usefulness can therefore misrepresent how science actually develops. Strategy AV21 offered a more integrated understanding. It suggested that research could be excellent, fundamental, interdisciplinary, and publicly relevant at the same time. This was particularly important for defending the Academy's role against simplistic policy expectations that equated relevance only with immediate commercialisation.

The public-interest orientation also had an ethical dimension. To say that research is conducted in the public interest is to make a claim about responsibility, not only utility. It implies that scientific institutions must consider the quality of life of future generations, the

resilience of society, the sustainability of technological development, the preservation of cultural memory, and the capacity of citizens and policymakers to make informed decisions. This does not mean that researchers should become political actors in a partisan sense. It means that the Academy's independence carries obligations towards the society that sustains it. Strategy AV21 articulated these obligations in a form compatible with academic freedom. It offered a civic vocabulary for scientific autonomy.

The strategy's early reception also showed why the new format mattered institutionally. Official annual reporting noted positive responses from governmental, business, and international circles, as well as interest from foreign partners and inspiration for similar programmes elsewhere. Such responses were important not because they replaced scholarly evaluation, but because they demonstrated that the Academy had found a public language intelligible beyond its own walls. The Academy could speak simultaneously to researchers, policymakers, entrepreneurs, public institutions, and citizens. This multivocal capacity is essential for a modern academy. A research institution that speaks only to itself may remain scientifically productive, but it risks losing strategic influence. Strategy AV21 strengthened the Academy's ability to act as a recognised national knowledge actor (*Czech Academy of Sciences, 2015*; *Czech Academy of Sciences, 2016*).

Another reason the Academy needed the strategy was generational. A national research institution must create conditions not only for current outputs, but also for future scientific communities. Young researchers enter an environment shaped by funding pressures, international mobility, precarious career stages, and competition for recognition. Strategy AV21 could not by itself solve the career problem, but it could help create broader intellectual contexts in which younger researchers saw their work connected to significant public questions. Interdisciplinary programmes can open new spaces for collaboration, visibility, and leadership beyond the narrow hierarchy of individual institutes. They can also show early-career researchers that academic work has social meaning without being reduced to policy service. In this sense, the strategy belonged to the Academy's long-term responsibility for scientific reproduction.

The name "AV21" itself carried symbolic weight. It marked the Academy's attempt to define itself for the 21st century rather than merely to defend its 20th-century inheritance. The number did not signify a complete break with the past, but it indicated a new horizon of self-understanding. The Academy of the 21st century had to be more interdisciplinary, more communicative, more internationally connected, more open to partners, and more capable of addressing uncertainty. Yet it also had to remain an academy: a place where knowledge is pursued with depth, methodological seriousness, and long-term commitment. Strategy AV21 expressed this dual movement. It modernised the Academy without asking it to abandon the academic principle.

The strategy was therefore necessary because the Academy's environment had become too complex for classical institutional self-presentation alone. A catalogue of institutes could not adequately express the Academy's capacity to address society's major challenges. A list of publications could not fully show why public research matters. A set of disciplinary achievements could not by itself explain how knowledge contributes to national resilience, democratic culture, technological development, environmental responsibility, and human self-understanding. Strategy AV21 offered a way to assemble these dispersed meanings into a coherent public mission. It did not replace evaluation, funding reform, international

cooperation, or institute autonomy. Rather, it connected them within a broader institutional narrative.

The need for a new strategic format can finally be understood as the need to redefine the social contract between the Academy and the society it serves. In the socialist period, that contract had been distorted by political ideology and state control. In the early post-socialist period, it was rebuilt through autonomy, reform, and reintegration into international science. In the 21st century, it had to be renewed through public relevance, interdisciplinary cooperation, and responsibility for future challenges. Strategy AV21 was the Academy's answer to this renewal. It declared that high-quality research and public interest were not competing principles, but mutually reinforcing dimensions of a modern academy. This was the institutional rationale from which the later thematic programmes, collaborative governance structures, and public communication practices of Strategy AV21 would develop.

Thus, the Czech Academy of Sciences needed Strategy AV21 because the historical conditions of its legitimacy had changed. The Academy could no longer rely only on the authority of tradition, the prestige of disciplinary excellence, or the memory of post-1989 reform. It had to demonstrate that an autonomous academy of specialised institutes could also function as a strategic national knowledge institution. Strategy AV21 supplied the organisational and symbolic format for this demonstration. It preserved the centrality of basic research, but placed it within a broader horizon of public responsibility. It respected institute autonomy, but created mechanisms for programme-based cooperation. It spoke the language of excellence, but connected excellence with social challenges, policy relevance, innovation, cultural memory, and the quality of life of future generations. In this sense, Strategy AV21 marked not a departure from the Academy's identity, but its adaptation to the intellectual, political, and civic demands of the 21st century.

2. The Idea of "Top Research in the Public Interest"

The motto of Strategy AV21, "Top research in the public interest", condensed into one phrase a major institutional reorientation of the Czech Academy of Sciences. It was deliberately more ambitious than a conventional statement about scientific excellence, because excellence alone did not explain why an academy of publicly funded institutes should remain central to national life. It was also broader than a simple promise of practical usefulness, because the Academy did not want to reduce itself to a service laboratory for immediate governmental or industrial demand. The formula brought together two claims that are often treated separately: that research must be of the highest scientific quality, and that such research must be connected with the long-term interests of society. In this sense, the motto was not a decorative slogan but a compact theory of the Academy's modern mission. It suggested that the public value of science depends precisely on its intellectual strength, methodological depth, and freedom from short-term political or market pressures. Strategy AV21 therefore turned the Academy's traditional defence of autonomy into a more active public argument (*Czech Academy of Sciences, 2017*).

The phrase "top research" carried a specific institutional meaning. It referred to research evaluated according to international standards, embedded in global scholarly networks, and capable of contributing to the development of knowledge beyond national borders. For the Academy, this was essential because its post-1989 legitimacy had been rebuilt through

internationalisation, peer review, competition, and reintegration into European science. However, Strategy AV21 did not present excellence as a closed academic value belonging only to specialist communities. It argued that high-quality research is valuable to society precisely because it produces knowledge that is more reliable, more cumulative, and more resistant to improvisation than politically convenient expertise. In other words, the public interest is not served by weak science that merely speaks in accessible language. It is served by strong science that can withstand scrutiny and then be translated responsibly into public meaning.

The second half of the formula, "in the public interest", was equally significant. It did not mean that every research result had to be immediately useful, profitable, or applicable to a current administrative problem. Rather, it pointed to a broader horizon of social responsibility. Public interest includes health, security, environment, cultural memory, democratic governance, technological development, social cohesion, quality of life, and the capacity of future generations to make informed decisions. Such interests are rarely reducible to short-term indicators. They are often uncertain, contested, and historically evolving. Strategy AV21 therefore used the language of public interest to defend research as a long-term civic resource, not merely as an instrument of economic competitiveness (*Bozeman, 2007*; *Czech Academy of Sciences, 2017*).

This understanding was especially important for a national academy with strong traditions in both the natural sciences and the humanities. A narrow innovation policy might have privileged only those fields that promise patents, products, or industrial partnerships. Strategy AV21 avoided this reduction by placing cultural, social, historical, linguistic, and philosophical research within the same public-interest horizon as energy, materials, medicine, biotechnology, and digital technologies. This was not an accidental inclusiveness. It reflected the Academy's conviction that modern societies need more than technological capacity. They also need historical orientation, cultural self-understanding, legal and political analysis, ethical reflection, and communication across social divisions. The motto therefore preserved the full disciplinary breadth of the Academy and gave that breadth a common public vocabulary.

The idea of public-interest research also marked a clear departure from the socialist understanding of science as service to the state. In the Czechoslovak Academy of Sciences, public purpose had often been defined from above, through ideological planning and political priorities. After 1989, the new Academy had to reclaim autonomy from that legacy. Yet by the 2010s, it was no longer enough simply to say that science must be free from political control. The more difficult task was to show how autonomous science can still be socially responsible. Strategy AV21 answered this question by separating public interest from state command. It implied that the Academy may serve society not by obeying the political regime, but by producing independent, high-quality knowledge on problems that matter to citizens, institutions, and future generations.

This distinction is crucial for understanding the democratic character of Strategy AV21. A democratic society cannot demand that science merely confirm governmental preferences, but it can expect publicly funded science to engage with shared problems. The Academy's independence is therefore not a withdrawal from society; it is a condition for more trustworthy service to society. Research on climate change, health risks, public policy, technological security, or cultural memory loses much of its value if it is shaped by partisan convenience. Conversely, it gains public significance when it is able to speak from a position of

methodological independence. The motto “Top research in the public interest” expressed this delicate balance between distance and engagement.

The formula also helped the Academy avoid the false opposition between basic and applied research. In public debates, basic research is sometimes portrayed as intellectually prestigious but socially remote, while applied research is viewed as useful but less fundamental. Strategy AV21 implicitly rejected this division. It showed that many societal challenges require precisely the kind of long-term knowledge that only basic research can provide. New materials, gene therapy, energy systems, environmental modelling, artificial intelligence, language technologies, demographic analysis, and the study of collective memory all depend on accumulated theoretical, empirical, and methodological work. The Academy therefore presented public interest not as a constraint imposed on basic research, but as one of the contexts in which the value of basic research becomes visible.

At the same time, the motto did not dissolve the difference between scientific knowledge and political decision-making. The Academy could provide evidence, models, concepts, scenarios, and expert interpretation, but it could not replace democratic choice. This separation was important because public-interest science must not become technocracy. Strategy AV21 placed the Academy in a position of responsibility, not sovereignty. Its task was to strengthen the knowledge base of society, not to govern society in the name of expertise. Such a position requires intellectual modesty as well as scientific confidence. The Academy had to present itself as a strategic knowledge institution while recognising that science participates in public life alongside law, politics, civil society, culture, and ethical debate.

The idea of public interest also expanded the meaning of innovation. In a narrow economic sense, innovation is often associated with commercialisation, technology transfer, competitiveness, and industrial renewal. Strategy AV21 included these dimensions, but it did not allow them to monopolise the Academy’s mission. Innovation could also mean new ways of understanding risk, new methods of public communication, new models of social policy, new forms of heritage interpretation, new diagnostic capacities, or new tools for environmental adaptation. This broader understanding suited the Academy because its institutes produced many kinds of knowledge, not all of which entered the market directly. Public-interest research therefore widened the conceptual space in which academic innovation could be recognised (*Etzkowitz & Leydesdorff, 2000*; *Czech Academy of Sciences, 2017*).

This broadness was also visible in the early programme structure of Strategy AV21. The first programmes included themes such as the digital age, efficient energy conversion, natural hazards, new materials, quality of life and health, food for the future, systems for nuclear power, memory, effective public policies, forms of communication, and Europe and the state. These titles already show that the Academy understood public interest as a multidimensional field. It was not only a matter of laboratories and technologies, but also of political institutions, communication, cultural continuity, and social resilience. Such a programme structure gave practical institutional form to the motto. It translated an abstract principle into coordinated research areas.

The phrase “top research” also served as a safeguard against populist interpretations of public interest. Public interest is not identical with immediate public opinion, media attention, or political popularity. Scientific work may be in the public interest even when its significance is not immediately understood by the broader public. Conversely, research can be publicly visible without being scientifically robust. Strategy AV21’s formula protected the Academy

from both dangers by insisting that social relevance must rest on scholarly quality. The public has a legitimate interest not merely in research that sounds useful, but in research that is actually competent, rigorous, and capable of producing dependable knowledge.

This point is particularly important in the age of digital misinformation and declining trust in expert institutions. Public communication has become faster, more fragmented, and more vulnerable to manipulation. In such an environment, research institutions cannot remain silent, but they also cannot compete with misinformation by abandoning complexity. Strategy AV21's public-interest orientation encouraged the Academy to become more visible while maintaining scientific seriousness. It gave public communication a stronger institutional foundation. The Academy could explain its research not as isolated curiosity, but as part of a structured effort to address problems that affect everyday life, public policy, cultural identity, and national resilience.

The motto also expressed a shift from passive availability of expertise to active agenda formation. A classical academy may wait to be consulted by ministries, universities, cultural institutions, or the public. Strategy AV21 encouraged the Academy to formulate research programmes proactively. It identified areas where the Academy believed its capacities could contribute to society before a crisis or administrative request defined the problem too narrowly. This proactive role was important because many contemporary challenges require preparedness rather than reaction. Public-interest research must often anticipate risks, build knowledge infrastructures, and maintain expert communities before their necessity becomes obvious.

The connection between public interest and long-term preparedness was especially relevant in fields such as public health, energy, environment, security, and digitalisation. Societies frequently discover the value of expertise only when a crisis occurs. Yet by that time, the necessary research capacities must already exist. The Academy's institutes preserve precisely such capacities: laboratories, databases, archives, field stations, collections, models, instruments, and specialist communities. Strategy AV21 made this latent preparedness more visible. It showed that public-interest science is not only the science that solves today's problem, but also the science that keeps society intellectually prepared for tomorrow's uncertainties.

The same logic applied to the humanities and social sciences. Historical research, philosophy, philology, sociology, economics, law, psychology, and political science may not always produce immediately tangible outputs, but they shape the interpretative resources of society. They help citizens and institutions understand memory, identity, conflict, inequality, legitimacy, communication, and social change. In times of democratic stress, such knowledge is not decorative. It becomes part of the intellectual infrastructure of public life. Strategy AV21's inclusion of social and human sciences therefore prevented the public-interest idea from becoming technologically one-sided. It affirmed that societies need meaning, memory, and judgement as well as innovation.

The formula also helped redefine the Academy's relationship with the state. The Academy remained a public research institution supported by public resources, and therefore it had obligations towards the national community. But Strategy AV21 framed this relationship as partnership rather than subordination. Research programmes were open to cooperation with state and regional administration, but their intellectual logic came from the Academy's scientific capacities. This allowed AV ČR to contribute to public policy without becoming an

administrative department. The public interest was therefore mediated through expertise, collaboration, and programme design, not through direct political control.

The relationship with industry was similarly nuanced. Strategy AV21 recognised that public-interest research may generate technologies, methods, prototypes, and applications relevant to business and production. However, industrial usefulness was not treated as the only measure of value. The Academy's cooperation with business had to remain compatible with scientific quality, openness, and longer-term societal benefit. This was important because some research areas, such as energy transition, advanced materials, food systems, biomedical technologies, and artificial intelligence, lie at the intersection of public need and economic opportunity. Strategy AV21 gave the Academy a framework for entering this intersection without reducing its mission to commercial service.

The motto also strengthened the Academy's role in the European research environment. European research policy increasingly emphasised grand challenges, responsible research and innovation, interdisciplinarity, societal impact, and cooperation across sectors. Strategy AV21 allowed the Czech Academy to speak this European language while retaining a distinct national institutional identity. It was not merely copying European terminology; it was translating the Academy's own historical and disciplinary capacities into a form compatible with the European Research Area. This was particularly important for an institution that had rebuilt itself after the end of state socialism and now needed to operate confidently within transnational research structures. The public-interest formula thus had both domestic and European significance (*European Commission, 2012*; *Owen, Macnaghten, & Stilgoe, 2012*).

The idea of "top research in the public interest" also implied a new style of institutional storytelling. The Academy could no longer be presented only as a collection of institutes founded in different periods and devoted to different disciplines. It needed narratives that showed why these institutes belonged together. Strategy AV21 provided such narratives through programmes that cut across institutional boundaries. A physicist, a biologist, a historian, a sociologist, and a computer scientist could all appear as contributors to shared public questions. This did not erase disciplinary identity, but it gave the Academy a more integrated public image. The motto therefore helped transform institutional plurality into strategic coherence.

The public-interest principle was particularly useful because it allowed the Academy to speak to multiple audiences at once. To scientists, it said that excellence remained non-negotiable. To policymakers, it said that the Academy could contribute to national priorities and long-term decision-making. To citizens, it said that academic research was not detached from everyday concerns. To business and public institutions, it said that cooperation with the Academy could generate knowledge of practical value. To the international community, it said that Czech science was engaged with global challenges. A successful institutional formula must be capable of such multiple translation, and Strategy AV21 achieved this more effectively than a purely internal strategic plan would have done.

However, the formula also contained a demanding promise. To claim public-interest research is to accept responsibility for relevance, communication, and accountability. The Academy had to show that its programmes were not merely rebranded existing projects, but real attempts to connect expertise with significant challenges. This required coordination, reporting, public presentation, and continuing adjustment of programme themes. It also required researchers to think beyond the immediate boundaries of their specialisms without

compromising scientific depth. Strategy AV21 therefore placed new expectations on the Academy's internal culture. The motto was inspiring, but it was also institutionally binding.

The concept of public interest also raised the problem of selection. No research institution can address every social challenge, and no academy can define the public interest in a complete or final way. Strategy AV21 therefore had to choose themes where the Academy possessed real capacities and where the problems were sufficiently broad, urgent, and intellectually demanding. This selective character was important. It prevented the strategy from becoming a vague declaration that all science is useful in some unspecified sense. Public-interest research required prioritisation, but prioritisation had to be based on the intersection of scientific strength, social relevance, and long-term strategic need.

The motto also had an internal integrative function. Institutes of the Academy differ greatly in scale, methods, audiences, and traditions. Some work with large instruments and experimental facilities; others with texts, archives, social data, mathematical models, biological systems, or field observation. Without a common strategic language, such diversity can appear fragmented. "Top research in the public interest" allowed these different research cultures to recognise themselves within a shared institutional mission. It did not force them into uniformity. Instead, it offered a flexible formula in which many forms of excellence could be connected to many forms of public value.

This flexibility was one of the reasons the motto proved durable. A narrower slogan might have become obsolete as policy priorities changed. Public interest, however, can accommodate changing problems while preserving a stable institutional orientation. In one period, energy security and digitalisation may dominate; in another, public health, climate adaptation, artificial intelligence, or social resilience may become more prominent. The formula allows programmes to evolve without abandoning the underlying mission. This adaptability was essential for Strategy AV21 because the Academy was not designing a one-time campaign, but a strategic framework for the 21st century.

The phrase also conveyed a moral argument about public funding. Public resources invested in research should not be understood simply as expenditure, nor even only as investment in competitiveness. They are also investments in collective intelligence. A society that supports high-quality research increases its capacity to understand itself, adapt to change, manage risk, preserve memory, and imagine alternatives. Strategy AV21 gave the Academy a way to express this argument without sounding defensive. It did not ask society to support the Academy because the Academy had always existed. It asked society to recognise that a modern democratic state needs independent institutions capable of producing knowledge for the common good.

In this respect, Strategy AV21 belongs to a broader tradition of thinking about science as a public good. Scientific knowledge often exceeds the interests of the individual researcher, the single institute, the immediate funder, or the present generation. It circulates, accumulates, and creates unforeseen possibilities. At the same time, it requires institutions capable of sustaining work whose value may not be instantly measurable. The Academy is one such institution. The motto "Top research in the public interest" therefore linked the Academy's practical strategy with a deeper philosophy of knowledge. It affirmed that advanced research is part of the infrastructure of a civilised society (*Merton, 1973*; *Polanyi, 1962*).

The idea was also historically resonant in the Czech lands. Czech scientific institutions had long been intertwined with questions of language, education, culture, modernisation, and

national self-definition. Yet Strategy AV21 reinterpreted this tradition in a contemporary democratic form. Public interest was no longer defined primarily as national awakening, ideological progress, or institutional survival. It was defined through open-ended engagement with social, technological, environmental, cultural, and economic challenges. This made the Academy's public mission less monumental but more practical, less rhetorical but more structurally embedded. It showed how an institution with deep historical roots could speak to the conditions of the 21st century.

Thus, the idea of "top research in the public interest" became the conceptual centre of Strategy AV21 because it reconciled values that the Academy needed to hold together: excellence and responsibility, autonomy and engagement, basic research and practical relevance, disciplinary depth and interdisciplinary cooperation, national service and international science. The formula allowed AV ČR to present itself not as a relic of the classical academy, nor as a purely applied research agency, but as a strategic public knowledge institution. It protected the dignity of fundamental research while making its social meaning more visible. It expanded innovation beyond the market and public service beyond state command. Most importantly, it gave the Academy a new language of legitimacy: the Academy exists because society needs independent, high-quality, long-term research capable of addressing the problems, uncertainties, memories, and possibilities that define public life.

3. Strategy AV21 as a Response to Contemporary Challenges

Strategy AV21 was not conceived in a historical vacuum, nor was it merely an internal reform of research administration. Its deeper significance lay in the fact that it translated the Academy's institutional capacities into a response to the major uncertainties of the 21st century. By the mid-2010s, the Czech Academy of Sciences was operating in a world in which scientific institutions were expected not only to generate knowledge, but also to help societies understand risk, complexity, acceleration, and vulnerability. Climate change, energy transition, technological disruption, demographic ageing, health insecurity, food systems, public mistrust, geopolitical instability, cultural memory, and digital transformation had become interconnected problems rather than separate policy sectors. A classical academy organised around disciplines and institutes could address each of these questions in specialised ways, but Strategy AV21 created a framework for addressing them as shared civilisational challenges. The strategy therefore represented a move from institutional self-preservation to strategic engagement with the conditions of contemporary life (*Czech Academy of Sciences, 2017*).

The word "contemporary" in the official materials of Strategy AV21 is important because it does not simply mean "current" or "recent". It points to a type of problem characteristic of late modern societies: problems that are complex, uncertain, interdisciplinary, and often global in origin but local in their consequences. Climate change is planetary, yet its effects are experienced through Czech landscapes, water systems, agriculture, forests, urban planning, and energy policy. Digitalisation is global, but it reshapes Czech education, labour, communication, state administration, media, and democratic debate. Public health threats circulate across borders, but they test national institutions, hospitals, laboratories, social trust, and the ability of citizens to understand scientific advice. Strategy AV21 responded to precisely this combination of global interdependence and national responsibility. It gave the

Academy a way to place Czech research within the world's major transformations without losing the specificity of Czech society.

The strategy's response to contemporary challenges must also be understood through the concept of risk. Since the late 20th century, social theory has described modern societies as increasingly preoccupied with risks produced by modernisation itself: technological systems, environmental degradation, industrial side-effects, nuclear infrastructures, financial volatility, and the uncertain consequences of scientific progress (*Beck, 1992*). Strategy AV21 did not use this sociological vocabulary as its primary language, but its programme structure clearly reflected a similar awareness. It included nuclear systems, natural hazards, energy conversion, digital risks, health, ecosystems, food, public policies, communication, and memory. These themes all point to areas where society needs knowledge not only to advance, but also to avoid harm. In this respect, Strategy AV21 interpreted science as a resource for anticipation, prevention, adaptation, and informed decision-making.

The Academy's response to contemporary challenges was therefore not limited to crisis management. It was more ambitious and more patient. Crises reveal weaknesses dramatically, but the knowledge required to face them must be built long before they occur. Laboratories, observatories, archives, long-term data series, linguistic corpora, biological collections, field stations, experimental facilities, social surveys, and historical expertise cannot be improvised in the moment of danger. Strategy AV21 made this long-term preparedness visible. It showed that the Academy's public value lay not only in immediate advice during emergencies, but also in maintaining the intellectual infrastructure that allows society to understand emerging problems before they become disasters. This is one of the strongest arguments for a national academy in the 21st century.

Energy was one of the clearest examples of this new logic. The Czech Republic, like other European countries, faced the problem of securing reliable, affordable, and environmentally responsible energy while responding to climate obligations, technological change, and geopolitical vulnerability. Strategy AV21's early programmes on nuclear power systems, efficient energy conversion and storage, and later sustainable energy themes connected physics, engineering, materials science, environmental research, safety analysis, and social considerations. Such a combination was necessary because energy policy is never only a technical question. It involves infrastructure, risk perception, industrial capacity, public trust, environmental burden, international dependency, and long-term investment. The Academy's role was not to replace political decision-making, but to provide the knowledge base without which such decision-making becomes short-sighted or ideological (*Czech Academy of Sciences, 2017*).

Environmental and climate-related challenges required an equally broad scientific response. The Strategy AV21 framework recognised that landscapes, ecosystems, biodiversity, natural hazards, soil, water, and atmosphere are interconnected systems shaped by both natural processes and human activity. Czech environmental problems are not abstract examples from global reports; they are visible in droughts, floods, forest degradation, agricultural pressures, urban heat, biodiversity loss, and disputes over land use. The Academy's institutes had long-standing expertise in geology, atmospheric physics, ecology, botany, hydrology, soil science, geography, and environmental law. Strategy AV21 allowed these capacities to be coordinated around issues that mattered for citizens, municipalities, ministries, and future generations. It

thereby transformed environmental knowledge from a set of specialised disciplines into a public-interest research agenda.

The challenge of natural hazards further demonstrated why Strategy AV21 required interdisciplinarity. Floods, storms, droughts, landslides, seismic risks, space weather, and other hazards are not merely physical events. They become social events through settlement patterns, infrastructure, communication, legal responsibility, insurance systems, local administration, public memory, and political preparedness. A natural hazard becomes a disaster when society is unprepared, when information is weak, or when institutions fail to coordinate. Strategy AV21's attention to natural hazards therefore connected earth sciences with social analysis and public administration. This was a modern form of academic responsibility: to understand not only the event itself, but also the conditions under which a society can withstand it.

Health represented another major area in which contemporary challenges demanded a strategic format. By the 2010s, biomedical research was already moving towards molecular diagnostics, personalised medicine, gene therapy, advanced imaging, translational medicine, and data-driven approaches to disease. At the same time, societies were ageing, chronic illnesses were increasing, and public health systems were under growing pressure. Strategy AV21 programmes dealing with wellbeing, diagnostics, pharmaceuticals, precision medicine, and later infectious diseases addressed this complex field from several angles. They linked laboratory science with clinical potential, biological mechanisms with technologies, and health innovation with social need. This was not a shift away from fundamental biomedical research, but a way of showing why such research matters to public life.

The COVID-19 pandemic, although it came after the launch of Strategy AV21, made the rationale of such a programme-based approach even more visible. The pandemic showed that health crises are not purely medical events. They involve virology, immunology, epidemiology, modelling, diagnostics, public communication, trust in science, law, education, social behaviour, economic consequences, and international coordination. Institutions that had already built interdisciplinary channels were better positioned to contribute expertise across these dimensions. Strategy AV21 did not predict the pandemic in a narrow sense, but it embodied the institutional logic that such crises require. It treated public health as an area where basic research, applied technologies, social knowledge, and communication must interact.

Digitalisation was another challenge that made the older disciplinary model insufficient. The digital era produces enormous quantities of data, new forms of communication, algorithmic decision-making, cybersecurity risks, artificial intelligence, digital archives, language technologies, and changes in labour and education. Strategy AV21's early programme on the hopes and risks of the digital era captured this duality very well. Digitalisation promised new knowledge, efficiency, and innovation, but it also brought vulnerabilities: surveillance, misinformation, exclusion, dependence on platforms, data misuse, and the erosion of reliable public debate. The Academy's response therefore had to include mathematics, computer science, information theory, sociology, psychology, linguistics, philosophy, law, and media studies. The challenge was not only to build digital tools, but also to understand the society being transformed by them.

Artificial intelligence intensified this issue in the following decade. AI became a technological, economic, scientific, ethical, and political problem at the same time. It could accelerate

discovery, support diagnostics, improve modelling, and transform industry, but it could also produce bias, opacity, labour disruption, disinformation, and new forms of dependence. Strategy AV21's later development, including programmes connected with artificial intelligence for science and society, showed the flexibility of the framework. The Academy could incorporate new challenges as they emerged, rather than remaining tied to the initial thematic list from 2015. This adaptability was one of the strategy's most important features. It allowed AV ČR to remain intellectually current while relying on long-term research capacities.

Food security and biotechnology provided another field where contemporary challenges crossed scientific and social boundaries. Food for the future is not only a question of agricultural productivity. It involves climate resilience, plant biology, soil quality, water management, microbiology, food chemistry, nutrition, public health, logistics, consumer behaviour, and social inequality. Biotechnology and synthetic biology add further complexity, because they generate both hope and public anxiety. Research on genetically modified organisms, microbial systems, new crops, or food technologies must therefore be accompanied by communication, regulation, ethics, and public understanding. Strategy AV21 created a format in which such issues could be treated as integrated public problems rather than isolated technical tasks.

The challenge of materials and future industries also required a strategic response. Modern economies depend on advanced materials, nanotechnologies, composites, metals, ceramics, semiconductors, optical technologies, sensors, and surface treatments. Such fields require expensive infrastructure, long-term experimentation, and cooperation between fundamental research and industrial application. A purely short-term project system cannot easily sustain this kind of research ecology. Strategy AV21 made it possible to coordinate institutes and external partners around materials as a national strategic capability. This mattered not only for economic competitiveness, but also for energy systems, medicine, transport, defence, space research, environmental technologies, and industrial modernisation. Materials science thus became a bridge between the Academy's experimental traditions and the technological future of the country (*Czech Academy of Sciences, 2017*).

Space research and light-based technologies illustrate the same point from a different angle. These areas might appear highly specialised, even remote from everyday life, but they have practical and strategic implications for communication, observation, instrumentation, medicine, security, climate monitoring, and industrial innovation. Strategy AV21 placed such research within a public-interest framework by showing how advanced scientific capacities can generate societal value in unexpected ways. This is important because public interest is not always obvious at the beginning of a research trajectory. Many technologies that later become socially indispensable originate in highly specialised scientific work. The Academy's task was to preserve the conditions for such work while communicating its broader significance.

Public policy itself became one of the themes of Strategy AV21, and this was institutionally very revealing. The Academy was not concerned only with supplying technical solutions to external decision-makers. It also recognised that policies must be studied, evaluated, compared, and improved through social science. Effective public policy requires evidence on education, labour markets, housing, inequality, taxation, social mobility, ageing, regional development, governance, and institutional trust. By including public policy among its strategic programmes, the Academy asserted that social diagnosis is part of the public-interest mission of science. It

also showed that the social sciences were not secondary to technological research, but essential for understanding how societies actually function.

The programme logic of Strategy AV21 was especially valuable because contemporary challenges are often “wicked problems”. Such problems have no single definition, no final solution, and no purely technical answer. Climate adaptation, public health, migration, digital misinformation, energy transition, social inequality, biodiversity loss, and cultural conflict all involve competing values, incomplete knowledge, institutional complexity, and long-term consequences. Strategy AV21 did not pretend that science could eliminate this complexity. Instead, it positioned the Academy as an institution capable of clarifying it. The Academy could formulate problems more precisely, provide evidence, reveal trade-offs, and offer scenarios. This is a more realistic and more democratic understanding of scientific contribution than the promise of simple solutions.

Cultural memory, heritage, and identity were also treated as contemporary challenges rather than as merely retrospective fields. This is one of the most distinctive features of Strategy AV21 and of the Czech Academy’s broader intellectual profile. In societies marked by the legacies of empire, nationalism, socialism, occupation, normalisation, revolution, European integration, migration, and digital media, memory is not a passive archive. It shapes public debate, identity, legitimacy, conflict, and the interpretation of democratic experience. Programmes on memory, communication, Europe, statehood, global conflicts, and later materiality and identity showed that the humanities can address urgent social questions. The Academy thereby affirmed that the public interest includes the capacity to remember, interpret, and argue responsibly about the past.

Communication was another key area because contemporary societies do not suffer only from a shortage of information. They often suffer from the fragmentation of communication, the loss of shared interpretative frameworks, and the strategic manipulation of language and media. Research on forms and functions of communication, language technologies, media, public discourse, and digital culture therefore belongs directly to the Academy’s response to contemporary challenges. Public interest requires not only facts, but also communicative conditions under which facts can be heard, understood, and debated. The Academy’s linguistic, philosophical, sociological, psychological, and computational capacities could all contribute to this task. Strategy AV21 made such contributions more visible within a unified framework.

Security and resilience formed another layer of the strategy’s response. In the 21st century, security no longer means only military defence. It includes energy security, cyber security, biological safety, food security, environmental resilience, infrastructure protection, social cohesion, and resistance to disinformation. The Academy could not and should not become a security agency, but it could provide knowledge relevant to these broader forms of resilience. Its institutes could analyse risks, model systems, study social vulnerabilities, develop technologies, interpret geopolitical and cultural processes, and contribute to informed public debate. Strategy AV21 thus reflected the expansion of security thinking into a knowledge-intensive field.

The strategy also responded to the changing relationship between science and citizens. Contemporary societies expect scientific institutions to communicate, explain, and sometimes justify their work more actively than in the past. This expectation can be demanding, and it can even become unfair when complex science is forced into oversimplified

public narratives. Yet the expectation itself cannot be ignored. Strategy AV21 gave the Academy thematic frameworks through which it could speak to citizens about research that affects their lives. Instead of presenting disconnected institute achievements, the Academy could discuss health, energy, digitalisation, memory, environment, public policy, and future technologies. This improved the public readability of the Academy's work.

The Academy's response to contemporary challenges was also a response to the Europeanisation of research. European research policy increasingly organised funding and cooperation around grand challenges, missions, societal impact, sustainability, responsible research and innovation, and interdisciplinary consortia. Horizon 2020 and later Horizon Europe strengthened this orientation by linking excellent science with global challenges, industrial competitiveness, and societal missions (*European Commission, 2021*). Strategy AV21 allowed the Czech Academy to align with these European tendencies while preserving its own institutional profile. The Academy was not merely adapting to funding terminology. It was reinterpreting its national role in a European research culture increasingly structured around complex challenges.

This European dimension did not weaken the Academy's national significance. On the contrary, it made the national role more complex. A 21st-century national academy must help its society participate in global knowledge systems and European research networks, but it must also interpret global challenges in relation to national conditions. Strategy AV21 did exactly this. It connected international scientific trends with Czech energy debates, Czech landscapes, Czech health needs, Czech public policy, Czech cultural memory, and Czech technological capacities. The Academy became not only a producer of research, but a mediator between global knowledge and national decision-making.

The strategy's openness to universities, businesses, state administration, regional institutions, foreign research groups, and public-sector organisations was therefore not an accessory. It was part of its response to contemporary challenges. Such challenges cannot be solved inside one institution. They require networks, translation, coordination, and mutual learning between different actors. However, Strategy AV21 also recognised that networks need intellectual anchors. The Academy's institutes provided such anchors through their long-term expertise, specialist communities, and research infrastructures. The strategy thus combined openness with institutional depth.

One of the most important institutional achievements of Strategy AV21 was that it gave the Academy a flexible mechanism for updating its agenda. The initial programme framework of 2015 was later expanded and revised, and new programmes were introduced as new social and scientific questions gained urgency. This flexibility was not a sign of instability. It was a deliberate answer to the changing nature of contemporary challenges. A strategic academy cannot freeze its understanding of public interest at the moment when a plan is adopted. It must remain capable of recognising new risks, new technologies, new cultural tensions, and new forms of vulnerability. Strategy AV21 created the procedural space for such recognition.

At the same time, the strategy did not mean that the Academy abandoned its older research traditions. Its response to contemporary challenges was built on accumulated capacities from earlier periods: strong physical sciences, chemical research, biological and biomedical institutes, mathematical and computational schools, earth sciences, humanities, social sciences, and historical scholarship. The novelty lay in the way these capacities were assembled and publicly interpreted. Strategy AV21 did not create excellence from nothing; it

reorganised excellence into challenge-oriented programmes. This distinction matters because it shows that the strategy was both innovative and conservative in the best sense. It innovated by changing the organisational format, but it conserved the deep research foundations of the Academy.

The strategy also provided a new way of understanding the Academy's responsibility to future generations. Many contemporary challenges unfold over decades: climate change, energy transition, demographic ageing, biodiversity loss, cultural memory, technological dependence, and educational transformation. Political cycles are often too short to address such processes with sufficient continuity. A national academy, by contrast, can maintain long-term research attention across electoral periods and policy fashions. Strategy AV21 explicitly connected research with the quality of life of future citizens. This temporal horizon distinguished the Academy's role from short-term consultancy and made its public-interest mission more profound.

The response to contemporary challenges also required humility. No academy can solve climate change, energy dependence, public mistrust, digital disruption, or health insecurity by itself. Strategy AV21 did not claim such omnipotence. Its more credible claim was that society needs institutions capable of producing reliable knowledge, integrating disciplines, communicating uncertainty, and cooperating with public and private actors. In this sense, the Academy's contribution was not final control over problems, but the strengthening of collective intelligence. This is a less dramatic but more realistic conception of scientific power. It also corresponds better to the democratic role of expertise.

Strategy AV21 therefore transformed the Academy's relationship with application. Application was no longer understood only as the commercial use of a discovery or the implementation of a technology. It also included policy relevance, public understanding, cultural interpretation, risk assessment, diagnostic capacity, educational impact, and preparedness for future crises. This broader notion of application suited an institution whose research spectrum extends from particle physics to medieval studies, from biotechnology to philosophy, from computational modelling to sociology. It allowed different forms of knowledge to contribute to public interest in different ways. The strategy thereby prevented the Academy's public mission from being narrowed to one dominant model of usefulness.

The later development of Strategy AV21 confirmed the durability of this approach. New programmes in areas such as biodiversity, infectious diseases, artificial intelligence, materiality, and identity demonstrated that the framework could absorb emerging challenges while retaining its original logic. The public-interest formula remained stable, but the thematic content evolved. This combination of stability and adaptation is one of the marks of a mature strategic institution. It shows that Strategy AV21 was not merely a response to the problems visible in 2014, but an institutional mechanism for responding to problems as they change over time (*Czech Academy of Sciences, 2026*).

Thus, Strategy AV21 functioned as the Czech Academy of Sciences' answer to the defining challenges of the 21st century because it connected knowledge, responsibility, interdisciplinarity, and public relevance within a single institutional framework. It recognised that contemporary problems are too complex for isolated disciplines, too urgent for passive academic distance, and too long-term for short political cycles. It allowed the Academy to respond to climate change, energy transition, digitalisation, health risks, public policy, technological development, cultural memory, communication, security, and social resilience

without abandoning the centrality of fundamental research. Its significance lay not in replacing classical academic values, but in giving them a new strategic form. The Academy remained an institution of scholarship, but Strategy AV21 enabled it to speak and act as a public-interest research institution prepared to address the uncertainties, risks, and possibilities of contemporary society.

Interdisciplinarity as an Organisational Principle

1. Crossing Boundaries between Institutes and Disciplines

Interdisciplinarity in Strategy AV21 was not a rhetorical ornament added to an otherwise conventional research plan. It was one of the organisational answers to the central difficulty faced by a modern academy composed of highly specialised institutes. The Czech Academy of Sciences had inherited, developed, and reformed a structure in which scientific strength was concentrated in relatively autonomous research workplaces. This structure made it possible to maintain depth, continuity, expert cultures, instrumentation, archives, collections, laboratories, and long-term schools of thought. Yet the same structure could also make the Academy appear fragmented when public challenges required a coordinated response. Strategy AV21 therefore introduced a programme logic that crossed the boundaries between institutes and disciplines without abolishing the institutional foundations on which the Academy's quality depended. Its task was not to weaken specialisation, but to make specialisation communicative, cooperative, and strategically visible (*Czech Academy of Sciences, 2017*).

The need to cross boundaries followed from the nature of the problems Strategy AV21 was designed to address. Energy, climate, health, artificial intelligence, public policy, cultural memory, biodiversity, food systems, security, materials, and communication are not contained within a single discipline. They have physical, biological, technological, social, legal, historical, economic, psychological, and cultural dimensions. A technical solution may fail if social acceptance is ignored; a biomedical innovation may remain ineffective if public communication collapses; environmental policy may be weak if it lacks both ecological data and legal analysis; digital technologies may become socially harmful if ethical and political consequences are neglected. Strategy AV21 therefore recognised that contemporary challenges are not merely large topics, but structurally mixed topics. They require forms of research organisation capable of moving across disciplinary borders while preserving disciplinary competence.

The Academy's institute structure made this task both difficult and promising. It was difficult because institutes often possess their own internal hierarchies, budgetary routines, publication cultures, research priorities, and professional identities. A physicist, a historian, a chemist, a sociologist, a botanist, and a computer scientist may all work within the same academy, but they do not automatically share concepts, evidence standards, temporal horizons, or research languages. At the same time, the structure was promising because the Academy contained a rare concentration of specialised capacities under one institutional roof.

Strategy AV21 could therefore draw on an internal diversity that universities, ministries, or private research organisations might not possess in the same form. The strategy transformed this diversity from a possible source of fragmentation into a resource for public-interest research.

The crossing of institute boundaries was especially important because the Academy was not created as a single disciplinary faculty or a compact research centre. It is an institutional constellation. Its institutes belong to different scientific areas and often have distinct historical genealogies, some rooted in older Czechoslovak scientific schools, others reshaped after 1989, and still others strengthened through European projects and international collaborations. Strategy AV21 did not attempt to erase these genealogies. Instead, it introduced a horizontal layer of cooperation in which institutes could participate according to research capacity and thematic relevance. This horizontal layer allowed the Academy to act more like a strategic network than a collection of separate workplaces. It was a subtle but important change in institutional behaviour.

The programme structure of Strategy AV21 therefore functioned as a bridge between the vertical logic of institutes and the horizontal logic of problems. Institutes remained the basic units of research life, employment, equipment, leadership, evaluation, and disciplinary continuity. Programmes, by contrast, assembled teams across institute boundaries around broader themes. This meant that the Academy did not have to choose between institute autonomy and strategic coordination. It could maintain both, although this balance required careful governance. If coordination became too weak, programmes would be little more than labels. If coordination became too strong, they might threaten the autonomy and creativity of institutes. Strategy AV21 tried to occupy the middle ground between these two extremes (*Czech Academy of Sciences, 2017*).

This middle ground reflected a wider transformation in the organisation of science. Since the late 20th century, scholars of science policy have argued that knowledge production increasingly takes place in contexts where disciplinary boundaries are porous and where social, economic, and political actors interact with research institutions more frequently than before. The idea of “Mode 2” knowledge production, though often debated, captured the growing importance of problem-oriented, transdisciplinary, socially distributed research (*Gibbons et al., 1994*; *Nowotny et al., 2001*). Strategy AV21 can be interpreted as the Academy’s own institutional response to this broader transformation. It did not simply imitate a policy fashion. It adapted the challenge-oriented language of contemporary science to the specific structure and historical role of AV ČR.

The strategy also showed that interdisciplinarity is not the same as generality. Crossing boundaries does not mean that everyone becomes a generalist or that disciplinary expertise loses value. On the contrary, meaningful interdisciplinarity depends on strong disciplines. A climate programme without atmospheric physics, hydrology, ecology, and soil science would be shallow; a digitalisation programme without mathematics, computer science, linguistics, sociology, and law would be incomplete; a memory programme without history, archaeology, literary studies, philosophy, anthropology, and archival expertise would be decorative. Strategy AV21 therefore required disciplines to enter into dialogue from positions of strength. It was not an argument against disciplinary knowledge, but against the isolation of disciplinary knowledge.

This distinction matters because interdisciplinarity is often praised too easily. In practice, it is difficult, time-consuming, and sometimes intellectually uncomfortable. Researchers must learn unfamiliar vocabularies, recognise different standards of evidence, negotiate priorities, and accept that another discipline may define the same problem differently. A biologist may think in terms of organisms, mechanisms, and experimental control; a sociologist may think in terms of institutions, behaviour, and inequality; a historian may think in terms of context, chronology, and interpretation; a computer scientist may think in terms of algorithms, models, and data structures. Strategy AV21 created institutional spaces in which such differences could be worked through rather than ignored. Its significance lay partly in making interdisciplinary cooperation a recognised organisational expectation rather than an exceptional personal initiative.

The Academy's earlier history gave this development particular meaning. Under the socialist ČSAV, interdisciplinarity could be invoked within centrally planned research priorities, but it was often mediated by ideological or administrative imperatives. After 1989, the restoration of autonomy and the reorientation towards international disciplinary standards were necessary and legitimate. Yet the post-socialist recovery of disciplines also risked reinforcing separation between research communities. Strategy AV21 belonged to a later phase, in which the Academy could move beyond the defensive reconstruction of disciplines towards more confident cooperation among them. This was possible precisely because the Academy had already stabilised itself institutionally and scientifically after the transformation period.

The crossing of boundaries also changed the meaning of leadership inside the Academy. Traditional leadership in a research institute is usually connected with disciplinary authority, institute management, project acquisition, and publication quality. Strategy AV21 added another type of leadership: the capacity to coordinate across institutes, communicate across disciplines, and formulate a problem in a way that different research cultures can recognise. Programme coordinators therefore occupied a strategic position. They were not simply administrators, nor were they only senior scholars in their own fields. They had to translate between scientific languages, institutional interests, external partners, Academy leadership, and public communication. In this respect, Strategy AV21 encouraged a more networked form of academic leadership.

The boundary-crossing logic was visible from the early programme titles. Themes such as "Hopes and Risks of the Digital Age", "Natural Hazards", "Foods for the Future", "Quality of Life and Health", "Effective Public Policies and Contemporary Society", "Memory in the Digital Age", and "Forms and Functions of Communication" already implied more than one discipline. Each title named not a discipline but a field of problems. Such naming was important because it invited institutes to enter the programme through different competences. It also made the programmes more understandable to audiences outside the Academy. A citizen, policymaker, entrepreneur, or journalist may not know the internal map of Academy institutes, but they can understand why food, health, energy, communication, memory, or digital risks matter.

The same principle can be seen in later developments of the strategy. As new programmes appeared, the Academy continued to organise cooperation around public-interest themes rather than around disciplinary labels. Programmes connected with artificial intelligence, biodiversity, infectious diseases, identity, materiality, and sustainable energy all presupposed participation by multiple institutes and partner organisations. This evolution showed that interdisciplinarity was not a one-time decorative feature of the 2015 launch. It became part of

the Academy's continuing strategic grammar. The Academy learned to present its research through problems that demanded coordination across the institutional map (*Czech Academy of Sciences, 2026*).

Crossing boundaries between institutes also strengthened the Academy's ability to cooperate with universities. Universities possess their own disciplinary structures, faculties, doctoral programmes, and research centres. The Academy's programme framework made it easier to connect with them around shared themes rather than isolated bilateral contacts. A university partner could join a programme because it worked on energy, public policy, artificial intelligence, memory, biodiversity, or health, even if the relevant Academy expertise was distributed across several institutes. This improved the visibility and practicality of collaboration. Strategy AV21 therefore did not only reorganise the Academy internally; it created clearer channels for cooperation with the broader Czech research system.

The same applied to relations with state and regional administration. Public authorities often need knowledge organised around policy problems, not around disciplinary divisions. A ministry concerned with energy, health, environment, education, culture, security, or innovation needs integrated expertise. It may not know which institute or discipline should be approached first. Strategy AV21 made the Academy's expertise more accessible by grouping relevant capacities into programmes. This did not turn the Academy into an administrative consultancy. Rather, it allowed public authorities to recognise where long-term research knowledge could inform decision-making. The programme format thus made academic expertise more legible to government without subordinating it to government.

Business and industrial partners also benefited from this boundary-crossing structure. Industrial innovation often requires materials science, chemistry, engineering, modelling, biotechnology, optics, data analysis, environmental assessment, and regulatory understanding. A single institute may offer a strong competence, but complex innovation frequently depends on several competences assembled together. Strategy AV21 created a more coherent interface between the Academy and the application sphere. It helped identify research areas where cooperation could produce economic and social benefit while remaining anchored in scientific quality. This was consistent with the Academy's attempt to become an important knowledge actor in the national innovation system without losing its academic identity.

The humanities and social sciences played a crucial role in preventing interdisciplinarity from becoming merely technical integration. Without them, Strategy AV21 might have become a programme of laboratories cooperating with industry, useful but intellectually narrower than the Academy's mission required. The inclusion of memory, communication, public policy, European statehood, global conflicts, identity, and cultural heritage showed that the Academy understood public-interest problems as human and social problems as well as technological ones. Historical interpretation, linguistic analysis, philosophical reflection, economic modelling, sociological research, legal expertise, and political analysis all helped broaden the meaning of interdisciplinary research. This was essential for an institution whose legitimacy had always included the cultural and intellectual life of the nation.

The crossing of boundaries also had epistemological consequences. Different disciplines do not merely study different objects; they construct evidence differently. Experimental sciences often privilege reproducibility, measurement, and controlled intervention. Historical sciences privilege contextual reconstruction, source criticism, and temporal explanation. Social

sciences combine empirical data, theory, interpretation, modelling, and institutional analysis. Mathematical and computational sciences work through abstraction, formalisation, and simulation. Strategy AV21 required these epistemic cultures to interact. Such interaction does not automatically produce agreement, but it can produce richer problem definitions. The public interest is often served not by one discipline winning over others, but by a more complete understanding of the problem.

This epistemological pluralism was particularly important in areas such as artificial intelligence. AI can be studied as mathematics, software, data infrastructure, industrial technology, cognitive model, ethical problem, legal challenge, labour-market force, educational tool, and cultural phenomenon. No single discipline can claim full authority over it. Strategy AV21's interdisciplinary orientation made it possible to frame AI as both a scientific instrument and a social object. This framing is more adequate than either technological enthusiasm or cultural alarmism alone. It shows how the Academy can use its internal diversity to produce a balanced understanding of emerging technologies.

The same is true of environmental sustainability. A forest affected by climate change is at once a biological system, an economic resource, a cultural landscape, a legal object, a recreational space, and a political issue. Water scarcity is a hydrological phenomenon, but also a matter of agriculture, infrastructure, governance, behaviour, and regional inequality. Biodiversity loss is an ecological process, but it also affects food systems, land use, public perception, and ethical responsibility towards future generations. Strategy AV21's boundary-crossing format allowed the Academy to treat such issues with the necessary breadth. It made environmental knowledge less isolated and more socially connected.

Health research provides another clear example. Modern health challenges cannot be solved by biomedical laboratories alone, although laboratory research is indispensable. Ageing populations, chronic disease, epidemics, mental health, diagnostics, therapeutics, nutrition, and health inequalities all require interaction between biology, medicine, chemistry, data science, demography, psychology, sociology, ethics, and public communication. Strategy AV21 created a framework in which these different areas could appear as parts of one public-interest field. The Academy's strength lay in its ability to connect molecular and social levels of analysis. This connection became especially visible during and after the COVID-19 pandemic, when the relationship between science, public trust, communication, and policy became unavoidable.

The strategy also helped connect small or highly specialised research communities to larger public narratives. Some fields within the Academy are intellectually sophisticated but not immediately visible to the public. Advanced spectroscopy, protein chemistry, medieval textual scholarship, formal logic, plant physiology, seismology, or computational image processing may not easily attract broad attention by themselves. When placed within programmes on health, heritage, digitalisation, natural hazards, materials, or sustainability, however, their public relevance becomes clearer. Strategy AV21 therefore did not simply favour fashionable topics. It helped demonstrate how specialised knowledge contributes to larger challenges.

This also affected the internal morale of the Academy. Researchers working in specialised fields could see their work recognised within broader institutional missions without being forced to abandon their research identity. Such recognition matters because public debate often values only immediately visible scientific achievements. Strategy AV21 allowed less visible forms of expertise to be connected with public interest through programme narratives.

It made the Academy's internal diversity more intelligible both to society and to the researchers themselves. In this sense, interdisciplinarity was not only a governance principle, but also a form of institutional self-recognition.

The crossing of boundaries between institutes required practical mechanisms. It required meetings, programme councils, shared workshops, joint publications, public events, common communication platforms, grant cooperation, coordination with the Academy Council, and reporting procedures. It also required financial support sufficient to make collaboration more than a voluntary burden added to normal research duties. Interdisciplinarity becomes real only when institutions create time, incentives, recognition, and administrative channels for it. Strategy AV21 therefore had to translate an intellectual ideal into working routines. Its success depended on whether researchers experienced programmes as meaningful opportunities rather than bureaucratic additions.

At the same time, interdisciplinary programmes risk becoming too broad if their boundaries are not defined carefully. A programme on "society", "technology", or "environment" can easily expand until it includes almost everything. Strategy AV21 had to avoid this danger by formulating programmes around recognisable but researchable themes. The best programmes are broad enough to invite multiple disciplines, but focused enough to generate cooperation, outputs, and public meaning. This balance is difficult, and it must be continually renegotiated. The Academy's experience with Strategy AV21 can therefore be read as an experiment in managing breadth without losing intellectual precision.

Another challenge concerned evaluation. Disciplinary research can often be assessed through established peer-review communities, journals, citation patterns, and professional standards. Interdisciplinary research is harder to evaluate because it may produce diverse outputs, address mixed audiences, and combine methods that no single discipline can fully judge. Strategy AV21 therefore required evaluation practices sensitive to both scientific quality and public relevance. This did not mean lowering standards. It meant recognising that a programme's value might include publications, technologies, policy contributions, public communication, methodological innovation, data infrastructures, cultural outputs, and new collaborative networks. The Academy's strategic format thus pushed evaluation beyond narrow disciplinary metrics.

The programme structure also helped the Academy respond to the problem of scale. Some research questions are too large for one institute but too specific to become a national ministry programme. Strategy AV21 created an intermediate scale: larger than an individual grant, smaller and more flexible than a state strategy, and more scientifically grounded than a policy slogan. This intermediate scale suited the Academy's position in the Czech research system. It enabled AV ČR to mobilise several institutes and partners around a theme while retaining academic control over research content. Such a scale is one of the distinctive organisational contributions of Strategy AV21.

The crossing of boundaries was also communicative. Programmes gave the Academy stories that could be told publicly. Instead of listing institutes and their achievements separately, the Academy could explain how researchers from different fields worked together on energy, health, memory, AI, biodiversity, or materials. This narrative form mattered because public communication is not only the transmission of facts. It is also the construction of understandable connections. Strategy AV21 made those connections visible. It allowed the

public to see the Academy as a coordinated intellectual actor rather than as a remote collection of expert enclaves.

The boundary-crossing principle also connected the Academy's domestic role with its international position. International research increasingly operates through consortia, networks, infrastructures, joint projects, and interdisciplinary calls. Institutes that learn to cooperate internally are better prepared to participate externally. Strategy AV21 therefore strengthened the Academy's capacity for European and global collaboration. It helped researchers move from local institute-based work to broader thematic networks. This was especially important in areas aligned with European priorities, such as climate, health, digital transformation, security, food systems, and cultural heritage.

In this sense, Strategy AV21 can be understood as an institutional rehearsal for the wider research world of the 21st century. The Academy's internal borders became training grounds for crossing external borders as well. Researchers who learned to collaborate across institutes could more easily cooperate with universities, ministries, companies, regions, international consortia, and civil society. The strategy therefore developed not only projects, but habits of cooperation. These habits may be among its most durable effects. They change how an academy thinks about its own internal map.

The intellectual importance of this change should not be underestimated. A classical academy often gains authority from depth, distance, and continuity. A public-interest research institution must retain those qualities while adding connection, responsiveness, and translation. Strategy AV21 did not abolish the classical academy; it opened it. It encouraged institutes to see themselves not only as guardians of disciplinary excellence, but as participants in shared problem-solving. This was a significant cultural shift, because it changed the relationship between institutional identity and public responsibility.

Thus, crossing boundaries between institutes and disciplines became one of the defining organisational principles of Strategy AV21 because it allowed the Czech Academy of Sciences to convert its internal plurality into strategic capacity. The Academy did not abandon specialised institutes, disciplinary standards, or long-term research cultures. Instead, it created programme-based mechanisms through which these strengths could interact around complex public-interest challenges. This made the Academy more visible, more cooperative, more responsive, and more capable of speaking to society without sacrificing scholarly depth. Strategy AV21 therefore turned interdisciplinarity from an abstract ideal into an institutional practice: a way of connecting laboratories, archives, field research, computation, social analysis, humanities, policy expertise, and external partners within one national knowledge institution.

2. Programme-Based Research and Collaborative Governance

Programme-based research became one of the most important organisational innovations of Strategy AV21 because it gave the Czech Academy of Sciences a form of coordination suited to complex public-interest problems. The Academy did not abandon its institute structure, nor did it create a new centralised hierarchy above the institutes. Instead, it introduced research programmes as flexible but recognisable frameworks through which several institutes, disciplines, and external partners could work on shared themes. This was a significant shift in institutional logic. The basic unit of scientific life remained the institute, but the basic unit of

strategic public presentation became the programme. Strategy AV21 therefore created an additional layer of organisation: not a replacement for institutes, but a connective architecture that made their cooperation more visible, purposeful, and accountable. In this sense, programme-based research was both a managerial tool and a cultural change in how the Academy understood its collective mission (*Czech Academy of Sciences, 2017*).

The programme format was necessary because contemporary challenges rarely correspond to the boundaries of a single institute. An institute may possess deep competence in a specialised field, but public problems often require a combination of competences distributed across the Academy. Energy transition may require physics, materials science, environmental modelling, economic analysis, and risk communication. Public health may require molecular biology, epidemiology, chemistry, demography, sociology, and public policy. Artificial intelligence may involve mathematics, computer science, linguistics, ethics, law, psychology, and industrial application. Cultural memory may involve history, archaeology, philology, literary studies, digital humanities, media studies, and education. Programme-based research allowed the Academy to assemble these capacities around problems rather than around institutional borders.

This is why Strategy AV21 should not be interpreted as a simple catalogue of projects. A project is usually time-limited, competitively funded, and defined around a more specific research objective. A programme, by contrast, is broader, more synthetic, and more strategic. It can contain several projects, working groups, partnerships, public events, policy outputs, publications, technologies, and communication activities. It provides a thematic roof under which diverse research activities can be connected without being forced into artificial uniformity. Strategy AV21 used the programme format precisely because the Academy needed a scale larger than the individual grant but more flexible than a state research plan. It offered an intermediate organisational form appropriate to a national academy of specialised institutes.

The programme-based model also helped the Academy move from reactive expertise to proactive agenda formation. In a reactive model, public institutions come to researchers when a problem has already become urgent, politically visible, or administratively defined. In the Strategy AV21 model, the Academy itself identified areas where its knowledge could matter for the future of society. This did not mean that the Academy claimed exclusive authority over social priorities. Rather, it meant that scientists took responsibility for formulating research agendas before public debate reduced complex problems to slogans. Programme-based research therefore allowed the Academy to act not only as a supplier of expertise, but also as a strategic interpreter of emerging challenges. This was a more ambitious public role.

Collaborative governance was the necessary counterpart of this programme logic. Once research is organised across institutes, disciplines, and partner organisations, it cannot be governed only through the normal vertical channels of institute management. It needs coordination, negotiation, shared priorities, evaluation, communication, and mechanisms for resolving tension between different research cultures. Strategy AV21 therefore required forms of governance that were neither purely hierarchical nor purely informal. Programmes had coordinators, participating institutes, thematic objectives, reporting obligations, and links to the Academy's central bodies. At the same time, they depended on voluntary intellectual cooperation and the willingness of researchers to work beyond their usual institutional

environments. This combination of structure and flexibility was central to the strategy's functioning.

The figure of the programme coordinator became especially important. A coordinator had to do more than administer a budget or collect reports. The role required scientific credibility, organisational skill, diplomatic sensitivity, and the ability to translate between disciplines and institutions. Coordinators had to recognise which institutes could contribute, how different research strands could be connected, and how a programme could speak to public audiences without oversimplifying its scientific content. They also had to maintain relations with external partners, including universities, public authorities, companies, cultural institutions, and foreign research groups. In this respect, Strategy AV21 created a new form of academic leadership: leadership by connection rather than only leadership by disciplinary seniority.

This collaborative leadership differed from the older image of the academy as a community of relatively self-contained scholarly authorities. In a classical model, academic prestige often comes from individual achievement, school formation, or institutional position. Under Strategy AV21, prestige also depended on the capacity to mobilise knowledge across boundaries. A successful programme required someone to build a network, maintain trust, articulate common goals, and produce outcomes that made sense to several audiences. This did not diminish individual scholarship, but it placed individual scholarship within larger cooperative structures. The Academy thereby adjusted its internal culture to a research world where collaboration, interdisciplinarity, and public relevance had become unavoidable.

The governance of Strategy AV21 also had to respect the autonomy of participating institutes. This was crucial because the Academy's strength rests on institutes with their own scientific identities and long-term priorities. If programmes had been imposed too rigidly from above, they might have been perceived as administrative burdens or as threats to institute autonomy. If they had been left entirely to spontaneous cooperation, however, they might have lacked strategic coherence. The programme-based model therefore had to balance autonomy and coordination. It encouraged institutes to participate in common programmes while preserving their disciplinary missions, internal leadership, and research independence. This balance was one of the most delicate institutional achievements of Strategy AV21.

The model also helped the Academy respond to the limitations of competitive grant funding. Competitive grants are essential for scientific dynamism, but they can fragment research into short-term cycles and encourage teams to pursue fundable topics rather than long-term strategic problems. Programme-based research offered a complementary logic. It allowed the Academy to maintain attention to broad themes over several years and to connect individual projects within a wider intellectual frame. This did not remove competition from the research environment, but it softened some of its fragmenting effects. Strategy AV21 therefore served as an instrument of continuity in a system increasingly shaped by project-based funding.

At the same time, the programme format was compatible with external funding and international cooperation. A well-defined strategic programme could help researchers identify grant opportunities, build consortia, attract partners, and present Czech expertise within European research agendas. Programmes on energy, health, artificial intelligence, biodiversity, materials, or cultural heritage could align with European priorities while retaining their own Academy-based intellectual structure. This made Strategy AV21 useful not only for domestic coordination, but also for positioning AV ČR in the European Research Area.

Programme-based governance thus operated at several levels: inside the Academy, within the Czech research system, and across international networks.

The relationship between programme-based research and collaborative governance can also be seen in the strategy's openness to external actors. Strategy AV21 was not designed as a closed internal initiative of Academy institutes alone. It encouraged cooperation with universities, public administration, regions, business, foreign research groups, and other organisations. This openness followed logically from the public-interest mission. If research is meant to address social, technological, environmental, cultural, and economic challenges, it must communicate with the institutions and communities affected by those challenges. Collaborative governance therefore extended beyond the Academy's walls. It created channels through which scientific knowledge could meet policy, practice, industry, education, culture, and public debate.

Such openness, however, required careful protection of scientific independence. Collaboration with ministries, companies, regions, or public organisations can be productive, but it can also create pressure to adapt research questions to external expectations. Strategy AV21 had to avoid the danger of turning the Academy into a consultancy service. Its programmes were public-interest programmes, not client-driven assignments. The Academy could cooperate with external partners while retaining control over scientific standards, methods, and interpretation. Collaborative governance therefore had to be based on partnership rather than subordination. This distinction was essential for preserving the Academy's identity as an autonomous research institution.

The programme format also allowed the Academy to handle different kinds of outputs. Traditional academic governance often privileges journal articles, monographs, conference papers, and disciplinary evaluation. Strategy AV21 could include these outputs, but it also had to recognise policy briefs, public lectures, educational materials, exhibitions, technologies, prototypes, databases, software, patents, expert opinions, media communication, and cooperation platforms. This broader output structure reflected the public-interest orientation of the strategy. It did not mean that scholarly quality became less important. It meant that the Academy acknowledged several pathways through which research can create public value. Programme-based governance had to make these pathways visible and credible.

This broader understanding of outputs was especially important for the social sciences and humanities. Their contributions to public interest often take the form of interpretation, critical analysis, historical contextualisation, conceptual clarification, public debate, or policy evaluation. These contributions may not always resemble technological innovation, but they can be crucial for democratic society. A programme on memory, communication, identity, public policy, or Europe cannot be evaluated only through the same indicators as a programme on materials or diagnostics. Strategy AV21 therefore required governance sensitive to disciplinary plurality. It had to combine common strategic aims with differentiated criteria of value.

The same principle applied to natural and technical sciences. In some fields, public value may appear through prototypes, patents, industrial cooperation, or medical applications. In others, it may appear through long-term data, modelling, monitoring, risk assessment, or expert infrastructure. Environmental research, for example, often produces value through continuity, observation, and early warning rather than through immediate commercial outputs. Physics or chemistry may produce knowledge whose practical significance emerges only later.

Programme-based governance had to recognise these temporal differences. Public-interest research cannot be governed as if all useful knowledge matures at the same speed.

The collaborative character of Strategy AV21 also changed the relationship between research and communication. Communication was not simply an activity added after scientific work had been completed. In many programmes, public communication formed part of the programme's social function. Research on digital risks, public health, climate change, energy systems, biodiversity, or cultural memory requires explanation, translation, and dialogue with society. Programme governance therefore had to include communication planning, not only scientific planning. This helped the Academy move from the older model of expert knowledge hidden inside institutes towards a more visible and dialogic public presence. Such visibility was central to the modern image of AV ČR.

Nevertheless, collaborative governance is never simple. It can generate conflicts over priorities, authorship, resources, visibility, intellectual ownership, and the division of labour between institutes. A programme that brings together several disciplines may reveal genuine disagreements about methods or problem definitions. External partners may expect faster or more practical outcomes than researchers can responsibly provide. Public communication may favour attractive narratives over methodological complexity. Strategy AV21 had to manage these tensions rather than pretend they did not exist. Its institutional maturity depended on creating coordination mechanisms capable of sustaining cooperation through disagreement.

The programme-based model also required trust. Formal rules can establish structures, but collaboration depends on whether researchers believe that participation is worthwhile. They must see programmes as intellectually productive, not merely as another layer of reporting. They must trust coordinators, partner institutes, and central Academy bodies. They must believe that their disciplinary contributions will be recognised fairly within broader programmes. Strategy AV21 therefore relied on an internal culture of cooperation built gradually through repeated interaction. Such culture cannot be produced instantly by strategic documents. It develops through practice, successful examples, and the demonstration that collaboration can strengthen rather than dilute research.

The long-term character of Strategy AV21 was important in this regard. Programmes operating over several years allowed relationships to mature. Researchers could learn how other disciplines work, discover complementary competences, and develop shared vocabularies. Short-term calls often do not provide enough time for such learning. A five-year programme horizon created better conditions for interdisciplinary trust and cumulative cooperation. It also allowed programmes to adjust their activities according to new findings, external events, and changing social needs. This flexibility was a practical expression of collaborative governance.

Programme-based research also gave the Academy a way to integrate basic and applied research without forcing a simplistic division between them. Within a single programme, some teams might work on fundamental mechanisms, others on technological development, others on social implications, and others on communication or policy relevance. The programme did not have to classify the whole field as either basic or applied. It could contain a chain of knowledge production from theoretical inquiry to public use. This was one of the strengths of Strategy AV21 because it reflected how science often works in reality. Fundamental research and application are not always separate stages; they frequently interact inside broader problem fields.

The strategy's governance also interacted with the Academy's evaluation culture. After the post-socialist reforms, AV ČR increasingly relied on evaluation to maintain quality and international credibility. Strategy AV21 added another dimension: the need to assess not only individual institutes or disciplinary outputs, but also collaborative programmes. This raised difficult questions. How should one evaluate a programme whose value lies in networks, preparedness, public communication, and long-term capacity-building? How should one compare a programme producing prototypes with one producing policy evidence or historical interpretation? These questions do not have simple answers, but the programme format made them unavoidable. It pushed the Academy towards a more nuanced understanding of performance.

Collaborative governance also strengthened the Academy's ability to speak with a more unified voice. A decentralised academy can produce excellent research while remaining publicly difficult to understand. Programme-based structures gave AV ČR thematic platforms through which it could present its work coherently. Instead of communicating only institute by institute, the Academy could speak about energy, health, AI, biodiversity, memory, materials, public policy, or communication. This did not eliminate the diversity of institutes, but it gave that diversity a strategic narrative. Such narrative unity is especially important when an institution must justify public funding and demonstrate national relevance.

The programme model also affected relations between senior and early-career researchers. Large collaborative programmes can create opportunities for younger scholars to participate in networks beyond their home institute, gain visibility, develop interdisciplinary competences, and work with external partners. At the same time, they can also reproduce hierarchies if coordination remains concentrated among established figures. The democratic potential of programme-based research therefore depends on how programmes organise participation. Strategy AV21's long-term significance should be judged partly by whether it helps create a new generation of researchers comfortable with both disciplinary excellence and collaborative responsibility.

Another important feature of programme-based governance was its capacity to respond to new themes. The development of new programmes in areas such as artificial intelligence, biodiversity, infectious diseases, materiality, identity, and other emerging topics showed that Strategy AV21 was not frozen in its original form. It could be renewed as scientific and social priorities changed. This adaptability distinguished the strategy from a rigid institutional plan. It allowed the Academy to keep the motto "Top research in the public interest" stable while revising the thematic content through which that motto was realised. Programme-based research thus gave the Academy both continuity and responsiveness (*Czech Academy of Sciences, 2026*).

The presence of external partners also linked Strategy AV21 with broader theories of collaborative governance. In public administration literature, collaborative governance describes arrangements in which public agencies, private actors, experts, and civil society organisations participate in structured decision-making or problem-solving processes (*Ansell & Gash, 2008*). Strategy AV21 was not collaborative governance in exactly the same sense as a policy-making forum, because the Academy remained a research institution rather than a governing authority. Yet the concept is useful because it highlights the importance of trust, shared goals, facilitation, institutional design, and iterative cooperation. The Academy's

programmes operated in this space between research coordination and public problem-solving. They were scientific programmes, but their governance had public-facing features.

Programme-based research also reflected the growing importance of networks in modern science. Scientific discovery and innovation increasingly depend on distributed expertise, shared infrastructures, international consortia, data platforms, and cross-sectoral cooperation. No single institution, however strong, can cover all dimensions of a major challenge alone. Strategy AV21 acknowledged this reality by treating the Academy as a node in wider knowledge networks, while still preserving its role as a national anchor of expertise. This dual position was important. AV ČR could cooperate widely because it had strong internal capacities; it could maintain national strategic relevance because it was open to external knowledge flows.

The governance of Strategy AV21 therefore had a constitutional meaning for the Academy's modern identity. It showed how AV ČR could remain an academy of institutes while also acting as an integrated public-interest research institution. This identity required more than excellent publications. It required institutional mechanisms for assembling expertise, defining programmes, communicating results, engaging partners, and adjusting priorities. Strategy AV21 provided these mechanisms in a form compatible with the Academy's history and autonomy. It did not impose a ministry-style planning model, nor did it leave cooperation to chance. It created a strategic middle layer through which the Academy could act collectively.

This middle layer was particularly valuable because the Academy's institutional history had made it cautious about centralised control. The experience of the socialist period had shown how dangerous political direction of science could be. The post-1989 transformation therefore placed strong emphasis on autonomy, evaluation, and international standards. Strategy AV21 had to build coordination without reviving the memory of ideological planning. Its programme-based governance was successful precisely because it framed coordination as scientific cooperation in the public interest, not as command. The Academy could therefore coordinate more strongly while remaining faithful to the post-1989 principle of intellectual freedom.

The distinction between coordination and control is central here. Coordination helps researchers connect, share resources, define common questions, and communicate public value. Control dictates what researchers must conclude or how they must serve external power. Strategy AV21 belonged to the first category. It gave direction without prescribing results. It identified themes without closing inquiry. It promoted public relevance without reducing science to political obedience. This distinction allowed the Academy to recover the positive meaning of strategy after a 20th-century history in which strategic planning had often been associated with ideological constraint.

Programme-based governance also helped the Academy cope with the complexity of public-interest language. Public interest is not self-evident. Different actors may define it differently: ministries, municipalities, companies, citizens, scientists, patients, teachers, cultural institutions, and future generations may all have different expectations. Programmes provided spaces where these expectations could be interpreted through research rather than accepted uncritically. The Academy's role was not simply to follow external demand, but to transform social concerns into scientifically meaningful questions. This transformation required collaborative governance because no single researcher or institute could define the public interest alone.

At the same time, programme-based research gave the Academy a better basis for accountability. A strategic programme has a name, coordinator, participating bodies, objectives, outputs, and public visibility. It can be discussed, reviewed, modified, and communicated. This is different from a diffuse claim that the Academy as a whole serves society in some general way. Strategy AV21 made public-interest activity more concrete. It allowed the Academy to show where resources were directed, which problems were being addressed, and how different institutes contributed. Accountability was therefore strengthened not through bureaucratic centralisation, but through thematic transparency.

The collaborative governance of Strategy AV21 also affected the symbolic image of the Academy. It presented AV ČR not as a closed corporation of scholars, but as an institution capable of organising knowledge for society. This image mattered in a democratic environment where public institutions must continually explain their relevance. The Academy could show that it was open to cooperation, responsive to contemporary problems, and willing to communicate beyond specialist circles. At the same time, it could show that such openness rested on serious research and long-term expertise. The programme format therefore became a bridge between scientific authority and public legitimacy.

Thus, programme-based research and collaborative governance formed the organisational core of Strategy AV21 because they allowed the Czech Academy of Sciences to coordinate its dispersed capacities without abandoning institute autonomy. The programme model created a strategic layer between individual research projects and the Academy as a whole. It enabled interdisciplinary cooperation, external partnership, broader communication, and more flexible responses to emerging challenges. Collaborative governance made this model workable by relying on coordinators, negotiated priorities, trust, reporting, public visibility, and respect for disciplinary diversity. In this way, Strategy AV21 transformed the Academy from a collection of excellent institutes into a more integrated public-interest research institution. It did so not by centralising science, but by creating a programme architecture through which autonomy, excellence, cooperation, and public responsibility could operate together.

3. The Integration of Natural, Technical, Social, and Human Sciences

The integration of natural, technical, social, and human sciences became one of the most distinctive features of Strategy AV21 because it expressed a mature understanding of what public-interest research requires in the 21st century. The Czech Academy of Sciences did not present contemporary challenges as problems that could be solved by one dominant type of knowledge. It recognised that energy, climate, health, security, digitalisation, biodiversity, public policy, cultural memory, and human identity all have several layers at once. They are physical and biological, but also technological, social, political, economic, historical, ethical, and cultural. Strategy AV21 therefore moved beyond the older hierarchy in which “hard” sciences were treated as the main producers of useful knowledge and the humanities as guardians of cultural memory alone. It created a research architecture in which different scientific cultures could contribute to shared public questions. This was not a decorative pluralism. It was a practical necessity arising from the structure of modern problems themselves (*Czech Academy of Sciences, 2017*).

The natural sciences brought to Strategy AV21 the capacity to investigate the material, biological, ecological, chemical, physical, and planetary conditions of human life. Climate

change, ecosystem transformation, infectious diseases, ageing, food systems, energy conversion, water management, and biodiversity all require empirical research into processes that cannot be understood through social interpretation alone. The Academy's institutes in biology, chemistry, physics, earth sciences, mathematics, and environmental research provided long-term expertise, instruments, data, fieldwork, modelling, and experimental methods. This gave the strategy scientific depth and credibility. Yet the natural sciences could not by themselves define the full meaning of public interest. Their findings had to be connected with questions of governance, behaviour, regulation, communication, values, and historical context. Strategy AV21 therefore placed natural science at the centre of public-interest research, but not in isolation from the rest of knowledge.

The technical sciences and engineering-oriented fields added another indispensable dimension. They transformed scientific understanding into instruments, materials, technologies, diagnostics, energy systems, sensors, digital tools, industrial processes, and practical infrastructures. In the Academy's modern profile, technical research did not stand outside basic science; it often grew directly from fundamental discoveries in physics, chemistry, materials science, computation, optics, plasma research, and biotechnology. Strategy AV21 gave these fields a strategic frame by linking them with national needs in energy, industry, health, environmental adaptation, digitalisation, and security. Technical research thus became one of the bridges between the Academy and the application sphere. However, Strategy AV21 avoided reducing technical work to commercialisation alone. Its technological orientation remained embedded in a broader public-interest mission, where innovation was evaluated not only by market value, but also by social usefulness, safety, sustainability, and long-term resilience (*Etzkowitz & Leydesdorff, 2000*; *Czech Academy of Sciences, 2026*).

The social sciences entered this architecture by asking how societies organise, distribute, accept, resist, regulate, and interpret change. A technological solution may fail if institutions are weak, citizens distrust it, inequalities deepen, or policy design is poor. A public health recommendation may be scientifically valid and still ineffective if communication, social behaviour, legal frameworks, and public trust are neglected. Climate adaptation depends not only on models and measurements, but also on agriculture, municipalities, household behaviour, investment priorities, land ownership, and political decision-making. Strategy AV21 therefore needed economics, sociology, political science, law, psychology, demography, geography, public administration, and communication studies. These fields made visible the social conditions under which scientific knowledge becomes public action. They also protected the Academy from the technocratic illusion that society can be redesigned by expertise alone.

The humanities contributed another layer that was equally essential, although less easily measured by conventional innovation indicators. History, philosophy, philology, literary studies, archaeology, art history, ethnology, linguistics, and cultural studies help societies understand memory, identity, language, meaning, tradition, conflict, and moral orientation. Contemporary challenges are never only material or institutional; they are also interpretative. Societies respond to crises through narratives, symbols, memories, fears, hopes, and inherited cultural categories. Strategy AV21's inclusion of memory, communication, Europe, statehood, identity, materiality, and cultural heritage showed that the Academy understood this. The humanities did not merely decorate the strategy with cultural legitimacy. They helped define the human meaning of public-interest research.

This integration was particularly important because the Czech Academy of Sciences has historically carried a broader intellectual mission than many specialised research organisations. From the learned societies of the Czech lands to the modern Academy, scientific institutions were repeatedly connected with language, national culture, education, historical consciousness, and public life. During the national revival, scholarship was part of cultural self-definition. Under socialism, the public mission of science was distorted by ideological control. After 1989, the Academy reclaimed autonomy and international standards. Strategy AV21 represented a further stage: it reconnected science with society, but in a democratic and interdisciplinary form. The integration of natural, technical, social, and human sciences therefore continued a long tradition while giving it a new institutional language.

The programme-based structure of Strategy AV21 made this integration operational. Rather than organising research under disciplinary headings, programmes were formulated around problems: energy, health, food, natural hazards, digital risks, materials, communication, public policy, memory, biodiversity, infectious diseases, artificial intelligence, identity, and other complex themes. Such themes naturally invited several fields to participate. A programme on artificial intelligence could include algorithmic research, data science, language technologies, ethics, law, education, psychology, labour studies, and public communication. A programme on biodiversity could include ecology, botany, zoology, genetics, landscape studies, climate science, economics, law, and environmental policy. A programme on memory could include history, archival research, digital technologies, sociology, media studies, philosophy, education, and cultural analysis. The title of the programme thus became a meeting point for different sciences.

The integration of scientific areas also changed the way public problems were defined. A narrowly technical definition often presents a problem as a lack of tools. A narrowly social definition may present it as a failure of institutions or behaviour. A narrowly cultural definition may present it as a crisis of meaning or identity. Strategy AV21 encouraged a more layered understanding. Energy transition, for example, becomes at once a question of physical systems, engineering capacities, environmental limits, economic costs, public trust, geopolitical vulnerability, and future social choices. Public health becomes a matter of molecular mechanisms, diagnostics, clinical translation, demographics, communication, inequality, law, and ethics. Cultural memory becomes a matter of archives and interpretation, but also of digital infrastructures, education, political legitimacy, and social cohesion. This layered definition is one of the main intellectual achievements of the strategy.

The Academy's natural and technical sciences gained from this integration because their public relevance became more visible. Research in plasma physics, advanced materials, molecular biology, atmospheric physics, plant science, or computational modelling can be difficult for the public to grasp when presented in isolation. When placed within programmes on energy, health, sustainability, food, artificial intelligence, or future industries, its meaning becomes clearer. This does not simplify the science itself, but it clarifies why it matters. Strategy AV21 thus helped specialised research communities articulate their public significance without abandoning disciplinary depth. It gave them a language through which fundamental work could be connected to long-term social challenges.

The social sciences and humanities also gained from the integrative format because they were placed at the centre of contemporary problem-solving rather than at the margins of cultural commentary. A programme on public policy, communication, identity, memory, or society in

motion does not merely accompany technological change; it analyses the conditions under which change becomes socially meaningful or dangerous. The humanities and social sciences help explain why evidence is accepted or rejected, why reforms succeed or fail, why societies remember selectively, and why technological futures are imagined in conflicting ways. Strategy AV21 therefore made these fields strategically necessary. It showed that public-interest research requires not only instruments and data, but also interpretation, judgement, and institutional understanding.

This integration also helped overcome the outdated opposition between "useful" and "non-useful" sciences. In narrow policy language, usefulness is often associated with technologies, patents, industrial cooperation, or measurable economic impact. Strategy AV21 broadened this meaning. A mathematical model can be useful, but so can a historical analysis of collective memory. A new material can be useful, but so can research into public trust during crises. A biomedical method can be useful, but so can linguistic research into communication and misinformation. The public interest is not exhausted by market application. It includes resilience, democratic understanding, cultural continuity, social diagnosis, environmental responsibility, and the ability of citizens to orient themselves in complex realities (*Bozeman, 2007*).

The integrative logic also made Strategy AV21 compatible with European and international research trends. European research policy increasingly emphasised grand challenges, missions, responsible research and innovation, and cross-sectoral cooperation. Such frameworks assume that climate, health, digitalisation, food, security, and culture cannot be addressed by one discipline alone. The Academy's strategy therefore aligned Czech research with a broader European movement while preserving its own institutional identity. It was not merely following external policy terminology. It translated European challenge-oriented language into the specific structure of AV ČR, with its strong institutes, historical depth, and full disciplinary spectrum (*European Commission, 2021*; *Owen, Macnaghten, & Stilgoe, 2012*).

However, integration did not mean fusion into a single undifferentiated science. Strategy AV21 depended on the continued strength of individual disciplines. The Academy could integrate fields precisely because it had laboratories, archives, observatories, textual scholarship, field research, computational centres, collections, and disciplinary schools with their own methods. Without such depth, interdisciplinarity would become shallow rhetoric. The strategy therefore did not ask historians to become physicists, biologists to become sociologists, or engineers to become philosophers. It asked them to recognise where their knowledge met the knowledge of others in relation to a shared problem. This is a more demanding and more realistic understanding of interdisciplinarity than the simple celebration of mixed teams.

The integration of different sciences also required translation between epistemic cultures. Natural scientists often work with measurement, experiment, modelling, and causal mechanisms. Technical researchers focus on design, optimisation, functionality, and application. Social scientists analyse institutions, behaviour, data, norms, incentives, and social structures. Humanists interpret texts, artefacts, meanings, memories, values, and historical contexts. These cultures do not always ask the same questions or accept the same kinds of evidence. Strategy AV21 created spaces where such differences could be negotiated. The point was not to eliminate disagreement, but to make disagreement productive. A complex public problem is better understood when different epistemic cultures illuminate its different dimensions.

The integration of sciences was especially visible in environmental and sustainability programmes. Biodiversity loss, climate adaptation, landscape change, soil degradation, water scarcity, and ecosystem resilience are biological and physical processes, but they are also shaped by agriculture, law, economics, settlement, culture, and public perception. A purely ecological analysis may identify the problem, but implementation requires social and political understanding. Conversely, policy without ecological knowledge becomes empty administration. Strategy AV21 allowed the Academy to connect environmental research with social diagnosis and public communication. This made sustainability a scientific, institutional, and civic issue at the same time.

Health-related programmes showed the same pattern. Molecular biology, immunology, chemistry, pharmacology, physiology, and biomedical technologies form the scientific base of modern health research. Yet health outcomes are also influenced by age structure, inequality, lifestyle, communication, trust, healthcare organisation, and political decisions. The COVID-19 pandemic made this interdependence impossible to ignore. A virus is a biological entity, but a pandemic is also a social event. Strategy AV21's integrative logic was well suited to such a reality because it made room for biomedical research, data analysis, behavioural science, public communication, and policy interpretation within one broad public-interest horizon.

Artificial intelligence provides another strong example. AI is built on mathematics, computer science, statistics, data infrastructures, and engineering. But its social effects involve law, ethics, labour markets, education, media, language, security, psychology, creativity, and political power. A research institution that treats AI only as a technical problem risks misunderstanding its public significance. A society that treats AI only as a cultural fear risks missing its scientific and technological potential. Strategy AV21's integration of natural, technical, social, and human sciences allowed the Academy to frame AI as both a tool for research and a phenomenon transforming society. This dual framing is one of the reasons why the programme logic remained relevant as new technologies emerged.

The field of materials and future industries also demonstrates why integration was necessary. Advanced materials may begin in physics, chemistry, crystallography, nanoscience, or engineering, but their public value depends on industrial production, environmental impact, regulation, supply chains, safety, design, and economic strategy. A material suitable for energy storage, medicine, transport, or electronics must pass through several knowledge worlds before it becomes socially useful. Strategy AV21 made it possible to understand such fields as chains of knowledge rather than isolated discoveries. It also helped connect the Academy with Czech industry without reducing research to short-term industrial service.

Cultural heritage and memory programmes showed integration from the opposite direction. At first glance, memory may seem to belong primarily to the humanities. Yet in the digital age, memory also involves databases, digitisation, imaging technologies, information systems, preservation materials, computational analysis, media infrastructures, and public communication. Archaeology, art history, linguistics, history, and literary studies increasingly interact with chemistry, physics, computer science, and data management. Strategy AV21 therefore allowed heritage to be understood not as a static archive of the past, but as a technologically mediated, socially contested, and scientifically investigable field. This was an important modernisation of the Academy's cultural mission.

The integration of sciences also strengthened the Academy's role in public expertise. Policymakers and citizens rarely need disciplinary fragments alone. They need integrated

understanding: what is happening, why it matters, what risks exist, what options are available, what uncertainties remain, and what consequences may follow. Strategy AV21 helped the Academy assemble expertise in a form closer to these public needs. It did not turn scientists into politicians, but it allowed scientific knowledge to be presented in a more usable and responsible way. This is one of the reasons why Strategy AV21 became central to the Academy's modern public image.

At the same time, integration brought risks. Interdisciplinary programmes can become too broad, too vague, or too dependent on attractive public language. They can also privilege disciplines that produce visible outputs more quickly. Strategy AV21 had to guard against these dangers by maintaining scientific standards and clear programme objectives. Integration must not mean that disciplines are diluted into slogans. It must mean that strong disciplinary work is connected through serious intellectual coordination. The credibility of the strategy depended on this distinction.

Another risk concerned asymmetry between fields. Natural and technical sciences often command larger infrastructures, budgets, and public attention because their outputs can appear more concrete. Social sciences and humanities may be asked to provide communication, ethical reflection, or historical context after the main research agenda has already been defined. A genuinely integrative Strategy AV21 required something deeper. Social and human sciences had to participate in problem definition from the beginning, not merely comment on technical solutions after they were produced. The strongest version of Strategy AV21 was therefore not multidisciplinary addition, but interdisciplinary co-formation of research questions.

This co-formation was important for the Academy's democratic role. Public-interest research cannot be defined only by experts inside laboratories or by political actors outside them. It requires dialogue between knowledge, values, institutions, and citizens. Social sciences and humanities help reveal that public interest is not a self-evident technical category. It is historically formed, politically negotiated, legally structured, culturally interpreted, and ethically contested. Natural and technical sciences help ensure that public debate remains grounded in the realities of matter, life, energy, disease, data, and environmental systems. Strategy AV21's integrative logic brought these dimensions together.

The Academy's internal organisation made such integration both demanding and valuable. AV ČR includes institutes of very different size, discipline, history, and public visibility. Some work with large experimental devices, some with biological systems, some with mathematical abstraction, some with archives and texts, some with social data, and some with cultural artefacts. Strategy AV21 did not flatten this diversity. It used programme themes to make diversity productive. In this way, the Academy could become more than the sum of its institutes. It could act as a national knowledge institution whose strength lay precisely in the coexistence of different scientific worlds.

The integration of sciences also influenced public communication. A programme that combines biology, technology, sociology, and ethics can speak to society more fully than a narrowly disciplinary project. It can explain not only what researchers discovered, but why the discovery matters, what uncertainties remain, what decisions may follow, and how citizens are affected. This is particularly important in areas where public trust is fragile: vaccination, climate measures, nuclear energy, artificial intelligence, genetic technologies, migration, historical memory, and cultural identity. Strategy AV21 gave the Academy a structure through

which complex messages could be communicated without reducing them to simplistic slogans.

The integrative model also helped the Academy respond to crises. Crises expose the artificiality of disciplinary separation. A pandemic, flood, cyberattack, energy shock, war-related migration, or misinformation campaign immediately produces biological, technical, institutional, psychological, cultural, and political effects. An academy that has already cultivated interdisciplinary cooperation is better prepared to mobilise knowledge quickly and responsibly. Strategy AV21 therefore contributed to institutional resilience. It created habits of cooperation that could be activated when society needed integrated expertise.

This does not mean that Strategy AV21 solved all problems of interdisciplinary work. Integration remains slow, uneven, and dependent on people who can translate between fields. It requires administrative support, funding, recognition, and evaluation methods capable of appreciating diverse outputs. It also requires intellectual humility from researchers who must accept that their discipline sees only part of the problem. The value of Strategy AV21 lies not in perfect integration, but in making integration a normal and legitimate part of the Academy's work. It turned an aspiration into an institutional practice.

The integration of natural, technical, social, and human sciences also redefined the meaning of excellence. Excellence was no longer only the achievement of a field measured by its own internal standards. It also included the capacity to contribute to shared problems without losing scientific rigour. A researcher could remain excellent within a discipline and also become valuable as part of a broader programme. A programme could be excellent not because it replaced disciplinary science, but because it connected excellent disciplinary contributions in a way that produced new understanding. Strategy AV21 thus expanded, rather than weakened, the Academy's concept of high-quality research.

This expanded concept of excellence was essential for the Academy's public legitimacy. Society does not fund a national academy only to preserve separate disciplinary traditions, however valuable they may be. It also expects the Academy to help understand the world in which citizens live. Strategy AV21 showed that AV ČR could respond to this expectation by integrating its full intellectual spectrum. The Academy's public value lay in its ability to connect molecular processes with health, climate models with landscapes, digital systems with communication, materials with industry, policy analysis with social change, and memory with identity. Such connections made the Academy visible as a strategic institution rather than a collection of specialised workplaces.

Thus, the integration of natural, technical, social, and human sciences became a defining organisational and intellectual principle of Strategy AV21. It allowed the Czech Academy of Sciences to address contemporary challenges in their full complexity, without reducing them to technical tasks, social problems, or cultural questions alone. The strategy preserved disciplinary depth while creating programme-based spaces for cooperation across scientific cultures. It gave natural and technical sciences a broader public context, and it placed social sciences and humanities at the centre of public-interest research. In doing so, Strategy AV21 transformed interdisciplinarity from an abstract ideal into a practical architecture of knowledge. It showed that the modern Academy could remain faithful to its classical commitment to rigorous research while becoming a more integrated, responsive, and publicly meaningful national knowledge institution.

Thematic Programmes of Strategy AV21

1. Energy, Climate, Environment, and Sustainability

Energy, climate, environment, and sustainability formed one of the most natural thematic cores of Strategy AV21 because they concentrated several of the most urgent public-interest challenges facing the Czech Republic and the wider world. These themes were not chosen only because they were politically visible or internationally fashionable. They expressed a deeper transformation in the relationship between science, society, and the conditions of life. Energy systems determine the functioning of industry, households, transport, digital infrastructures, hospitals, schools, and public administration. Climate change alters landscapes, water regimes, agriculture, forests, biodiversity, urban life, and risk patterns. Environmental degradation affects health, food systems, regional development, and the quality of life of future generations. Sustainability, therefore, was not a separate programme topic added to the Academy's portfolio; it became a way of thinking about the long-term responsibility of knowledge itself (*Czech Academy of Sciences, 2017*; *United Nations, 2015*).

The Academy's engagement with these themes drew on a wide range of its scientific capacities. Physics, chemistry, materials science, plasma research, geology, atmospheric physics, hydrology, ecology, botany, soil science, biology, mathematics, computer modelling, economics, sociology, law, and public policy all had something to contribute. Strategy AV21 made this diversity visible by framing energy and sustainability as public-interest problems rather than as narrow technical sectors. In a classical disciplinary arrangement, energy might appear mainly as a matter for physics and engineering, climate as a matter for atmospheric science, environment as a matter for ecology, and sustainability as a policy slogan. Under Strategy AV21, these areas were connected. The result was a more integrated understanding of the material, technological, social, and political foundations of contemporary civilisation.

The energy question was especially important because the Czech Republic inherited an industrial economy with strong dependence on reliable power supply, heavy manufacturing, heat production, transport infrastructures, and technologically demanding sectors. Energy is not merely a commodity in such a society; it is a condition of social order and economic continuity. The transition away from high-emission systems therefore cannot be treated as a simple replacement of one source by another. It involves investment cycles, technological innovation, public acceptance, grid stability, storage capacity, regional employment, price vulnerability, and geopolitical dependence. Strategy AV21's programme on sustainable energy addressed this complexity by connecting research on low-emission sources, nuclear safety, renewable systems, hydrogen, energy storage, circular economy, and decentralised energy. Its importance lay in showing that energy transition is a scientific, technical, economic, environmental, and social process at the same time (*Czech Academy of Sciences, n.d.*).

The phrase "sustainable energy" itself carried a double meaning. It referred to energy systems that reduce environmental burden, but also to systems capable of supporting society reliably over time. Sustainability cannot mean only lowering emissions if the result is unstable supply, unaffordable prices, or social rejection. Conversely, reliability cannot be defended indefinitely

through systems that damage the climate, pollute the environment, or lock society into vulnerable dependencies. Strategy AV21 placed the Academy in the middle of this difficult balance. Its role was not to provide political slogans for or against any single energy source, but to produce knowledge about the conditions, limits, risks, and possibilities of transition. This gave the Academy a voice in one of the most consequential debates of the 21st century.

Nuclear energy occupied a particular place in this discussion. The Czech Republic has long treated nuclear power as part of its energy mix, and any realistic debate on decarbonisation, energy security, and industrial continuity must consider it. Strategy AV21's attention to nuclear systems, reactor safety, thermonuclear fusion, materials, and energy conversion reflected the Academy's capacity to work on technically demanding questions with long time horizons. Nuclear research is not only a matter of power generation; it involves safety culture, ageing infrastructures, waste, public trust, regulation, and international cooperation. The Academy's scientific independence was crucial here because nuclear debates are often politically charged. Public-interest research in this field requires both technical seriousness and an ability to communicate uncertainty responsibly.

Renewable energy created a different set of research problems. Solar, wind, biomass, geothermal, and other renewable sources are essential for low-emission transition, but their integration into real energy systems raises questions of intermittency, storage, decentralisation, grid management, land use, materials, recycling, and local acceptance. Strategy AV21's energy agenda therefore had to include not only production, but also storage, conversion, distribution, and social impact. This is where chemistry, materials science, electrochemistry, computer modelling, systems engineering, environmental assessment, and social research meet. A renewable system is not sustainable simply because the source is renewable. It becomes sustainable only when the whole chain of production, infrastructure, maintenance, environmental cost, and public use is understood.

Hydrogen technologies illustrated the same logic. Hydrogen is often presented as a promising energy carrier for transport, industry, storage, and future low-carbon systems. Yet its real contribution depends on how it is produced, stored, transported, and used. It may support decarbonisation if produced through low-emission processes, but it may also reproduce old dependencies if tied to fossil sources or inefficient infrastructures. Strategy AV21's inclusion of hydrogen research therefore reflected the Academy's effort to study emerging technologies before they become fixed in policy or industrial practice. This anticipatory role is one of the reasons a national academy matters. It can investigate options before political urgency narrows the range of possible choices.

Energy storage was another central issue because the transition to renewable and decentralised systems depends on the capacity to manage uneven production and consumption. Batteries, hydrogen, thermal storage, mechanical systems, and chemical storage each involve different materials, efficiencies, costs, environmental burdens, and technological risks. Research on storage connects fundamental chemistry and physics with engineering, economics, and sustainability assessment. It also links national energy security with global supply chains for critical materials. Strategy AV21's energy programmes therefore did not simply follow the rhetoric of green transition. They examined the material and infrastructural foundations on which such a transition must rest.

Climate change gave the environmental dimension of Strategy AV21 a planetary horizon. The Academy's work in atmospheric research, climatology, hydrology, ecology, geology,

mathematics, and modelling allowed it to contribute to understanding climate processes and their local consequences. For the Czech Republic, climate change is not an abstract global trend. It appears in drought, heat waves, changing precipitation, forest stress, soil degradation, flood risk, agricultural uncertainty, urban heat islands, and biodiversity shifts. These processes affect regions differently and require knowledge at multiple scales. Strategy AV21's climate-related orientation therefore connected global science with national adaptation needs (*Intergovernmental Panel on Climate Change, 2023*).

The environmental challenge was not reducible to climate alone. Biodiversity loss, ecosystem fragmentation, soil depletion, water pollution, invasive species, landscape homogenisation, and unsustainable land use are problems with their own dynamics. Strategy AV21's programmes on biodiversity, land conservation, food systems, and ecosystems reflected this broader understanding. The Academy's biological and environmental institutes had accumulated long-term expertise in Czech landscapes, species, habitats, forests, wetlands, rivers, agricultural ecosystems, and protected areas. Such knowledge is essential because environmental policy without empirical grounding easily becomes declarative. The Academy could provide the long memory of ecosystems: data, collections, monitoring, field observations, and historical comparisons that reveal change over time (*Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, n.d.*).

The programme on the global biodiversity crisis was particularly important because biodiversity is often perceived as a specialised ecological concern, while in reality it affects the stability of food systems, water cycles, disease patterns, climate resilience, cultural landscapes, and human wellbeing. Biodiversity loss is not only the disappearance of species from scientific catalogues. It is the weakening of ecological relations that support agriculture, pollination, soil fertility, pest control, and landscape resilience. Strategy AV21 treated biodiversity as a public-interest problem by connecting researchers with government and civic society. This communication platform was essential because biodiversity policy requires cooperation among scientists, landowners, municipalities, farmers, conservation authorities, educators, and citizens. The Academy's role was to make the complexity of life systems politically and socially intelligible.

The Czech landscape became a central object of sustainability research because it carries the traces of geology, agriculture, settlement, industrialisation, socialist planning, post-socialist transformation, and contemporary climate pressure. Landscape is never only nature; it is nature shaped by history, property, infrastructure, labour, memory, and policy. Strategy AV21's attention to land conservation and restoration showed that environmental research must deal with this layered reality. Restoring a landscape means understanding soils, water, vegetation, species, erosion, farming practices, legal frameworks, local communities, and economic incentives. It also means recognising that landscapes are cultural spaces in which people live, work, remember, and imagine their future.

Water was one of the most sensitive dimensions of this landscape problem. Droughts, floods, groundwater depletion, river regulation, wetland loss, soil retention, and urban water management all became increasingly important for Czech environmental policy. Scientific research in hydrology, climatology, geology, soil science, ecology, and modelling helps society understand where water is stored, how it moves, how it is lost, and how it can be retained. But water management also depends on municipalities, agriculture, construction, law, public investment, and citizen behaviour. Strategy AV21's interdisciplinary architecture was therefore

well suited to this field. It allowed water to be seen not as a technical resource alone, but as a central element of environmental resilience.

Food production connected energy, climate, biodiversity, soil, health, and social behaviour. Strategy AV21's programme on sustainable food production and consumption addressed one of the most ordinary and fundamental public-interest questions: how societies feed themselves without destroying the ecological conditions of future food production. Food systems involve crop breeding, plant biology, microbiology, soil quality, water availability, food chemistry, processing, logistics, nutrition, waste, consumer habits, and public health. Climate change and intensive agriculture place additional pressure on yields and soil fertility. At the same time, unhealthy diets and food waste create social and medical consequences. Strategy AV21 placed food within an integrated sustainability frame rather than treating it as an agricultural issue alone (*Czech Academy of Sciences, n.d.*).

This was important because food security is often misunderstood as the mere availability of calories. In modern societies, food security also concerns quality, nutrition, safety, affordability, environmental footprint, resilience of supply chains, and cultural habits of consumption. The Academy's research could contribute through plant science, genetics, chemistry, microbiology, environmental analysis, economics, public health, and social research. Sustainable food systems require knowledge about both production and consumption. They ask how crops can become more resistant, how soils can be protected, how contaminants can be reduced, how diets affect health, and how waste can be limited. Strategy AV21's programme format allowed these questions to be treated as connected.

Circular economy appeared within the energy and sustainability agenda as a response to the limits of linear production and consumption. A society that extracts, produces, uses, and discards materials without systematic recovery creates environmental pressure, energy waste, pollution, and dependence on raw materials. Circular approaches require research on materials, waste processing, recycling technologies, industrial design, chemical transformation, regulation, consumer behaviour, and economic incentives. Strategy AV21's inclusion of circular economy within energy-related research showed that sustainability is not only about replacing energy sources. It is also about changing material flows. The Academy's chemical, technological, environmental, and social expertise could help define what circularity means in practice rather than as a fashionable slogan.

Sustainability also raised the question of the Academy's own operations and institutional culture. Research institutions consume energy, operate buildings, travel, use laboratories, purchase equipment, and generate waste. Although Strategy AV21 primarily concerned research programmes, the broader movement towards ecological responsibility also affected how academic institutions thought about themselves. A public-interest research institution cannot speak credibly about sustainability if it ignores its own environmental footprint. This does not mean that research must be paralysed by operational constraints, but it does require reflexivity. The Academy's sustainability agenda therefore had both external and internal dimensions: producing knowledge for society and considering the conditions under which knowledge production itself remains responsible.

The climate and sustainability programmes also sharpened the Academy's relationship with public policy. Energy transition, biodiversity protection, climate adaptation, food systems, and landscape restoration require decisions by ministries, municipalities, regions, regulatory bodies, companies, and citizens. Scientific knowledge cannot replace these decisions, but it

can improve them. It can show risks, compare scenarios, explain trade-offs, identify unintended consequences, and reveal long-term patterns that are invisible in short political cycles. Strategy AV21's programme-based format made this policy relevance more systematic. It allowed the Academy to communicate with decision-makers through organised thematic platforms rather than isolated expert interventions.

At the same time, public-interest research in sustainability must remain independent because environmental and energy debates are full of conflicting interests. Industrial actors, political parties, municipalities, environmental organisations, farmers, households, and consumers may all define the public good differently. A national academy must not become the voice of one interest group. Its contribution lies in methodological discipline, long-term knowledge, and the capacity to expose complexity. Strategy AV21 gave the Academy an institutional framework for entering contested debates while preserving scientific authority. This balance between engagement and independence was essential for credibility.

Communication was especially important in climate and sustainability research because these fields are vulnerable to misunderstanding, simplification, and politicisation. Climate science deals with probabilities, models, scenarios, uncertainties, and long time horizons. Biodiversity research deals with invisible dependencies and slow losses. Energy transition deals with trade-offs between cost, security, emissions, and public acceptance. Food sustainability deals with everyday habits as well as global systems. Strategy AV21's public-interest mission required the Academy to explain these issues in a credible and broader context. Scientific communication became part of the sustainability agenda itself.

The social sciences were indispensable in this communication task. Public acceptance of energy technologies, climate measures, conservation policies, or dietary changes cannot be assumed. It depends on trust, fairness, identity, economic burden, regional experience, political culture, and the perceived legitimacy of institutions. A technically correct policy may fail if it is socially blind. Strategy AV21's integration of social research into energy and sustainability programmes therefore prevented a purely technocratic approach. It allowed the Academy to ask not only what should be done in technical terms, but also how society can understand, negotiate, and implement change.

The humanities also had a role in this thematic block, although it may be less obvious at first glance. Sustainability is partly a question of values, memory, narratives, and the human relationship to place. Landscapes are remembered; rivers, forests, villages, fields, and cities carry cultural meanings. Debates about energy futures are also debates about modernity, comfort, responsibility, sacrifice, and intergenerational justice. Climate change forces societies to rethink their place in nature and their obligations to the future. The humanities help articulate these meanings. Strategy AV21's wider interdisciplinary logic made it possible to include such reflection within the public-interest mission of the Academy.

The energy and sustainability agenda also connected the Academy with European policy frameworks. The European Green Deal, climate neutrality objectives, biodiversity strategies, circular economy policies, and Horizon Europe missions all shaped the context in which Czech research developed. Strategy AV21 allowed the Academy to align with these European priorities while translating them into national scientific and social conditions. This translation was important because European strategies cannot be implemented mechanically in every country. They must be interpreted through national energy systems, landscapes, industries,

institutions, and cultural attitudes. The Academy could serve as one of the institutions capable of this translation (*European Commission, 2019*; *European Commission, 2021*).

The global dimension was equally important. Climate change, biodiversity loss, resource depletion, and food insecurity are planetary processes, but their consequences are experienced locally. The Academy's research therefore had to operate across scales. It could contribute to global science through publications, international collaborations, monitoring networks, and comparative research. At the same time, it had to answer Czech questions about forests, drought, nuclear energy, renewable integration, food production, urban adaptation, and regional resilience. Strategy AV21 gave the Academy a framework in which global and national scales could be connected. This is one of the distinctive tasks of a national academy in an interdependent world.

The sustainability agenda also strengthened the Academy's connection with future generations. Many scientific institutions justify themselves through current outputs, but sustainability requires a longer moral horizon. The effects of energy choices, biodiversity loss, soil degradation, greenhouse gas emissions, and landscape transformation extend beyond the present generation. Strategy AV21's motto, "top research in the public interest", therefore acquired a temporal depth in this thematic area. Public interest does not belong only to today's citizens. It also includes those who will inherit the consequences of today's decisions. This gave the Academy's environmental and energy programmes an ethical significance beyond technical research.

The Academy's strength in this field depended on continuity. Environmental and climate knowledge require long-term observation, repeated measurement, data preservation, and institutional memory. Energy technologies require sustained laboratory work and cumulative engineering experience. Food and biodiversity research require field knowledge, collections, and experimental infrastructures. Such capacities cannot be created quickly in response to a political emergency. Strategy AV21 made visible the importance of maintaining them over time. It showed that public-interest research is often a matter of preparedness: society benefits from scientific capacities that have been cultivated before their necessity becomes obvious.

At the same time, Strategy AV21's sustainability orientation was not pessimistic. It did not present contemporary society only as a source of ecological damage and risk. It also highlighted possibilities: new energy systems, better storage, safer technologies, restored landscapes, resilient food systems, informed policy, public communication, circular economy, and responsible innovation. This constructive dimension mattered because public-interest science should not only diagnose decline. It should help identify realistic pathways of adaptation and transformation. The Academy's role was therefore both critical and creative: to reveal dangers, but also to explore alternatives.

The thematic block of energy, climate, environment, and sustainability also changed the modern image of the Academy. It showed AV ČR as an institution directly engaged with the conditions of everyday life and national future. Energy prices, drought, floods, forests, food, pollution, biodiversity, and climate adaptation are not remote academic topics. They concern households, regions, farmers, schools, industry, health, and public budgets. By organising research around these themes, Strategy AV21 made the Academy more publicly recognisable. It demonstrated that a classical research institution could contribute to urgent social questions without abandoning fundamental science.

This was particularly important after the long post-socialist period in which the Academy had to defend its autonomy, quality, and institutional necessity. Strategy AV21 allowed AV ČR to shift the argument. The Academy did not ask to be supported only because it preserved scientific excellence. It showed that excellence could be mobilised for public problems of high consequence. Energy, climate, environment, and sustainability were ideal fields for this demonstration because they require both deep science and public responsibility. They also require cooperation between institutes, disciplines, sectors, and generations. In this sense, they embodied the whole logic of Strategy AV21.

Thus, the Strategy AV21 programmes connected with energy, climate, environment, and sustainability revealed the Czech Academy of Sciences as a public-interest research institution capable of addressing the material foundations of contemporary society. These programmes showed that energy transition, climate adaptation, biodiversity protection, landscape restoration, sustainable food systems, circular economy, and environmental resilience cannot be solved by isolated disciplines or short-term policy reactions. They require long-term research, interdisciplinary cooperation, public communication, technological imagination, social understanding, and ethical responsibility towards future generations. Strategy AV21 gave the Academy a format through which its natural, technical, social, and human sciences could be assembled around these challenges. In doing so, it transformed sustainability from a policy slogan into an academic mission grounded in scientific excellence and civic responsibility.

2. Health, Society, Security, and Resilience

Health, society, security, and resilience formed another major thematic constellation within Strategy AV21 because they brought the Academy's public-interest mission closest to the vulnerabilities of human life. If the previous thematic block centred on the material and environmental conditions of civilisation, this one focused on the biological, social, institutional, and psychological conditions under which people live, age, trust, cooperate, and survive crises. Health was no longer understood only as the treatment of disease, society no longer only as a field of observation, security no longer only as military or police protection, and resilience no longer only as recovery after disruption. Strategy AV21 placed these concepts in relation to one another. It showed that a modern academy must study disease mechanisms and public policy, gene therapy and social inequality, infectious risks and public communication, demographic change and institutional trust, security technologies and the behaviour of citizens. This thematic block therefore revealed how deeply intertwined biomedical research, social diagnosis, public administration, ethics, communication, and cultural interpretation had become in the 21st century (*Czech Academy of Sciences, 2017*).

The Academy's health-related programmes developed from a strong base in life sciences, chemistry, biomedicine, physiology, molecular biology, immunology, microbiology, pharmacology, and medical technologies. These fields had long been central to the Academy's scientific profile, especially after the post-1993 modernisation of biological and biomedical institutes. Strategy AV21 gave them a broader public frame. It did not present biomedical research only as laboratory excellence or as a source of future therapies, although both aspects remained essential. It connected health research with quality of life, ageing, diagnostics, personalised treatment, prevention, social preparedness, and the capacity of public institutions to respond to risk. This was important because health in contemporary

society is never purely biological. It is also demographic, economic, communicative, political, ethical, and institutional.

One of the most visible examples of this logic was the programme directed towards precision medicine and gene therapy. Precision medicine expresses a major transformation in biomedical thinking: the movement from generalised treatment models towards approaches adapted to molecular mechanisms, genetic information, patient variability, and disease subtypes. Gene therapy adds an even more ambitious horizon because it aims not only to treat symptoms, but to intervene in the biological causes of disease. Such research requires molecular biology, genetics, virology, immunology, bioinformatics, chemistry, nanotechnologies, clinical cooperation, regulatory understanding, and ethical reflection. Strategy AV21 placed this field within the public-interest mission of the Academy because advanced therapy is not only a scientific frontier. It raises questions of accessibility, safety, public trust, cost, social expectation, and the future organisation of healthcare (*Czech Academy of Sciences, n.d.*; *World Health Organization, 2021*).

The public significance of precision medicine lies in its promise and its difficulty. The promise is that patients may receive more accurate diagnoses and more effective treatments, especially in fields such as oncology, rare diseases, immunological disorders, and genetic conditions. The difficulty is that precision medicine depends on complex infrastructures: genomic data, biobanks, specialised laboratories, computational analysis, clinical validation, regulatory pathways, and healthcare systems able to implement new knowledge. The Academy's role is not to replace hospitals or pharmaceutical companies, but to generate the fundamental and translational knowledge without which such medicine cannot develop responsibly. Strategy AV21 thus connected the laboratory with the clinic and the clinic with society. This was precisely the type of bridge that a public-interest academy was expected to build.

Infectious diseases provided another essential dimension of the health agenda. The Strategy AV21 programme on infectious diseases and the earlier programme on virology and antiviral therapy reflected the Academy's capacity to study pathogens, host responses, viral mechanisms, antimicrobial resistance, immune processes, diagnostics, and therapeutic strategies. These fields became even more publicly visible after the COVID-19 pandemic, but their significance had been present long before the pandemic began. Infectious diseases are old companions of humanity, yet they constantly reappear in new ecological, technological, and social contexts. Global travel, urbanisation, environmental change, intensive agriculture, antimicrobial misuse, and social inequality can all shape the spread and impact of infections. Strategy AV21 therefore treated infection not only as a biomedical topic, but as a challenge to collective preparedness (*Czech Academy of Sciences, n.d.; Czech Academy of Sciences, n.d.*).

The pandemic made clear that a virus is a biological entity, but a pandemic is a social event. It affects hospitals, schools, workplaces, families, media, political institutions, borders, supply chains, and public trust. It requires diagnostics, modelling, vaccine research, treatment development, public communication, legal decisions, economic support, and psychological resilience. The Academy's biomedical institutes could contribute through research on viral behaviour, immunity, diagnostics, and therapeutic possibilities, while social scientists and humanists could analyse public response, misinformation, institutional capacity, and the cultural meaning of risk. Strategy AV21's interdisciplinary logic was therefore not an abstract ideal in this field. It corresponded to the real structure of a health crisis.

Public health also demonstrated the limits of purely individualised understandings of medicine. A society may possess advanced therapies and still suffer from poor health outcomes if prevention is weak, inequalities are deep, communication is ineffective, or institutions are distrusted. Quality of life depends on biological health, but also on work, housing, education, social relations, environment, ageing, mental wellbeing, and access to care. Strategy AV21's health themes therefore extended beyond disease as a strictly medical object. They helped frame health as a public condition, shaped by interactions between bodies, technologies, institutions, and ways of life. This expanded understanding was necessary for an Academy that wanted to link scientific excellence with public responsibility.

Ageing was one of the most important social and health-related challenges facing Czech society and Europe more broadly. Longer life expectancy is a success of modern medicine and social development, but it also transforms family structures, pension systems, healthcare demand, labour markets, housing needs, intergenerational relations, and concepts of care. Biomedical research can study ageing at the cellular, molecular, and physiological levels; social sciences can analyse demographic change, care systems, social isolation, and policy responses; humanities can interpret the meaning of ageing, dignity, dependence, memory, and generational identity. Strategy AV21 created a space in which these perspectives could be connected. Ageing thus became not only a medical problem, but a civilisational question about how societies organise longer human lives.

Mental health and psychological resilience also belong to this thematic field, even when they are not always named as separate programme titles. Modern societies face stress from economic uncertainty, digital acceleration, social fragmentation, war, migration, pandemic experience, climate anxiety, and the erosion of stable expectations. Resilience cannot be understood only as the capacity of infrastructure to withstand disruption. It also concerns individuals, communities, institutions, and cultures. The Academy's psychological, sociological, philosophical, and medical expertise can help explain how people cope with uncertainty, how communities maintain solidarity, and how institutions either support or weaken resilience. Strategy AV21's broader social programmes made such questions part of the Academy's public mission.

The programme Resilient Society for 21st Century: Crisis Potentials and Effective Transformation expressed this movement most directly. It shifted the focus from isolated crisis response to the general assumptions of individual and social resilience. Resilience, in this context, does not mean passive endurance or a return to the previous state at any cost. It means the capacity to absorb shocks, learn from disruption, transform institutions, maintain social bonds, and adapt without losing democratic and human values. This is a complex research object. It requires sociology, psychology, political science, philosophy, economics, anthropology, communication studies, history, security studies, and public administration. Strategy AV21 thus placed resilience among the central problems of contemporary knowledge, not as a fashionable keyword, but as an analytical category for societies exposed to continuous uncertainty (*Czech Academy of Sciences, n.d.*).

The Czech experience gave the concept of resilience particular depth. The country had passed through empire, national revival, democratic statehood, occupation, communism, normalisation, the Velvet Revolution, post-socialist transformation, European integration, economic crises, migration debates, pandemic disruption, and the security consequences of Russia's war against Ukraine. Each of these historical layers shaped institutions, public

expectations, trust, memory, and vulnerability. A society's resilience is never only a technical capacity; it is historical. It depends on what people remember, whom they trust, how institutions behaved in previous crises, and how public language frames danger and solidarity. Strategy AV21's integration of social sciences and humanities was therefore indispensable for studying resilience in the Czech context.

The programme Society in Motion and Public Policy added another crucial dimension. Modern society is characterised by rapid change: migration, demographic shifts, labour-market transformation, housing pressures, educational inequalities, technological disruption, public debt, regional disparities, epidemics, wars, and environmental crises. These phenomena are not exceptional interruptions of a stable social order. They increasingly define the normal conditions under which policy must operate. Public policy research becomes essential because societies need evidence about what works, for whom, under what conditions, and with what unintended consequences. Strategy AV21's inclusion of public policy demonstrated that the Academy understood governance itself as a field requiring scientific analysis (*Czech Academy of Sciences, n.d.*).

This was significant for the Academy's modern role. In the socialist period, social sciences were often constrained by ideology, and public policy was largely subordinated to central planning and political doctrine. After 1989, Czech social sciences had to rebuild empirical methods, international connections, and intellectual independence. Strategy AV21 represented a later stage in which social sciences could contribute confidently to democratic governance. They could analyse public policies without serving as instruments of ideological control. They could help the state understand social reality while preserving critical autonomy. This was one of the clearest examples of the Academy's transformation from a state-directed institution into a democratic knowledge institution.

Security, in this thematic block, must be understood broadly. It includes biological security, cyber security, energy security, social cohesion, protection against disinformation, resilience of institutions, food and health security, and the ability of society to respond to war-related and environmental shocks. Strategy AV21 did not turn the Academy into a security agency. Rather, it placed security within the wider domain of knowledge, preparedness, and public trust. Scientific institutions contribute to security by identifying risks, modelling consequences, developing technologies, analysing vulnerabilities, and explaining complex threats. This is especially important in societies where risks are hybrid and where physical, digital, biological, social, and cultural dimensions overlap.

The war in Ukraine and the wider destabilisation of European security after 2022 intensified the relevance of this approach. Even when Strategy AV21 programmes were not designed as geopolitical instruments, the Academy's research on society, identity, resilience, communication, energy, security, and public policy became more visibly connected with national preparedness. War affects energy supply, migration, inflation, public discourse, defence thinking, historical memory, and trust in institutions. It also produces disinformation and identity conflicts. A national academy cannot decide foreign policy, but it can help society understand the structural consequences of war and uncertainty. Strategy AV21's social and security-related programmes made this contribution more coherent.

Disinformation and communication risks formed a particularly important part of social security. The digital environment changed the circulation of knowledge, rumour, fear, propaganda, expertise, and political mobilisation. Public health crises, elections, migration

debates, wars, climate change, and technological controversies are all affected by communication systems. A society may possess excellent scientific knowledge and still fail if that knowledge cannot be communicated or trusted. Strategy AV21's programmes on communication, society, resilience, and artificial intelligence therefore belong indirectly to the health and security agenda as well. They show that security in the 21st century includes the integrity of public discourse.

Trust became one of the most important hidden variables in this thematic block. Trust in scientists, doctors, public institutions, media, courts, schools, and democratic procedures affects how societies respond to crises. During a pandemic, trust influences whether citizens follow health guidance. During energy transition, it shapes acceptance of infrastructure and policy costs. During security crises, it affects resistance to disinformation. During social reform, it determines whether citizens believe institutions are acting fairly. The Academy's public-interest mission therefore cannot be separated from the production of trustworthy knowledge. Strategy AV21 strengthened this mission by making Academy research more visible, coordinated, and publicly oriented.

The social dimension of health also raised questions of inequality. Health risks are not distributed evenly across society. Income, education, region, age, gender, occupation, housing, ethnicity, disability, and access to services all influence exposure and outcome. Public policy research can reveal these differences and help design better interventions. Biomedical research may produce powerful tools, but without social analysis those tools may benefit groups unevenly or fail to reach those most in need. Strategy AV21's integration of health and society therefore protected the Academy from a narrow biomedical model. It encouraged a more complete understanding of how disease, care, inequality, and policy interact.

Resilience also has a regional dimension. The Czech Republic is not socially homogeneous. Prague, Brno, industrial regions, rural municipalities, borderlands, university towns, post-industrial areas, and ageing localities experience risks differently. Health infrastructure, economic opportunities, social trust, educational access, and environmental pressures vary across space. A national academy has the capacity to connect local evidence with national interpretation. Strategy AV21's public policy and resilience themes allowed research to address regional differences without reducing them to administrative statistics. This spatial sensitivity is important because crises often reveal territorial inequalities that remain invisible in national averages.

The Academy's humanities institutes contributed to this theme by analysing memory, identity, language, ethics, and historical experience. Security and resilience are not only about resources and institutions; they are also about meanings. Societies interpret danger through historical analogies, collective memories, national narratives, moral vocabularies, and cultural fears. The memory of authoritarianism, occupation, normalisation, or transition can influence how citizens respond to state measures, propaganda, solidarity appeals, or external threats. Strategy AV21's inclusion of humanities within public-interest research made it possible to understand these deeper dimensions. Without them, resilience would be reduced to management technique.

Ethics was particularly important in health and security research. Gene therapy, assisted reproduction, infectious disease measures, surveillance technologies, artificial intelligence, data sharing, and crisis governance all raise ethical questions. What risks are acceptable? Who

decides? How should personal data be protected? How should benefits and burdens be distributed? How can emergency measures remain compatible with rights and dignity? Strategy AV21's interdisciplinary structure allowed ethical reflection to accompany scientific and technological development. This was necessary because public-interest research must be not only effective, but also legitimate.

Assisted reproduction, as one of the Strategy AV21 programme themes, shows how closely biomedical progress can be connected with social, ethical, and demographic questions. Infertility treatment is a medical field, but it also touches family formation, gender, kinship, legal regulation, psychological stress, religious and moral debates, ageing parenthood, and demographic change. The Czech Republic has a developed assisted reproduction sector, which makes the topic socially relevant as well as scientifically significant. Strategy AV21's attention to the future of assisted reproduction therefore belongs to the broader health-society nexus. It demonstrates that the Academy's public-interest research can address intimate human problems while maintaining scientific distance and ethical seriousness (*Czech Academy of Sciences, n.d.*).

The fungal programme within Strategy AV21 also illustrates the combination of threat and opportunity. Fungi may be pathogens affecting humans, animals, plants, and agriculture; they may also be sources of new compounds, ecological processes, biotechnology, food, and materials. This duality is typical of many modern biological challenges. The same domain of life can generate disease risks and innovation potential. Studying fungi therefore requires microbiology, ecology, medicine, agriculture, chemistry, biotechnology, and environmental science. Within the broader theme of health, society, security, and resilience, such research shows how biological knowledge can contribute both to risk prevention and to new forms of sustainable innovation (*Czech Academy of Sciences, n.d.*).

The concept of systemic risk helps to connect these diverse examples. A systemic risk is one in which disruption spreads across interconnected systems: health, economy, education, supply chains, communication, governance, and social trust. The pandemic was a systemic risk; so are energy shocks, cyberattacks, climate disasters, financial crises, and war-related disruptions. Strategy AV21's thematic programmes were well suited to such risks because they were not confined to single disciplines. They allowed the Academy to study how crises move through society and how institutions can reduce vulnerability. This systemic understanding is one of the most important contributions of public-interest research in the 21st century (*Renn, 2008*).

Preparedness, however, must not be confused with prediction. Science cannot predict every crisis in detail, and public institutions cannot eliminate uncertainty. What research can do is improve the quality of preparedness by identifying patterns, vulnerabilities, thresholds, possible scenarios, and conditions of resilience. Strategy AV21 supported this kind of anticipatory knowledge. It did not promise certainty. It strengthened the capacity of society to think before crisis, learn during crisis, and transform after crisis. This is a mature form of scientific responsibility because it recognises both the power and the limits of expertise.

The Academy's public communication became especially significant in this thematic block because health, security, and resilience are areas where fear can easily dominate reasoned discussion. During epidemics, people fear illness and death; during security crises, they fear war and instability; during social change, they fear loss of status, identity, or control. Scientific communication must therefore be accurate, calm, transparent, and aware of public emotion.

Strategy AV21 helped the Academy frame its communication around recognisable social problems rather than isolated disciplinary outputs. It allowed researchers to explain why their work mattered for the protection and improvement of life.

At the same time, public-interest communication in these fields must avoid paternalism. Citizens are not merely passive recipients of expert instruction. They possess experience, local knowledge, moral concerns, and legitimate questions. A democratic research institution must communicate with them, not only at them. Strategy AV21's orientation towards society, public policy, and resilience opened the possibility of more dialogic forms of expertise. The Academy could present evidence, but also learn from the way social actors experience risk and change. This did not weaken scientific authority; it made authority more socially intelligent.

The health and resilience agenda also linked Strategy AV21 with international organisations and global debates. The World Health Organization's work on health systems, pandemic preparedness, antimicrobial resistance, and social determinants of health; the OECD's work on resilience and public governance; and European research programmes on health, security, and social transformation all formed part of the broader context. The Academy's programmes allowed Czech research to participate in these debates from a national institutional position. Strategy AV21 thus mediated between global health and security concerns and the specific needs of Czech society. This mediation is one of the classical functions of a national academy in a globalised world (*Organisation for Economic Co-operation and Development, 2019; World Health Organization, 2021*).

The Academy's role in this thematic field was also strengthened by its ability to work across temporal scales. Biomedical research may operate in the timescale of experiments, clinical development, and therapeutic innovation. Social resilience may require historical comparison and long-term observation of institutions. Public policy evaluation may analyse the effects of reforms over years or decades. Security risks may emerge suddenly but reflect accumulated vulnerabilities. Strategy AV21's programme format allowed these different temporalities to coexist. It showed that public-interest research must combine rapid response with long memory.

The connection between health and society also made Strategy AV21 relevant to education and the formation of public competence. Citizens need scientific literacy, media literacy, health literacy, and civic literacy to navigate crises. Schools, universities, museums, media, and public institutions all participate in this process. The Academy, though not a university in the full teaching sense, contributes through expert communication, doctoral training, public lectures, science festivals, publications, and cooperation with educational institutions. Strategy AV21 made these communicative and educational functions more visible. Health and resilience are not produced only in hospitals and ministries; they are also produced through knowledge, understanding, and trust.

This thematic block also revealed the Academy's capacity to integrate vulnerability and innovation. Health programmes looked towards new therapies, diagnostics, and biomedical technologies. Social programmes examined policy, crisis potential, identity, and resilience. Security-related questions connected risk analysis with communication and technological preparedness. These are not separate worlds. Innovation can reduce vulnerability, but it can also create new risks. Vulnerability can stimulate research, but it can also expose social inequalities. Strategy AV21 provided a structure in which these relationships could be analysed rather than simplified.

The modern public image of the Academy benefited from this field because health, society, security, and resilience are immediately understandable to citizens. People may not always understand the internal structure of AV ČR, but they understand illness, ageing, fear, crisis, trust, policy failure, social instability, and the need for protection. By addressing these topics, Strategy AV21 brought the Academy closer to everyday life. It showed that academic research is not remote from human concerns. At the same time, it demonstrated that everyday concerns often require highly specialised knowledge. This is the essence of public-interest science: it connects the ordinary vulnerability of human life with the extraordinary depth of organised research.

Thus, the Strategy AV21 programmes connected with health, society, security, and resilience showed the Czech Academy of Sciences as an institution capable of responding to the human and institutional vulnerabilities of contemporary civilisation. They linked biomedical research with public health, gene therapy with ethics, infectious diseases with social preparedness, public policy with democratic governance, security with communication, and resilience with historical memory and social trust. This thematic block demonstrated that the Academy's public-interest mission could not be reduced to technology or environmental sustainability alone. It also had to address bodies, communities, institutions, values, fears, and capacities for collective adaptation. Strategy AV21 therefore transformed health and resilience into broad interdisciplinary fields in which natural, technical, social, and human sciences could work together for the protection, understanding, and renewal of society.

3. Technologies, Digitalisation, Materials, and Future Industries

Technologies, digitalisation, materials, and future industries formed one of the most forward-looking thematic clusters of Strategy AV21. If the environmental programmes addressed the conditions of planetary and national sustainability, and the health and resilience programmes addressed the vulnerabilities of bodies and societies, this cluster focused on the technological foundations of the future. It asked how a national academy could contribute to a world shaped by artificial intelligence, data, automation, sensors, advanced materials, quantum technologies, diagnostics, photonics, space research, and new industrial processes. These were not only technical topics. They were questions about sovereignty, competitiveness, public trust, security, employment, education, infrastructure, and the place of small and medium-sized countries in global technological change. Strategy AV21 therefore treated technology not as an external application of science, but as one of the central terrains on which scientific autonomy, national capacity, and public interest meet (*Czech Academy of Sciences, 2017*; *Czech Academy of Sciences, n.d.*).

The Academy's technological orientation had deep roots in its post-war and post-socialist history. The Czechoslovak Academy of Sciences had developed strong schools in physics, chemistry, mathematics, cybernetics, materials research, instrumentation, plasma physics, and technical sciences, although these fields were often shaped by the priorities and constraints of the socialist state. After 1989, their development depended increasingly on international evaluation, European projects, competitive funding, and cooperation with universities and industry. Strategy AV21 gave these capacities a new public language. It did not present them only as specialised research traditions, nor only as sources of patents or industrial partnerships. It placed them within a broader question: how can top-level research

help the Czech Republic participate actively in technological transformation rather than merely consume technologies developed elsewhere?

Digitalisation became one of the most important answers to this question. The early Strategy AV21 programme on the hopes and risks of the digital era already captured the double character of digital transformation. Digital technologies make it possible to process data, model complex systems, automate tasks, connect institutions, improve diagnostics, preserve memory, and open new forms of communication. At the same time, they create risks of surveillance, data misuse, cyber vulnerability, misinformation, social fragmentation, labour disruption, and dependence on foreign platforms. The Academy therefore did not treat digitalisation as simple progress. It treated it as a field where mathematics, computer science, social analysis, legal reasoning, ethics, communication studies, and public policy must interact. This balanced approach was essential for a public-interest research institution (*Czech Academy of Sciences, 2017*).

Artificial intelligence intensified the significance of this digital agenda. The programme AI: Artificial Intelligence for Science and Society reflected the fact that AI had become both a research instrument and a social force. It could accelerate discovery, automate analysis, support modelling, improve diagnostics, assist language technologies, optimise industrial processes, and transform scientific instrumentation. Yet it also raised questions of explainability, accountability, bias, privacy, labour, education, security, and democratic control. Strategy AV21's treatment of AI therefore had to be broader than a technical programme in machine learning. It had to ask how AI changes science itself, how it affects society, and how the Academy can help build trustworthy and useful AI systems. This placed AV ČR within a global debate on AI as both technological infrastructure and public concern (*Czech Academy of Sciences, n.d.*; *Organisation for Economic Co-operation and Development, 2019*).

The phrase "for science and society" was especially important in the AI programme. It suggested that artificial intelligence should not be understood only as a commercial technology or a geopolitical race. For the Academy, AI was also a tool for research: a way to analyse complex data, detect patterns, model systems, process language, and support discovery in physics, chemistry, biology, medicine, climate research, social sciences, and the humanities. At the same time, AI was an object of research because it reshaped institutions, communication, law, ethics, and human behaviour. Strategy AV21 therefore placed AI in a dual position. It was both a means of producing knowledge and a phenomenon that itself required critical knowledge.

This dual position made the Academy's role particularly important. Commercial actors often develop AI systems with strong incentives towards speed, market penetration, and proprietary advantage. Governments may approach AI through regulation, security, public services, and economic strategy. Universities contribute through education and research, but they are often distributed across faculties and disciplines. A national academy can provide something different: long-term, interdisciplinary, independent expertise that connects technical competence with social understanding. Strategy AV21 created a framework for precisely this kind of contribution. It allowed AV ČR to study AI without surrendering the topic either to market enthusiasm or to cultural anxiety.

The broader European context reinforced the importance of this agenda. The European Union's digital decade policy set measurable targets for connectivity, digital skills, digitalisation of

business, and digital public services, while the AI and data debates increasingly emphasised trustworthiness, human rights, competitiveness, and strategic autonomy (*European Commission, 2023*; *Organisation for Economic Co-operation and Development, 2019*). Strategy AV21 allowed the Czech Academy to connect national research capacities with these European priorities. The Czech Republic could not define the global technological order by itself, but it could cultivate knowledge and institutions that allowed it to participate more actively. In this sense, digitalisation under Strategy AV21 was not only a technical modernisation theme. It was part of a wider question of European and Czech technological agency.

The programme Breakthrough Technologies for the Future carried this agency-oriented logic even further. It brought together sensing, digitisation, artificial intelligence, quantum technologies, and related technological platforms. Such a programme reflected the recognition that future industries are no longer built from isolated inventions. They depend on convergent technological systems: sensors generate data, digital infrastructures transmit and store them, AI analyses them, quantum technologies may transform computation and measurement, and advanced instruments make it possible to observe phenomena at new scales. Strategy AV21's programme format was well suited to such convergence because it could connect researchers from several institutes and fields. It showed that future technologies emerge from networks of knowledge rather than from one discipline alone (*Czech Academy of Sciences, n.d.*).

Sensing technologies occupied a special position in this cluster because measurement is one of the basic acts of modern science and industry. To measure more precisely is often to discover more deeply. Sensors, detectors, imaging systems, spectroscopic methods, microscopy, and diagnostic instruments make invisible processes visible. They support medicine, environmental monitoring, industrial control, space research, security, materials development, and cultural heritage preservation. The Academy's institutes dealing with scientific instruments, photonics, electronics, physics, chemistry, biology, and engineering could therefore contribute to many public-interest fields through advances in measurement. Strategy AV21 made this contribution more visible by placing instrumentation within a broader technological future.

The earlier programme on diagnostic methods and techniques belongs to the same intellectual family. Diagnostics is often associated with medicine, but its meaning is broader. It includes the detection and interpretation of signals in biological systems, materials, industrial processes, environmental samples, artworks, historical objects, and physical phenomena. A diagnostic technology can identify disease, reveal material defects, monitor pollution, analyse food quality, examine cultural artefacts, or improve industrial reliability. Strategy AV21 therefore treated diagnostic methods as a cross-cutting field where basic research, instrumentation, data analysis, and application meet. This made diagnostics one of the bridges between the Academy's laboratories and society's practical needs (*Czech Academy of Sciences, 2017*).

Photonics and light-based technologies also carried strategic importance. The programme Light at the Service of Society captured the public-interest meaning of research on lasers, optics, imaging, spectroscopy, photonic materials, and light-matter interaction. Light-based technologies are essential in medicine, telecommunications, manufacturing, environmental monitoring, cultural heritage analysis, defence, and scientific instrumentation. They are often

invisible to citizens because they operate inside devices and infrastructures, yet modern life depends heavily on them. Strategy AV21 allowed the Academy to show that highly specialised optical and photonic research can serve society in concrete ways. It also demonstrated how fundamental physics can generate technological platforms with broad industrial and public consequences.

Advanced materials formed another core of this thematic cluster. The early Strategy AV21 programme on new materials based on metals, ceramics, and composites addressed a field in which fundamental science, industrial capacity, and future technologies are closely intertwined. Materials determine what can be built, stored, transported, protected, implanted, miniaturised, recycled, or made more efficient. Energy systems need better batteries, catalysts, heat-resistant components, and materials for hydrogen technologies. Medicine needs biocompatible materials, carriers, implants, sensors, and diagnostic platforms. Transport, construction, electronics, aerospace, defence, and environmental technologies all depend on materials with specific properties. Strategy AV21 therefore placed materials research at the centre of future industry rather than treating it as an auxiliary technical discipline (*Czech Academy of Sciences, 2017*).

The strategic relevance of advanced materials increased further as Europe began to emphasise green and digital transitions, supply-chain security, and industrial leadership. Advanced materials are not only scientific objects; they are enabling technologies. They make possible new energy storage, lighter transport, more efficient electronics, better insulation, stronger infrastructure, and more sustainable production. The European Commission's communication on advanced materials for industrial leadership in 2024 reflected the growing recognition that research and innovation in this field are crucial for European competitiveness and resilience (*European Commission, 2024*). Strategy AV21 had already placed the Czech Academy in a position to contribute to this agenda through its long-standing expertise in physics, chemistry, materials science, engineering, and modelling.

Materials research also showed why future industries cannot be separated from sustainability. A new material is not automatically a public good. It may require rare raw materials, energy-intensive production, difficult recycling, or environmentally harmful processes. The public-interest perspective therefore requires evaluation across the whole life cycle: discovery, synthesis, production, use, repair, reuse, recycling, and disposal. Strategy AV21's broader connection between materials, energy, circular economy, and environmental responsibility made this life-cycle perspective more plausible. The Academy could help design materials not only for performance, but also for sustainability, safety, and long-term social value.

The relationship between materials and digitalisation became increasingly close. Machine learning and data-driven approaches now influence the discovery of materials, prediction of properties, optimisation of synthesis, and analysis of experimental results. Scientific AI can accelerate the search for new compounds, catalysts, polymers, alloys, ceramics, and nanostructures. At the same time, AI depends on materials: semiconductors, sensors, memory systems, cooling technologies, batteries, and photonic components. Strategy AV21's technological cluster therefore revealed a feedback loop between digital and material infrastructures. Digital tools transform materials research, while materials research enables the next generation of digital technologies.

Quantum technologies belonged to the most advanced part of this future-oriented agenda. Quantum sensing, quantum communication, quantum computation, and quantum materials

all demand deep theoretical and experimental competence. They also have potential implications for cybersecurity, measurement, simulation, and industrial innovation. For a country such as the Czech Republic, participation in quantum research is not merely a prestige issue. It concerns the ability to remain connected to a technological field that may reshape scientific and economic infrastructures. Strategy AV21's inclusion of quantum technologies within breakthrough technologies showed that the Academy understood future industries as fields requiring early and sustained research engagement, even before applications become routine.

Space research and space-related technologies extended the same logic beyond the Earth's immediate industrial landscape. The Strategy AV21 programme Space for the Mankind presented space not as a remote curiosity, but as a field with implications for observation, communication, navigation, climate monitoring, instrumentation, materials, plasma physics, astronomy, and international cooperation. Space technologies support everyday services, but they also shape security, environmental knowledge, disaster response, and scientific discovery. The Academy's astronomical, physical, atmospheric, geophysical, and technological institutes could contribute to this field through instruments, models, observations, and data analysis. Strategy AV21 therefore integrated space research into the public-interest horizon of future technologies.

The technological cluster also included research on systems for nuclear power industry and energy-related technologies, which connect directly with future industrial capacity. Nuclear systems require materials able to withstand extreme conditions, plasma research relevant to fusion, safety analysis, geophysics, reactor physics, modelling, and the training of specialists. The public-interest importance of such research lies not only in energy production, but also in safety, expertise, strategic autonomy, and the ability of national institutions to understand technologies that have long-term consequences. Strategy AV21's inclusion of social aspects of nuclear power also showed that future industries must be socially understood, not only technically developed (*Czech Academy of Sciences, 2017*).

Future industries depend on this combination of scientific depth and social interpretation. Industrial transformation is often described through terms such as Industry 4.0, automation, smart manufacturing, robotics, cyber-physical systems, and digital twins. Yet these terms can become empty if they are detached from research infrastructures, skilled people, materials, data, standards, and institutional cooperation. The Academy's role under Strategy AV21 was to provide the knowledge base from which such transformation could become more than imported terminology. It could support Czech industry through research on materials, sensors, computation, diagnostics, energy systems, optics, biotechnology, and data analysis. At the same time, it could help analyse the social consequences of industrial transformation.

The labour dimension of future industries is especially important. Automation and AI may increase productivity, but they also transform skills, employment patterns, professional identities, education, and regional economies. Technological change can create new opportunities while deepening inequalities if institutions do not adapt. Strategy AV21's integration of technical research with social sciences made it possible to study this transformation more responsibly. Future industry is not only about machines and processes. It is also about workers, schools, companies, regions, regulation, and the distribution of benefits. A public-interest academy must ask how technological innovation affects society, not only how society can use technological innovation.

Digitalisation also changed the humanities and cultural sciences. Digital archives, computational linguistics, text mining, image analysis, geospatial tools, digitised collections, and virtual reconstructions transformed the ways in which memory, language, literature, archaeology, and art history could be studied. Strategy AV21's technological agenda therefore did not belong exclusively to natural and technical sciences. It affected the whole Academy. The digital era changed how knowledge is stored, searched, visualised, communicated, and preserved. This made digitalisation a common infrastructure of research across disciplinary boundaries.

The public-interest meaning of digital heritage is particularly significant for the Czech Academy. Historical documents, language corpora, museum collections, archaeological records, manuscripts, photographs, and audio-visual materials are part of cultural memory. Digital technologies can preserve and make them accessible, but they also raise questions of selection, interpretation, authenticity, sustainability, and public use. Strategy AV21's combination of digital and memory-related programmes allowed the Academy to understand technology as a tool of cultural continuity as well as industrial innovation. This broadened the concept of future industries by linking it with future memory.

The technological cluster also required attention to security. Digital infrastructures can be attacked, manipulated, or made dependent on external suppliers. AI systems can produce errors, reproduce bias, or become tools of disinformation. Materials and technologies may depend on fragile supply chains. Space systems can become strategically sensitive. Industrial processes can be vulnerable to cyber disruption. Strategy AV21's technological programmes therefore intersected with national resilience. Research on technologies in the public interest must include reliability, robustness, transparency, safety, and social trust. Otherwise, innovation can create new vulnerabilities at the same time as it solves old problems.

This security dimension was closely connected with the question of sovereignty. For small and medium-sized countries, technological sovereignty does not mean complete self-sufficiency. It means having enough knowledge, expertise, infrastructure, and international networks to make informed choices, participate in high-level collaborations, avoid total dependence, and protect critical capacities. The Czech Academy cannot by itself guarantee technological sovereignty, but it can contribute to it by maintaining advanced research communities. Strategy AV21 made this contribution visible. It showed that public research is part of the strategic capacity of the state and society.

The relationship between the Academy and industry was especially important in this field. Strategy AV21's public-interest orientation did not reject cooperation with business. On the contrary, technologies, materials, diagnostics, AI, and energy systems all require contact with application sectors. However, the Academy's cooperation with industry had to be based on scientific strength and long-term value, not only on immediate commercial demand. The programme format helped organise such cooperation by creating thematic platforms through which companies could recognise relevant Academy expertise. This strengthened the Academy's role as an increasingly important economic factor while preserving its identity as a research institution (*Czech Academy of Sciences, 2017*).

The application laboratories associated with the Strategy AV21 vision were part of this broader effort to deepen contact with the application sphere. They represented an attempt to make the Academy's research capacities more accessible for practical use without reducing the Academy to an applied service organisation. This distinction was important. The public-

interest value of technology transfer depends on the depth of the underlying research and on the ability to maintain long-term scientific independence. Strategy AV21 therefore treated application not as the opposite of basic research, but as one of the pathways through which basic research enters social and economic life.

The Academy's technological programmes also contributed to education and human capital, even though AV ČR is not primarily a teaching institution. Future industries require experts who can work across disciplines, understand advanced instruments, analyse data, communicate with industry, and think ethically about innovation. Strategy AV21 programmes created environments in which early-career researchers could participate in interdisciplinary and application-oriented work. They also supported public communication, workshops, cooperation with universities, and links with doctoral education. In this way, the technological cluster contributed to the formation of a new scientific generation prepared for a more complex innovation system.

The innovation model implied by Strategy AV21 was therefore richer than linear transfer from laboratory to market. It resembled an ecosystem model in which basic research, applied development, public policy, industry, education, social trust, and international cooperation interact. Discoveries may move towards applications, but practical problems may also generate new basic questions. Industrial cooperation may reveal material constraints, while social analysis may reveal adoption barriers. AI may transform scientific method, while scientific method may help make AI more reliable. Strategy AV21's programme-based organisation was well suited to this non-linear innovation ecology (*Mazzucato, 2018*).

This non-linear view also protected the Academy from technological determinism. Technologies do not shape society automatically. They are developed, regulated, adopted, resisted, modified, and interpreted by people and institutions. Digitalisation can strengthen democracy or weaken it, depending on governance and communication. AI can support medicine or spread misinformation. Materials can enable sustainability or deepen resource dependence. Industrial automation can improve productivity or produce exclusion. Strategy AV21's public-interest framework allowed the Academy to ask not only what technologies can do, but under what conditions they should be developed and used.

Ethics therefore belonged inside the technological agenda, not outside it. AI, gene technologies, sensors, surveillance systems, data infrastructures, automation, and advanced materials all raise questions about human dignity, rights, transparency, responsibility, environmental consequences, and unequal access. The Academy's social sciences and humanities were needed to articulate these questions, while natural and technical sciences were needed to understand the technologies themselves. Strategy AV21's interdisciplinary structure made such ethical integration possible. It helped prevent a division in which technologists innovate first and ethicists criticise later. In the stronger model, ethical reflection participates from the beginning in defining responsible innovation.

The Czech Academy's engagement with technologies and future industries also strengthened its public visibility. Citizens may not understand the details of quantum sensing, photonics, composite materials, AI models, or plasma physics, but they encounter the consequences of technological change in work, communication, medicine, energy, transport, and public services. Strategy AV21 made it easier to explain why high-level research in these areas matters. It connected specialised research with recognisable public themes: safer diagnostics, cleaner energy, smarter industry, trustworthy AI, better materials, digital services,

and technological resilience. This communicative function was a central part of the strategy's success.

At the same time, the Academy had to avoid exaggeration. Future-oriented technological programmes are vulnerable to hype. AI, quantum technologies, advanced materials, and digital transformation often attract inflated promises. A public research institution must remain more careful. Its task is to investigate possibilities rigorously, identify limitations, and resist the pressure to turn every emerging field into a miracle solution. Strategy AV21's emphasis on top research helped maintain this discipline. Public interest is not served by technological optimism alone; it is served by reliable knowledge about what technologies can and cannot achieve.

The technological cluster therefore revealed a mature form of academic modernisation. The Academy did not become a corporate innovation centre, but neither did it remain distant from the technological forces shaping society. It entered the field as an institution capable of connecting basic science, advanced instrumentation, digital methods, materials research, industry, public policy, ethics, and communication. This was a demanding role because it required the Academy to speak several languages at once: the language of scientific excellence, the language of industrial relevance, the language of public responsibility, and the language of democratic caution. Strategy AV21 provided the organisational format for this multilingual institutional performance.

Thus, the Strategy AV21 programmes connected with technologies, digitalisation, materials, and future industries demonstrated how the Czech Academy of Sciences redefined innovation as a public-interest mission grounded in fundamental research. These programmes showed that artificial intelligence, sensing, quantum technologies, photonics, diagnostics, advanced materials, space research, nuclear systems, digital infrastructures, and future industrial processes are not isolated technical fields, but elements of a broader transformation of society. The Academy's role was to generate deep knowledge, connect disciplines, support responsible application, cooperate with industry and public institutions, and help society understand the risks and possibilities of technological change. Strategy AV21 therefore placed AV ČR at the intersection of science and future-making. It allowed the Academy to remain faithful to its classical research identity while becoming an active contributor to the technological capacity, resilience, and strategic imagination of the Czech Republic.

4. Culture, Memory, Heritage, and Human Identity

Culture, memory, heritage, and human identity formed one of the most important and intellectually distinctive thematic blocks of Strategy AV21 because they demonstrated that the Academy's public-interest mission could not be reduced to technology, health, energy, or environmental sustainability alone. A society is not sustained only by infrastructures, laboratories, industries, and medical systems. It is also sustained by language, memory, symbolic continuity, historical understanding, artistic forms, ethical reflection, collective narratives, and the ability to interpret its own experience. The Czech Academy of Sciences had inherited a particularly strong responsibility in this field because Czech scholarly institutions had long been connected with the formation of national culture, the codification of language, the interpretation of history, and the preservation of cultural memory. Strategy AV21 did not treat this inheritance as a museum-like residue of the past. It reinterpreted culture, memory,

and identity as contemporary challenges in their own right. In this sense, the humanities within Strategy AV21 were not peripheral to the Academy's modernisation; they were one of the forms through which modernisation acquired historical depth and civic meaning (*Czech Academy of Sciences, 2017*).

The placement of memory and identity within Strategy AV21 was particularly significant because contemporary European societies are increasingly shaped by conflicts over the past. Public debates about democracy, nationhood, socialism, occupation, war, migration, European integration, religion, minorities, gender, and geopolitical belonging are often debates about memory before they are debates about policy. Historical experience becomes politically active when groups use the past to legitimise claims, express grievance, construct identity, or resist change. The Academy's institutes dealing with history, philosophy, archaeology, philology, literature, art history, ethnology, sociology, political science, and archives therefore had a clear public role. They could help society distinguish between memory and myth, evidence and manipulation, interpretation and propaganda. Strategy AV21 gave this role an institutional and strategic frame.

The programme Memory in the Digital Age expressed one of the most visible forms of this transformation. Memory had always depended on material carriers: manuscripts, books, monuments, photographs, archives, museums, libraries, oral testimonies, landscapes, and rituals. The digital age changed the conditions under which memory is produced, stored, accessed, circulated, and contested. Digitisation opened archives and collections to wider audiences, but it also created new problems of selection, authenticity, long-term preservation, metadata, interpretation, algorithmic visibility, and digital inequality. Strategy AV21 recognised that the digital transformation of memory was not only a technical matter. It was a cultural and institutional challenge requiring cooperation between humanities scholars, archivists, librarians, information specialists, computer scientists, conservators, and public communicators (*Czech Academy of Sciences, n.d.*).

Digital humanities played a central role in this context. The creation of shared digital environments, portals, databases, and access points for social-science and humanities resources helped make dispersed scholarly materials more visible and usable. Such work may appear less dramatic than laboratory discovery, but it changes the infrastructure of knowledge. A digitised correspondence network, historical database, manuscript collection, linguistic corpus, or archaeological record can transform the questions researchers ask and the ways the public encounters the past. Strategy AV21 helped legitimise this infrastructural labour as public-interest research. It showed that the preservation and accessibility of sources are not secondary technical services, but conditions for historical understanding and democratic cultural life (*Czech Academy of Sciences, n.d.*).

The digital turn also raised new questions about collective memory itself. Online platforms create rapid cycles of remembrance, forgetting, commemoration, outrage, and reinterpretation. Historical events can reappear suddenly through anniversaries, political conflicts, viral images, or social-media disputes. Digital traces can be studied quantitatively, but they also require critical interpretation because attention is not the same as understanding. Strategy AV21's attention to memory in the digital age therefore connected Czech humanities with broader international discussions about how digital media transform remembrance. The Academy could contribute both through traditional source criticism and through new digital methods. This combination was crucial because the digital age did not

abolish the historian's craft; it expanded and complicated it (*Yasseri, Gildersleve, & David, 2022*).

Cultural heritage became another field in which Strategy AV21 linked historical knowledge with modern technologies. Heritage is often understood as preservation of monuments, objects, texts, buildings, traditions, or landscapes. Yet in contemporary society, heritage also involves scientific analysis, conservation technologies, digital documentation, legal protection, tourism, education, identity politics, and public debate. The Academy's archaeological, art-historical, historical, architectural, chemical, physical, and material-science expertise could therefore converge around heritage as a public-interest field. Strategy AV21 made this convergence easier by allowing projects on historical correspondence, monuments, material culture, archaeological documentation, and digital presentation to appear within a common strategic horizon. Heritage was no longer only about saving the past; it was about making the past intelligible, accessible, and responsibly present.

The programme The Power of Objects: Materiality between Past and Future deepened this line of thought by placing materiality itself at the centre of research. Objects are not passive remnants of human activity. They organise perception, transmit memory, structure social relations, embody power, and connect technologies, economies, rituals, and identities. A coin, manuscript, machine, textile, monument, religious object, tool, archive box, sculpture, scientific instrument, or everyday artefact can reveal relations between material form and social meaning. Strategy AV21's materiality programme aimed to bring together researchers from all three scientific areas of the Academy and from other academic and public institutions. This was highly characteristic of the strategy's logic: material culture became a meeting point for archaeology, history, anthropology, art history, philosophy, conservation science, chemistry, physics, and social theory (*Czech Academy of Sciences, n.d.*).

The focus on materiality also challenged the idea that humanities research is concerned only with texts and ideas. Material objects carry knowledge in ways that cannot be reduced to written records. They preserve traces of technique, trade, labour, bodily practice, social hierarchy, religious life, political authority, and aesthetic value. Scientific methods can identify composition, provenance, age, degradation, pigment, fibre, residue, or manufacturing technique. Humanistic interpretation can explain meaning, use, circulation, symbolism, and historical context. Strategy AV21 enabled these approaches to meet. It showed that cultural heritage is one of the fields where the natural sciences and humanities can cooperate most organically.

The integration of memory and materiality was especially important for understanding Czech and Central European history. The region has been shaped by changing borders, multilingual communities, confessional conflicts, Habsburg rule, national movements, democratic statehood, occupation, expulsion, communism, normalisation, dissent, revolution, and European integration. These transformations left traces in architecture, cemeteries, archives, museums, public monuments, private objects, industrial sites, and urban landscapes. Heritage in such a context is never politically neutral. It raises questions about whose memory is preserved, whose suffering is recognised, whose language appears in public space, and how historical complexity is represented. Strategy AV21 allowed the Academy to address these questions as scholarly and civic problems at the same time.

The programme Anatomy of European Society, History, Tradition, Culture, Identity placed Czech questions within a wider European frame. Europe is not only a political and economic

union; it is also a historical and cultural space made from shared inheritances, conflicts, translations, borders, religions, ideologies, institutions, and memories. The Czech lands have always belonged to this European space in a complex way: geographically central, linguistically and culturally plural, historically connected to both Western and Central European traditions, and repeatedly affected by imperial, national, and ideological projects. Strategy AV21 used the study of European society and identity to show that Czech scholarship could contribute to debates about Europe not as an external object, but from within its historical fabric (*Czech Academy of Sciences, n.d.*).

This European orientation mattered especially after the post-1989 transformation. The Czech Republic's return to Europe was never only a matter of accession to institutions such as the European Union or NATO. It was also a reinterpretation of historical belonging after decades of socialist isolation and ideological distortion. Academic research played an important role in this reinterpretation by studying statehood, democracy, law, religion, culture, political thought, migration, minorities, and transnational connections. Strategy AV21 placed such research in the public-interest framework because European identity was not a settled fact. It remained a question to be historically examined, critically discussed, and culturally negotiated.

The programme Identities in the World of Wars and Crises brought this issue into the present more sharply. Identity becomes especially visible in moments of crisis because people and communities ask who they are, whom they trust, where they belong, and what values they defend. Wars, forced migration, geopolitical instability, economic insecurity, pandemics, climate anxiety, and information conflicts all transform identity debates. In the Czech and European context, Russia's war against Ukraine, the crisis of liberal democracy, polarisation, and global power shifts intensified questions of national, European, regional, religious, linguistic, and political identity. Strategy AV21's identity programme responded to this destabilised environment through interdisciplinary and comparative research. It recognised that identity is not a static possession, but a dynamic process shaped by conflict, memory, institutions, language, and imagination (*Czech Academy of Sciences, n.d.*).

Human identity, in this framework, is not merely a psychological or philosophical abstraction. It is formed through social practices, narratives, bodies, places, objects, media, rituals, education, law, and historical experience. A person understands themselves partly through family memory, national history, language, religion, profession, gender, region, class, political community, and digital environment. Collective identities are similarly layered and contested. Strategy AV21's contribution was to place identity among the major public challenges of the 21st century, alongside energy, health, sustainability, and technology. This was important because identity conflicts can destabilise societies as powerfully as material crises. They influence elections, policy acceptance, migration debates, security perceptions, and trust in institutions.

The humanities were indispensable in this field because they study meaning. Meaning is not an ornament attached to social life after economic, biological, or technological processes have done their work. It shapes action from the beginning. People accept or reject vaccines, climate policies, European integration, migration, heritage protection, digital technologies, and social reforms partly according to the meanings they attach to them. Historical analogies, moral vocabularies, national myths, religious symbols, literary forms, and media narratives all influence behaviour. Strategy AV21 therefore treated cultural and humanistic knowledge as

part of society's capacity for self-understanding. This was a strong answer to narrow definitions of public usefulness.

Social sciences connected these humanistic questions with empirical analysis of contemporary society. Sociology, political science, economics, law, psychology, demography, and communication studies could examine how identities are distributed, mobilised, institutionalised, and transformed. They could analyse public opinion, media systems, inequality, migration, radicalisation, trust, education, civic participation, and policy effects. When combined with historical and philosophical work, social-science research made identity and memory both empirically grounded and interpretatively rich. Strategy AV21's programme-based format encouraged precisely this combination. It avoided the separation between cultural interpretation and social diagnosis.

Language occupied a special place in this cultural block because Czech scientific and cultural history has long been connected with linguistic identity. The national revival, philology, literary studies, lexicography, language culture, and education all treated language as a carrier of collective existence. In the digital age, language again became a strategic object, but in new forms: corpora, machine translation, language technologies, digital communication, media discourse, minority languages, and online misinformation. Strategy AV21's communication and digital-memory orientations allowed linguistic research to remain central to public-interest science. Language is not only a medium of communication; it is a field where power, identity, memory, and technology intersect.

Communication itself linked culture and society in a particularly direct way. Programmes dealing with forms and functions of communication, memory, identity, and digitalisation showed that the public sphere depends on more than the availability of information. It depends on interpretative competence, trust, narrative frames, media infrastructures, and the ability to distinguish argument from manipulation. In a period of disinformation and polarisation, communication research became part of civic security. The Academy's humanities and social sciences could help society understand how meanings circulate, how propaganda works, how expertise is challenged, and how public debate can be damaged or repaired. Strategy AV21 thus placed communication within the same public-interest horizon as health or energy.

The Academy's archival and library institutions were also central to this mission. Archives and libraries are not passive storehouses. They are active infrastructures of scholarly and public memory. They decide how sources are preserved, catalogued, digitised, contextualised, and made accessible. The digital humanities initiatives connected with Strategy AV21 revealed the importance of such work. A society without accessible archives becomes vulnerable to myth, forgetting, and manipulation. A society with well-preserved and critically interpreted sources can debate its past with greater responsibility. Strategy AV21 therefore strengthened the Academy's role as a guardian and interpreter of evidence.

The cultural heritage field also showed how public interest may require patience rather than immediacy. The restoration of a manuscript, the cataloguing of correspondence, the analysis of a monument, the preparation of a critical edition, or the digitisation of an archive may take years. Such work does not always produce rapid headlines. Yet it creates durable cultural value. It allows future researchers, teachers, citizens, artists, and institutions to access knowledge that would otherwise be lost or inaccessible. Strategy AV21's inclusion of such work demonstrated a long-term understanding of public benefit. Not all socially valuable research solves an urgent crisis; some of it preserves the conditions for future understanding.

This long-term logic was especially relevant for memory of the 20th century. The history of occupation, the Holocaust, communist rule, political repression, dissent, exile, normalisation, and the Velvet Revolution remains central to Czech democratic self-understanding. As witnesses pass away, archives, oral histories, scholarly interpretation, public exhibitions, education, and digital resources become even more important. Strategy AV21's memory-oriented programmes could support this transition from living memory to documented and interpreted memory. The Academy's responsibility was not to dictate a single official interpretation, but to provide evidence, context, and critical scholarship. This is a democratic rather than ideological form of memory work.

At the same time, the humanities must avoid becoming servants of national self-congratulation. Critical historical research often complicates comfortable narratives. It reveals ambiguity, exclusion, violence, collaboration, forgetting, and conflict. Strategy AV21's public-interest frame should therefore not be understood as a demand that culture and memory research produce positive identity stories. Public interest may be served by uncomfortable knowledge. A mature society needs scholarship capable of examining its own myths, failures, and contradictions. The Academy's autonomy is essential here because memory research becomes dangerous when subordinated to political convenience.

The study of heritage also raised questions of ownership and participation. Cultural objects and historical narratives often belong simultaneously to local communities, national institutions, minority groups, religious communities, professional experts, and international audiences. Decisions about preservation, interpretation, or display can therefore be contested. Strategy AV21's interdisciplinary and public-facing orientation allowed heritage to be studied not only as expert conservation, but also as a social relationship. This is particularly important in Central Europe, where Jewish, German, Roma, Czech, Slovak, Austrian, Polish, Hungarian, and other histories intersect in material and symbolic space. Heritage research can make such plurality visible rather than allowing national narratives to flatten it.

The connection between culture and technology was another defining element of this block. Digitisation, imaging, 3D documentation, databases, AI-assisted text analysis, geographic information systems, virtual exhibitions, and online educational platforms all changed the study and presentation of heritage. Strategy AV21 allowed the Academy to connect humanities scholarship with technical innovation. This was not only a matter of making old materials available online. It changed research questions themselves. Scholars could trace networks, compare large textual corpora, reconstruct landscapes, visualise correspondence, analyse image collections, and connect dispersed sources across institutions. Digital tools therefore became instruments of cultural analysis, not merely instruments of dissemination.

However, digital heritage also brought risks. Digital access can create the illusion that a source is self-explanatory once it is online. Algorithms can privilege certain materials while hiding others. Digital formats can become obsolete. Metadata choices can shape interpretation. Commercial platforms can influence public memory. Strategy AV21's scholarly framing was important because it insisted that digitisation must be accompanied by critical method. The public interest is not served by access alone; it is served by meaningful, contextualised, sustainable, and ethically responsible access. This is a central principle of digital humanities as a public mission.

The programme on materiality between past and future also invited reflection on the relationship between objects and power. Objects can stabilise hierarchies: crowns, uniforms,

weapons, religious artefacts, legal documents, museum displays, state symbols, architectural forms, and technological devices can all organise social imagination. At the same time, objects can move, be reused, reinterpreted, stolen, restored, displayed, or contested. Their meanings change across contexts. Strategy AV21's attention to materiality therefore connected cultural history with political anthropology, sociology, philosophy, conservation science, and technological studies. It showed that objects are active participants in the making of social worlds.

Human identity in the world of wars and crises also required attention to trauma and displacement. Wars and crises force people to leave homes, change languages, reinterpret loyalties, and rebuild communities. They also force host societies to define solidarity, belonging, and limits of responsibility. The Czech Republic's response to Ukrainian refugees after 2022, as well as its older memories of exile, occupation, and migration, made such questions highly relevant. Strategy AV21's identity programme provided a framework for studying these processes comparatively and historically. It showed that identity research can contribute to public understanding during geopolitical crisis.

Culture and memory also intersected with education. Schools transmit historical narratives, literary canons, civic values, and cultural references. They also become sites where societies debate what should be remembered and how. The Academy's research in history, literature, language, philosophy, sociology, and education can inform textbooks, exhibitions, public lectures, teacher training, and educational resources. Strategy AV21's public-interest orientation made this educational function more visible. A national academy does not educate only through formal teaching; it educates by shaping the quality of public knowledge available to society.

The cultural block of Strategy AV21 also contributed to international visibility. Czech humanities and social sciences could enter European and global conversations about memory studies, heritage preservation, digital humanities, identity, material culture, communication, and crisis. These fields are not provincial. They address questions shared by many societies, even when grounded in local materials. Strategy AV21 allowed Czech research to present its specific historical experience as part of broader comparative scholarship. This strengthened the Academy's role as both a national and international intellectual institution.

The integration of culture, memory, heritage, and identity also helped correct a common misunderstanding of modernisation. Modernisation is often associated with technology, management, economic growth, or institutional efficiency. Strategy AV21 showed that modernisation also requires the renewal of cultural self-understanding. A society that innovates technologically but loses the capacity to interpret its history may become vulnerable to manipulation, cynicism, or identity panic. A society that preserves heritage without adapting to digital and social change may turn memory into nostalgia. The Academy's cultural programmes therefore contributed to a more balanced form of modernisation: one that connects future-oriented research with historical consciousness.

This balance was especially important for the modern image of AV ČR. The Academy could present itself not only as a producer of scientific and technological knowledge, but also as an institution responsible for the intellectual continuity of Czech society. In the public imagination, academies often carry an aura of tradition. Strategy AV21 did not reject this aura, but it gave it active content. Tradition became not a static claim to prestige, but a resource for addressing contemporary crises of memory, identity, communication, and cultural orientation.

The Academy thus appeared as both old and modern: rooted in learned culture, but capable of responding to the digital and geopolitical conditions of the present.

The cultural and identity programmes also deepened the ethical meaning of "public interest". Public interest is not only the interest in living longer, producing more energy, developing better technologies, or protecting ecosystems. It is also the interest in truthful memory, open interpretation, cultural plurality, language, dignity, identity, and the capacity to live with historical complexity. These are less measurable than patents or energy outputs, but they are no less important for democratic society. Strategy AV21's inclusion of these themes therefore broadened the very definition of what a public-interest research institution should be.

Thus, the Strategy AV21 programmes connected with culture, memory, heritage, and human identity revealed the Czech Academy of Sciences as an institution concerned not only with the material and technological future of society, but also with its historical consciousness, symbolic order, and interpretative capacity. They showed that memory in the digital age, European society, materiality, cultural heritage, communication, and identities in wars and crises are not marginal humanities topics, but central public-interest challenges. These programmes connected archives with digital technologies, objects with power, heritage with science, identity with geopolitical crisis, and historical interpretation with democratic resilience. Strategy AV21 thereby gave the humanities and social sciences a strategic place within the modern Academy. It affirmed that a society capable of innovation must also be capable of memory, self-criticism, cultural continuity, and responsible interpretation of its own past and present.

Strategy AV21 and the Modern Image of the Academy

1. Public Communication and Visibility of Science

Public communication became one of the most important dimensions of Strategy AV21 because the strategy was designed not only to reorganise research, but also to change the way the Czech Academy of Sciences appeared in public life. The Academy could no longer rely on the assumption that society would automatically understand why specialised research institutes matter. A modern public research institution must show how its work relates to the lives, risks, memories, technologies, landscapes, health, and future choices of citizens. Strategy AV21 therefore created a new language of visibility. It allowed the Academy to present research not as a scattered collection of institute outputs, but as a coordinated response to major public-interest problems. This was a major shift in the Academy's public image. Visibility became not an optional supplement to research, but part of the institutional meaning of research itself (*Czech Academy of Sciences, 2017*).

The motto "Top research in the public interest" already contained a communicative ambition. It was short enough to be publicly recognisable, but broad enough to include the Academy's full disciplinary range. It told citizens, policymakers, journalists, teachers, students, and partners that the Academy's work was both scientifically serious and socially relevant. The phrase also helped the Academy avoid two weaker forms of public presentation. It did not

reduce science to entertainment or immediate usefulness, but it also did not hide behind the language of specialised excellence alone. It connected excellence with responsibility. In this sense, Strategy AV21 functioned as a bridge between internal scientific quality and external public intelligibility.

Public communication was especially necessary because the Academy's institutional structure is difficult for non-specialists to understand. AV ČR consists of many institutes with different names, disciplines, histories, locations, and research cultures. For an ordinary citizen, this structure may appear remote or opaque. Strategy AV21 simplified the public map of the Academy without simplifying the research itself. Instead of asking the public to understand every institute separately, it organised communication around themes such as energy, health, biodiversity, artificial intelligence, infectious diseases, memory, society, materials, and sustainability. These themes are closer to the public's experience of contemporary life. They make the Academy visible through problems that citizens can recognise.

This does not mean that Strategy AV21 turned science into public relations. A serious academy cannot communicate by replacing knowledge with slogans. Its credibility depends on the fact that public narratives are anchored in genuine research capacities, peer-reviewed work, long-term expertise, and institutional depth. Public communication under Strategy AV21 therefore had to maintain a difficult balance. It needed to be clear without being simplistic, engaging without being sensationalist, and publicly relevant without becoming politically subordinate. The Academy's task was not to market itself as a brand detached from substance. It was to explain why its research substance matters.

The need for such communication reflected a wider transformation in the relationship between science and society. During much of the 20th century, scientific authority often rested on distance: scientists produced knowledge, and the public was expected to trust experts. By the late 20th and early 21st centuries, this model had become insufficient. Scholars of science communication increasingly emphasised dialogue, public engagement, participation, trust, and the social contexts in which knowledge is received (*Burns, O'Connor, & Stocklmayer, 2003*; *Bucchi & Trench, 2014*; *Stilgoe, Lock, & Wilsdon, 2014*). Strategy AV21 should be understood within this broader shift. It made the Academy's public role more dialogic, more thematic, and more visibly connected with societal concerns.

The Academy's history gave this communicative turn particular significance. Czech science had long possessed a public dimension, especially during periods when scholarship was connected with language, culture, national identity, and modernisation. Under socialism, however, public communication of science was often entangled with ideological presentation, state planning, and official optimism. After 1989, the Academy had to restore scientific autonomy and credibility, which naturally encouraged a return to international standards and disciplinary seriousness. Strategy AV21 represented a later phase in which public communication could be rebuilt on democratic foundations. It did not ask science to serve propaganda; it asked science to speak responsibly to society.

This distinction is crucial. Public communication in a democratic academy is not the same as state-directed popularisation. It is not a one-way transmission of approved conclusions. It is a process through which researchers explain methods, uncertainty, evidence, limitations, and relevance. It also requires awareness that citizens may have legitimate concerns, local knowledge, ethical questions, and distrust shaped by past experience. Strategy AV21

strengthened this democratic model by framing the Academy's communication around public-interest programmes rather than institutional self-praise. The public could see not only that the Academy existed, but what kinds of problems it was trying to understand.

The public events organised by the Academy formed one important part of this visibility. The Week of the Czech Academy of Sciences, Science Fair, Brain Awareness Week, exhibitions, lectures, workshops, workplace visits, science cafés, documentaries, and laboratory open days all helped bring research into public space. Such events matter because science is often invisible in ordinary life. Laboratories, archives, observatories, field stations, and computational centres are usually closed spaces, not because they are secret, but because they require specialised work. Public events temporarily open these spaces symbolically and sometimes physically. They allow citizens to encounter research as a living activity performed by real people.

The Week of the Czech Academy of Sciences had special institutional meaning in this regard. It continued and transformed earlier traditions of science festivals and became a large public celebration of the Academy's work across disciplines. Its structure, with lectures, exhibitions, workplace events, documentaries, workshops, science cafés, and activities throughout the country, corresponded well to the Strategy AV21 idea of research in the public interest. It did not present one discipline as the face of science. It showed science in all its variety, from laboratories to humanities, from young visitors to adult audiences, from Prague to regional centres. This helped communicate the Academy as a national institution rather than a closed metropolitan elite (*Czech Academy of Sciences, n.d.*).

The regional dimension of public communication was particularly important. A national academy must not appear as an institution located only in Prague and speaking only to policymakers or university audiences. Many Strategy AV21 themes are deeply regional: drought, forests, biodiversity, local heritage, industrial transformation, public health, energy infrastructure, ageing communities, and regional inequalities. Public events held in different cities and connected with individual institutes allowed the Academy to be visible beyond the capital. This strengthened its role as a national knowledge institution. It also helped citizens see that research is relevant to places where they live, not only to abstract national policy.

Science fairs and open days also contributed to the visibility of scientific practice. Public communication is strongest when it does not merely report results, but shows how knowledge is made. A child looking through a microscope, a student entering a laboratory, a visitor seeing experimental instruments, or an audience discussing a historical source can experience science as process rather than as authority. This experience matters for trust. People are more likely to understand the value of research when they see its methods, patience, uncertainty, and human labour. Strategy AV21's public-interest orientation gained credibility when connected with such direct encounters.

Student internships and educational initiatives strengthened this connection further. The Academy is not a university in the ordinary sense, but it participates in education through doctoral training, university cooperation, public lectures, school programmes, internships, mentoring, and open science activities. Public communication therefore also becomes a form of scientific reproduction. It helps young people imagine themselves as future researchers, technicians, teachers, physicians, historians, environmental experts, or data scientists. Strategy AV21's thematic programmes provided attractive entry points for such imagination.

Energy, AI, health, biodiversity, memory, and space are themes that can draw students into science because they feel connected to the future.

Citizen science added another important layer to the public visibility of the Academy. In citizen science, the public is not only an audience but, in certain forms, a participant in the production or collection of knowledge. This does not abolish professional expertise, but it can expand observation, strengthen public understanding, and create a sense of shared responsibility. Environmental monitoring, biodiversity observation, language documentation, historical memory projects, and public data collection are all fields where citizens may contribute meaningfully under scientific guidance. Strategy AV21's public-interest logic was compatible with such practices because it emphasised the relationship between research and society. Citizen involvement can make science more visible, but also more socially grounded (*Irwin, 1995*).

The Academy's media communication also became more important under the Strategy AV21 framework. Press releases, expert contacts, interviews, periodicals, online articles, podcasts, video series, social media, and visual materials all help translate research into public narratives. In the digital age, silence is not neutrality. If serious research institutions do not communicate, public space may be filled by speculation, misinformation, commercial simplification, or ideological distortion. The Academy's public communication therefore has a protective function. It helps maintain the presence of evidence-based knowledge in public debate.

The Strategy AV21 website and related digital presentation tools became part of this communicative infrastructure. A programme-based strategy needs a clear digital interface because citizens, journalists, policymakers, teachers, and partners must be able to find information about programmes, coordinators, topics, outputs, and news. The Academy's recent emphasis on more intensive communication, clearer presentation of findings, and modernisation of the Strategy AV21 web environment reflected this need. A public-interest programme cannot remain hidden in internal documents. Its legitimacy grows when its activities, results, and forms of cooperation are accessible and understandable (*Czech Academy of Sciences, 2026*).

Digital communication also changes the temporality of scientific visibility. Traditional scholarly publication is slow, specialised, and cumulative. Public digital communication is faster, more fragmented, and more exposed to immediate reaction. The Academy had to learn to operate in both temporalities at once. It must protect the slow time of research while participating in the fast time of public debate. Strategy AV21 helped by giving the Academy stable thematic frames that could be used repeatedly in communication. Energy, biodiversity, infectious diseases, AI, memory, and public policy are not one-day topics; they provide durable contexts for explaining new results.

The public communication of uncertainty is one of the most difficult responsibilities of a research institution. Citizens often expect science to provide clear answers, while serious research often produces probabilities, models, scenarios, competing interpretations, or provisional conclusions. This is especially visible in climate science, pandemic response, energy policy, biodiversity loss, AI ethics, and public policy evaluation. Strategy AV21's public-interest mission required the Academy to explain uncertainty without undermining trust. The point was not to pretend that science knows everything. It was to show why scientifically disciplined uncertainty is more reliable than unsupported certainty.

The Academy's communication of health and crisis-related research made this especially clear. During public health emergencies, citizens need timely information, but they also need explanations of changing evidence. Recommendations may change because knowledge improves, not because science has failed. A research institution that communicates carefully can help society understand this process. Strategy AV21's programmes on infectious diseases, resilience, public policy, and communication created a wider context for such work. They showed that public communication is itself a component of social resilience.

The same applies to climate and environmental communication. Climate change, biodiversity loss, drought, forests, water, and sustainable food systems are complex and sometimes politically divisive issues. Public communication must make long-term processes visible without turning them into catastrophe rhetoric that paralyses action. It must explain both risks and possibilities. The Academy's environmental and sustainability programmes provided scientific substance for this communication. Strategy AV21 allowed environmental research to speak in a public language grounded in evidence, not activism alone.

Technology communication presented another challenge. Artificial intelligence, genetic technologies, nuclear energy, quantum technologies, digital platforms, and advanced materials often provoke both fascination and fear. Public communication must avoid technological hype, but also avoid unproductive alarmism. Strategy AV21's public-interest frame allowed the Academy to present technologies as objects of research, tools of innovation, sources of risk, and subjects of ethical reflection. This balanced language is important because democratic societies need technological literacy. Citizens should be able to discuss technologies not only as consumers, but as members of a public affected by them.

The humanities and social sciences played a central role in the Academy's public visibility because they are often closer to public language, memory, and identity. Research on history, culture, communication, public policy, language, society, and identity can enter public debate directly. Yet this visibility also exposes these fields to political controversy. Historical interpretation, memory of communism, national identity, migration, religion, gender, and European integration are not neutral public topics. Strategy AV21 gave humanities and social sciences a strategic framework that protected their public role as research-based, not merely opinion-based. It helped show that culture and memory require evidence, method, and scholarly responsibility.

Public communication also changed the relationship between the Academy and journalism. Journalists need reliable experts, clear explanations, and access to research findings. Scientists need journalists capable of presenting complexity without distortion. The Academy's media infrastructure, expert databases, press releases, and public-facing articles all contributed to this relationship. Strategy AV21 strengthened it by making research themes easier to identify. A journalist working on energy, infectious disease, biodiversity, AI, public policy, or memory could more easily recognise the Academy as a source of expertise.

This visibility had implications for political legitimacy as well. Publicly funded research institutions must explain themselves to taxpayers, government, parliament, ministries, and civic society. Strategy AV21 made the Academy's contribution more visible by connecting research with public problems and by presenting outputs in an organised way. However, visibility must not become dependence on political approval. The Academy's credibility depends on its capacity to speak independently, including when its findings are inconvenient. Public communication under Strategy AV21 therefore had to support autonomy, not replace it.

The Academy's public voice is valuable because it is grounded in research rather than political convenience.

The public communication of Strategy AV21 also contributed to the Academy's identity as a whole. Institutes often communicate their own achievements, but the Academy needed a shared public narrative. Strategy AV21 provided that narrative. It allowed the Academy to say: these different institutes, disciplines, and programmes belong to one institution because they contribute together to the public interest. This was essential for institutional coherence. A decentralised academy becomes publicly stronger when it can present diversity as organised capacity rather than as fragmentation.

The visual dimension of scientific communication also became more important. Images from laboratories, fieldwork, microscopy, space observation, historical collections, environmental research, and scientific instruments can make research emotionally and intellectually accessible. Contests, exhibitions, videos, and online galleries can reveal the aesthetic dimension of science without trivialising it. The Academy's public communication increasingly used such visual formats to show that science is not only equations, articles, and reports, but also observation, craft, material practice, and wonder. Strategy AV21's public-interest orientation gave such visibility a deeper purpose. Images were not only attractive; they helped citizens encounter the world of research.

At the same time, communication must avoid the danger of reducing science to spectacle. Popularisation can become superficial if it values surprise more than understanding. A serious academy must use attractive formats while preserving intellectual content. This is especially important when communicating difficult topics such as infectious diseases, nuclear energy, biodiversity loss, identity conflicts, or AI risks. Strategy AV21's strength was that its public communication could draw on substantial programmes rather than isolated events. The public-facing message had research depth behind it.

The Academy's public visibility also benefited from the fact that Strategy AV21 connected research with practical outputs and policy relevance. Policy briefs, public debates, expert platforms, cooperation with public administration, and Science4Policy-type activities made research visible to decision-makers as well as citizens. This widened the audience of communication. Public communication does not mean only communication with the general public. It also includes communication with policymakers, teachers, municipalities, hospitals, companies, cultural institutions, and professional communities. Strategy AV21's programme architecture made such differentiated communication possible (*Czech Academy of Sciences, 2026*).

The relation between communication and knowledge transfer was therefore close. Knowledge transfer is often associated with technology transfer, patents, licensing, or industrial cooperation. Strategy AV21 broadened the meaning of transfer. Knowledge can be transferred through policy advice, public explanation, educational resources, databases, exhibitions, citizen-science tools, expert consultations, media work, and cultural interpretation. Public communication is one of the forms through which scientific knowledge enters society. It does not replace technology transfer, but it complements and expands it.

Public communication also has an international dimension. The Academy presents Czech research to foreign partners, European institutions, international scholars, and global audiences. English-language websites, reports, press materials, and international events help AV ČR appear as a modern European research institution. Strategy AV21's themes are

internationally recognisable: AI, biodiversity, infectious diseases, sustainability, energy, memory, identity, and public policy. This makes the Academy's work more visible beyond national borders. The strategy therefore supports both domestic legitimacy and international reputation.

The Academy's communication practices also reflect the changing expectations of openness in science. Open access, open data, public engagement, research integrity, and transparency have become central concerns in contemporary research culture. Public visibility is not only about explaining results after publication. It is also about making research processes, infrastructures, collaborations, and responsibilities more transparent where possible. Strategy AV21 contributed to this culture by presenting programmes, coordinators, aims, and outputs in a public form. It made the Academy's strategic priorities more visible and therefore more open to public understanding.

There is, however, a tension between visibility and the slow, specialised nature of research. Not every valuable scientific activity can be easily communicated. Some work is technical, preliminary, negative, incremental, or intelligible only after long preparation. An academy must protect such work from the demand for constant public performance. Strategy AV21 did not solve this tension completely, but it offered a reasonable compromise. It created thematic frames through which specialised work could become visible at the appropriate level of generality, without forcing every result into immediate public language.

The public communication function of Strategy AV21 also helped strengthen trust in the Academy as an institution. Trust is not built only by claiming authority. It is built through repeated, credible, transparent, and useful encounters. When citizens see scientists explaining drought, pandemics, AI, heritage, memory, health, or biodiversity in a responsible way, the institution becomes more familiar. Familiarity does not guarantee agreement, but it reduces distance. Strategy AV21 made such encounters more systematic by linking communication to programmes rather than leaving it to isolated individual enthusiasm.

This is especially important in a period when expert institutions face suspicion, misinformation, and political polarisation. Science is sometimes portrayed as elitist, detached, ideological, or hostile to ordinary experience. A public-interest academy must answer not by abandoning expertise, but by making expertise more accountable and understandable. Strategy AV21 helped the Academy show that researchers are not separate from society; they work on problems that affect society. At the same time, it showed that social relevance does not require the sacrifice of scientific standards. This dual message was central to the Academy's modern visibility.

The public image of the Academy therefore changed from that of a mainly internal research corporation to that of an institution visibly engaged with national and global challenges. This did not mean that the Academy became less scholarly. It meant that scholarship acquired a clearer public face. Strategy AV21 enabled citizens to recognise AV ČR through the problems it addressed, the programmes it organised, and the events and communication channels through which it presented its work. Public communication became a form of institutional self-definition. The Academy was not only producing knowledge; it was showing why knowledge matters.

Thus, public communication and the visibility of science became essential to Strategy AV21 because the Academy's public-interest mission could not remain hidden inside institutes, reports, laboratories, archives, and specialist journals. Strategy AV21 gave AV ČR a

communicative architecture: thematic programmes, public events, digital platforms, media channels, educational activities, visual formats, citizen engagement, and policy-oriented outputs. Through this architecture, the Academy made its research more intelligible to citizens, more accessible to policymakers, more attractive to students, and more recognisable internationally. The strategy did not reduce science to popularisation; it connected communication with excellence, responsibility, autonomy, and public trust. In doing so, it helped transform the Czech Academy of Sciences into a more visible national knowledge institution capable of speaking to society while remaining faithful to the depth and seriousness of academic research.

2. Expertise for State, Society, and Citizens

Expertise became one of the central forms through which Strategy AV21 reshaped the modern public role of the Czech Academy of Sciences. The Academy had always possessed expert capacity, because its institutes concentrated specialised knowledge, long-term data, archives, laboratories, collections, instruments, and professional communities. Yet Strategy AV21 made this expert capacity more visible, more coordinated, and more explicitly connected with public-interest problems. Expertise was no longer only something offered occasionally when a ministry, court, school, museum, hospital, company, or journalist requested it. It became part of the Academy's strategic self-understanding. The Academy presented itself as an institution able to help the state, society, and citizens understand complex issues that cannot be solved through political will, administrative routine, or public opinion alone. In this sense, Strategy AV21 transformed expertise from a dispersed institutional asset into one of the defining features of the Academy's civic mission (*Czech Academy of Sciences, 2017*).

The phrase "expertise for the state" must be understood carefully. It does not mean that the Academy became an instrument of the government or a technical department of public administration. The history of the Czechoslovak Academy under socialism had shown the danger of subordinating scientific knowledge to political command. After 1989, the Academy rebuilt its legitimacy through autonomy, international standards, evaluation, and intellectual freedom. Strategy AV21 did not reverse this post-socialist recovery. Rather, it asked how an autonomous academy could provide knowledge useful to public institutions without losing its independence. This distinction is essential: democratic expertise serves the state best when it is not captured by the state.

The state needs expertise because modern governance operates under conditions of complexity. Energy transition, infectious diseases, climate adaptation, cyber security, public health, social inequality, education, demographic ageing, biodiversity, artificial intelligence, migration, heritage protection, and economic resilience cannot be governed responsibly without knowledge. Ministries and public agencies have administrative authority, but they do not always possess the long-term scientific capacities required to understand these problems in depth. The Academy can supply evidence, scenarios, models, historical context, diagnostic tools, risk assessments, and conceptual clarification. Strategy AV21 organised such capacities into programmes that made the Academy's knowledge easier for public institutions to recognise and use. It thereby strengthened the knowledge base of the Czech state without dissolving the boundary between science and politics.

This boundary is important because expertise does not decide policy by itself. Scientific knowledge can show what is likely, what is uncertain, what risks are present, what options exist, and what consequences may follow. It cannot determine values, allocate burdens, or replace democratic decision-making. Strategy AV21 therefore positioned the Academy not as a technocratic authority above society, but as a knowledge institution that improves the quality of public reasoning. The Academy's role was to make decisions better informed, not to remove them from political accountability. This model corresponds to a mature democratic understanding of expertise, where science contributes to public judgement but does not monopolise it (*Jasanoff, 2004*; *Pielke, 2007*).

The Academy's expertise for the state was particularly visible in areas where decisions have long-term consequences. Energy policy, for example, requires knowledge about nuclear safety, renewable integration, storage technologies, materials, grid stability, emissions, geophysical risks, public acceptance, and industrial capacity. A government may decide the direction of energy policy, but the quality of that decision depends on the available knowledge. Strategy AV21's energy-related programmes gave the Academy a platform for providing such knowledge in a more integrated way. They allowed researchers from physics, chemistry, materials science, environmental research, economics, and social sciences to contribute to a field where technical, economic, environmental, and geopolitical factors interact. This is exactly the type of policy problem for which a national academy is needed.

Environmental and climate expertise provides another example. Public authorities must respond to drought, floods, forest degradation, biodiversity loss, soil erosion, water management, landscape restoration, and climate adaptation. These questions require long-term monitoring, field research, models, ecological interpretation, legal analysis, and public communication. The Academy's institutes can contribute not only individual findings, but accumulated knowledge about Czech landscapes and ecosystems. Strategy AV21 placed such knowledge in a public-interest frame and helped connect it with government, municipalities, and civic society. The result was not simply environmental advocacy, but expert capacity grounded in research.

Public health created an even more direct relation between expertise and public life. The COVID-19 pandemic showed that governments need scientific advice, but also that scientific advice must be communicated clearly, interpreted cautiously, and integrated with social realities. Virology, immunology, diagnostics, modelling, epidemiology, law, psychology, communication studies, and sociology all became relevant. The Academy's expertise was valuable because it was not limited to one dimension of the crisis. Strategy AV21's programmes on infectious diseases, resilience, public policy, and communication corresponded to the multidimensional character of health crises. They showed that expertise for the state must be interdisciplinary if the problem itself is interdisciplinary.

The Academy's expertise for society is broader than expertise for the state. Society includes schools, universities, hospitals, municipalities, businesses, cultural institutions, non-governmental organisations, professional communities, media, and citizens' groups. These actors often need knowledge but do not always access it through formal governmental channels. Strategy AV21's public-interest orientation opened the Academy more clearly to these wider social actors. It presented Academy research as a resource for many communities, not only for ministries. This was an important democratisation of expertise. Knowledge remained specialised, but its public pathways became more diverse.

For municipalities and regions, Academy expertise may be especially valuable because many contemporary problems are experienced locally. A national ministry may define a strategy, but drought affects particular landscapes, ageing affects particular communities, heritage belongs to particular places, industrial transformation affects particular regions, and public health services operate in particular local systems. The Academy's research can help local actors understand their situation within broader national and global processes. Strategy AV21's programmes on landscape, food, society, public policy, resilience, memory, and cities offered themes through which regional knowledge could be connected with national expertise. This helped overcome the distance between central scientific institutions and local public needs.

The relationship with industry and business also belongs to this wider social expertise. Companies need knowledge about materials, diagnostics, optics, biotechnology, artificial intelligence, energy systems, sensors, environmental technologies, food production, and circular economy. Strategy AV21 did not define cooperation with industry as the only or highest form of public interest, but it recognised industry as one of the places where research can become socially and economically consequential. The Academy's expertise could support innovation, testing, prototypes, methods, and strategic technological capacity. At the same time, the Academy had to preserve a distinction between public-interest expertise and private consultancy. Its cooperation with business was most legitimate when it rested on high-quality research and produced wider benefits beyond immediate commercial advantage.

Cultural institutions also relied on the Academy's expertise in distinctive ways. Museums, archives, libraries, galleries, heritage offices, schools, and media organisations often need historical, linguistic, archaeological, philosophical, ethnological, literary, and conservation knowledge. Strategy AV21's programmes on memory, materiality, European society, communication, and identity strengthened the public role of the humanities in such cooperation. Expertise in this field is not only about identifying facts. It involves interpretation, context, preservation, source criticism, and sensitivity to contested memories. The Academy thus served society not only by producing technologies or health research, but also by protecting the intellectual conditions of cultural continuity.

Expertise for citizens is perhaps the most difficult and most important dimension. Citizens rarely approach the Academy as a ministry or company would. They encounter its expertise through public lectures, media appearances, exhibitions, websites, festivals, educational materials, interviews, expert statements, popular books, podcasts, documentaries, and sometimes through direct participation in citizen science. Strategy AV21 helped make such encounters more meaningful by connecting them with recognisable themes: health, environment, food, AI, memory, energy, biodiversity, society, and security. Citizens do not need to know the full institutional structure of AV ČR to understand that Academy research concerns their lives. The strategy therefore made expertise more publicly legible.

This public legibility is essential in democratic societies because citizens are asked to make choices in conditions of technical and social complexity. They vote, discuss policies, choose health behaviours, respond to crises, interpret media, support or resist technologies, and form opinions about climate, migration, energy, education, and public spending. They cannot all become specialists, but they need access to reliable explanations. The Academy can contribute to civic competence by translating specialised knowledge into responsible public language. Strategy AV21 gave this translation an institutional foundation. It helped the Academy become not only a producer of knowledge, but a mediator of knowledge.

However, expertise for citizens must not become paternalistic. The Academy cannot simply speak from above and assume that citizens should accept expert conclusions without question. Public trust is built through transparency, clarity, humility, and repeated engagement. Citizens may possess local knowledge, moral concerns, practical experience, and legitimate doubts. Strategy AV21's public-interest model is strongest when it recognises this relationship as dialogic. Expert knowledge remains essential, but it enters society more effectively when it listens as well as informs. This is especially important in fields such as vaccination, climate adaptation, energy infrastructure, heritage disputes, and AI regulation.

The production of expertise also depends on the Academy's capacity for long-term research. Public institutions often need quick answers, but reliable expertise is rarely created quickly. It is built over years through data collection, laboratory work, field observation, archival research, theoretical development, evaluation, peer review, and international cooperation. Strategy AV21 made this connection clearer by showing how long-term basic research supports public usefulness. When a crisis arrives, the value of earlier investment becomes visible. A society that neglects long-term research may discover too late that it lacks the expertise it needs. The Academy's role is therefore preventive as well as responsive.

This preventive dimension is particularly important in risk governance. Many public dangers develop slowly before they become visible: climate change, biodiversity loss, antimicrobial resistance, infrastructure vulnerability, disinformation, demographic ageing, soil degradation, and social distrust. Expertise for state, society, and citizens must therefore include early warning, scenario building, monitoring, and the interpretation of weak signals. Strategy AV21's programmes were designed around contemporary challenges precisely because such challenges require anticipatory knowledge. The Academy's public value lies partly in helping society think before crisis, not only during crisis (*Renn, 2008*).

The Academy's expert role also involves the clarification of uncertainty. Policymakers and citizens often want certainty, but scientific expertise frequently provides degrees of probability, ranges of scenarios, competing models, and conditional conclusions. This is not a weakness of science; it is part of its honesty. Strategy AV21's public-interest mission required the Academy to communicate uncertainty without undermining confidence in evidence. In climate, health, AI, energy, and public policy, responsible expertise must explain what is known, what is not known, and what decisions must still be made under uncertainty. This form of communication is more difficult than simply presenting conclusions, but it is more trustworthy.

The relationship between expertise and public policy is particularly complex. Evidence-informed policy is not the same as evidence-determined policy. Research can inform policy, but policy also involves values, resources, power, law, electoral accountability, and public acceptance. Strategy AV21 allowed the Academy to contribute to policy without pretending that science alone governs society. This is important because unrealistic expectations of expertise can create disappointment when scientific advice does not produce simple solutions. The Academy's strength lies in making policy more intelligent, not in making politics disappear (*Cairney, 2016*; *Parkhurst, 2017*).

The programme Society in Motion and Public Policy embodied this role clearly. It connected behavioural sciences, economics, sociology, psychology, law, ethics, and other approaches in order to analyse a changing society and its policy needs. This was a significant step because it treated public policy itself as a research field rather than merely as an area where external

authorities apply academic results. The Academy could study how policies work, how citizens respond, how incentives operate, how inequalities are reproduced, and how institutions can be improved. Strategy AV21 therefore placed social-science expertise at the centre of the Academy's public mission.

The programme Resilient Society for 21st Century similarly showed that expertise must address the capacity of society to withstand and transform through crises. Resilience cannot be ordered administratively. It depends on trust, institutions, infrastructure, memory, communication, solidarity, health systems, education, economic capacity, and psychological adaptation. The Academy's expertise can help identify crisis potentials and conditions of effective transformation. This is expertise for the state because it informs preparedness; expertise for society because it supports institutions and communities; and expertise for citizens because it helps people understand uncertainty. Strategy AV21's value lay in connecting these levels.

The Academy's expertise also has an ethical dimension. Public-interest research must ask not only what can be done, but what should be done and under what conditions. Gene therapy, AI, surveillance, data sharing, energy choices, conservation policy, pandemic measures, and heritage interpretation all raise ethical questions. The Academy's natural and technical sciences can reveal possibilities, while social sciences and humanities can help examine consequences, values, rights, and responsibilities. Strategy AV21's interdisciplinary architecture made such ethical expertise more feasible. It allowed ethical reflection to accompany scientific and technological development rather than appear only as a later commentary.

This ethical dimension is especially important when expertise affects citizens directly. Public health measures may restrict behaviour; digital technologies may process personal data; environmental policies may affect livelihoods; energy choices may change prices and landscapes; heritage decisions may influence identity and memory. Citizens therefore have a legitimate interest in how expert knowledge is produced and used. Strategy AV21's public-interest orientation implied that expertise must be accountable, transparent, and sensitive to consequences. The Academy's independence does not free it from responsibility. It makes responsibility more serious.

Expertise also requires credibility, and credibility depends on quality control. The Academy's post-1993 reforms, institute evaluations, international peer review, and emphasis on research excellence formed the background against which Strategy AV21 could claim authority. Without scientific quality, public-interest language would be hollow. Strategy AV21 did not replace excellence with relevance; it connected them. This connection was vital because weak expertise can be more dangerous than no expertise at all. In public policy, health, energy, environment, and technology, poorly grounded advice can lead to costly or harmful decisions. The Academy's expert role therefore depends on the continued strength of its research culture.

The international dimension of expertise is also important. Contemporary problems cross borders, and national expertise is strengthened by participation in global knowledge networks. Climate science, infectious disease research, AI, energy technologies, biodiversity, public policy, and cultural heritage all require international cooperation. Strategy AV21 allowed Czech expertise to be connected with European and global agendas while remaining attentive to national needs. The Academy could translate international knowledge into Czech conditions

and present Czech research to international partners. This two-way movement is one of the functions of a modern national academy.

The European Research Area and European policy frameworks strengthened the demand for this kind of expertise. European programmes increasingly emphasised societal challenges, missions, responsible research and innovation, sustainability, digital transformation, health, security, and policy impact. The Academy's Strategy AV21 placed AV ČR in a good position to participate in these frameworks because it had already organised its public-interest agenda around comparable themes. This did not mean that the Academy merely adopted European vocabulary. It used European language to express its own institutional capacities and national responsibilities (*European Commission, 2021*).

Expertise for citizens also intersects with education. The Academy does not primarily educate through undergraduate teaching, but it shapes public knowledge through doctoral training, cooperation with universities, public lectures, exhibitions, school programmes, science festivals, media, and digital resources. Citizens need scientific literacy, historical literacy, media literacy, and civic literacy in order to navigate complex problems. Strategy AV21's thematic programmes provided content for such educational work. They helped turn Academy research into resources that could inform teachers, students, journalists, and lifelong learners. In this way, expertise became part of the broader intellectual formation of society.

The Academy's expertise is also visible in moments of public controversy. Climate change, nuclear energy, vaccination, gene technologies, AI, migration, historical memory, and European integration can all become politically polarised. In such situations, the Academy must communicate carefully. It should not pretend that scientific evidence eliminates all disagreement, but it should defend the distinction between evidence-based argument and manipulation. Strategy AV21 strengthened the Academy's ability to enter controversies with a structured public mission. Its programmes showed that the Academy was not reacting randomly to public debates, but working systematically on the problems behind them.

This capacity is especially important in the digital age, where misinformation can spread faster than expert correction. Citizens face contradictory claims, emotional narratives, manipulated images, conspiracy theories, pseudo-science, and polarised media environments. The Academy's expertise must therefore include not only knowledge of specific topics, but also communication about how knowledge is produced and evaluated. Strategy AV21's public communication and society-oriented programmes helped make this broader epistemic function visible. The Academy served citizens not only by giving answers, but by strengthening their ability to recognise better and worse forms of knowledge.

The expertise provided by the Academy also has a temporal depth that distinguishes it from consultancy. Consultants often answer a defined client problem within a short time horizon. A national academy preserves knowledge across generations. Its archives, observatories, long-term experiments, collections, data sets, scholarly editions, and theoretical traditions allow it to interpret change historically. This long memory is essential for public expertise. Without it, society risks treating every crisis as unprecedented and every policy fashion as new. Strategy AV21 made the Academy's long-term perspective more visible in relation to contemporary challenges.

The humanities are particularly important in preserving this temporal depth. Historical expertise helps policymakers and citizens understand institutional memory, previous crises, cultural identities, legal traditions, and the consequences of earlier decisions. Philology and

linguistics clarify language, communication, and interpretation. Philosophy helps examine concepts, values, and ethical limits. Archaeology and art history connect material heritage with social memory. Strategy AV21 placed these forms of expertise within the same public-interest frame as biomedical or technological knowledge. This prevented the Academy's expert role from becoming narrowly technical.

The Academy's social sciences, in turn, help translate public problems into researchable questions. They examine how citizens behave, how institutions function, how policies produce effects, how inequalities emerge, how trust is built or damaged, and how societies respond to change. This type of expertise is indispensable for state and society because many policy failures are not caused by lack of technology, but by misunderstanding human behaviour and institutional context. Strategy AV21's social programmes therefore strengthened the Academy's capacity to provide realistic advice. They showed that public-interest expertise must include knowledge of society itself.

Natural and technical sciences provide the empirical and technological foundations of many expert interventions. They make it possible to detect diseases, model climate, analyse materials, develop sensors, monitor ecosystems, improve energy systems, and understand biological mechanisms. But Strategy AV21's integrative logic ensured that such knowledge was connected with social and human dimensions. This is where the Academy's expert role became especially strong. It could offer not only facts from one field, but a structured interpretation of complex problems across fields. This is more valuable for state, society, and citizens than isolated expert fragments.

The Academy's cooperation with public administration also required institutional channels. Expert reports, advisory groups, policy consultations, public hearings, research programmes, Science4Policy initiatives, and cooperation with ministries or regional bodies all help translate research into public decision-making. Strategy AV21 provided thematic and organisational structures that made such channels easier to develop. A policymaker seeking knowledge on biodiversity, AI, public policy, energy, infectious diseases, or resilience could identify programmes and coordinators. This reduced the opacity of the Academy's internal structure and made expertise more accessible.

At the same time, institutionalised expertise must avoid the danger of routine. If expert advice becomes too close to administration, it may lose critical distance. If it remains too distant, it may lose practical influence. Strategy AV21's programme-based model allowed the Academy to stay between these extremes. It created stable channels of engagement while preserving the Academy's own research logic. This intermediate position is difficult but essential. A public academy must be close enough to society to matter and independent enough to be trusted.

Expertise for society also includes the ability to criticise public assumptions. The Academy's role is not only to provide useful information, but also to challenge false certainties. It may show that a popular solution is ineffective, that a policy rests on weak evidence, that a historical myth is misleading, that a technological promise is exaggerated, or that a risk is underestimated. Such criticism may be uncomfortable, but it is part of public interest. Strategy AV21's emphasis on top research gave the Academy the authority to perform this critical function. Public relevance does not mean pleasing the public; it means serving society's deeper need for reliable knowledge.

The citizen dimension of expertise also implies accessibility. Expert knowledge that remains inaccessible cannot fully serve the public. Accessibility does not require simplification to the

point of distortion, but it does require translation, good communication, open resources where possible, and respect for non-specialist audiences. Strategy AV21's public-facing programmes, events, and digital platforms helped the Academy move in this direction. The Academy's challenge was to make expertise usable without making it shallow. This is one of the central tasks of science communication in a democratic society.

The concept of public interest helps unify these different forms of expertise. The state needs knowledge for governance; society needs knowledge for institutional and cultural life; citizens need knowledge for orientation, judgement, and participation. Strategy AV21 placed all three within one framework. It did not define public interest only from above, as a governmental priority, nor only from below, as public demand. It treated public interest as a field in which scientific knowledge, democratic values, social needs, and long-term responsibility meet. This made the Academy's expertise both strategic and civic.

The Academy's expert role also contributed to its legitimacy before taxpayers. Public funding of research is easier to justify when citizens can see that research improves collective capacity to understand and respond to important problems. Strategy AV21 made this connection visible. It showed that the Academy's institutes do not exist only for specialist communities, although specialist research remains the foundation of their value. They also support decisions, preparedness, innovation, memory, education, culture, and public understanding. Expertise became one of the ways in which the Academy returned value to society.

This does not mean that every expert contribution has immediate measurable impact. Some forms of expertise work slowly. A historical edition may shape future scholarship and education; an environmental data set may become crucial years later; a theoretical model may later support technology; a public lecture may influence a student's career; an expert warning may prevent a poor decision that never becomes visible. Strategy AV21's public-interest orientation had to accommodate this slow impact. The Academy's value cannot be fully captured by short-term indicators. Expertise often matters most when it prevents harm, preserves capacity, or prepares society for future choices.

The expert function of Strategy AV21 also deepened the Academy's identity as a mediator between knowledge systems. It connected global science with Czech conditions, basic research with practical problems, institute expertise with public institutions, and specialised knowledge with citizen understanding. This mediating role is essential for a national academy in the 21st century. It is not enough to produce knowledge; knowledge must be interpreted, connected, communicated, and sometimes defended. Strategy AV21 provided a strategic format for this work.

Thus, Strategy AV21 strengthened the Czech Academy of Sciences as a source of expertise for the state, society, and citizens by making its knowledge more coordinated, visible, accessible, and publicly relevant. The Academy's expertise informed public policy without becoming subordinate to political command; supported society without reducing research to service provision; and addressed citizens without abandoning scientific depth. It connected energy, environment, health, security, public policy, technology, culture, memory, and resilience within a broad public-interest mission. In doing so, Strategy AV21 redefined expertise as one of the central democratic functions of the modern Academy. AV ČR became not only a producer of excellent research, but also a national institution capable of helping society understand itself, govern more intelligently, prepare for crises, and make more responsible choices about its future.

3. The Academy as a Strategic National Knowledge Institution

Strategy AV21 completed an important shift in the modern self-understanding of the Czech Academy of Sciences: it helped present the Academy not only as a network of excellent research institutes, but as a strategic national knowledge institution. This formulation is important because it captures something broader than ordinary research performance. A research institute produces knowledge in a specialised field; a grant agency distributes resources; a university combines education and research; a ministry formulates public policy. The Academy, through Strategy AV21, claimed a different and more synthetic role. It was to preserve deep scientific capacities, connect them across disciplines, translate them into public-interest programmes, communicate them to society, and make them available for the long-term needs of the Czech state, economy, culture, and citizenry. The Academy thus became visible as an institution of collective intelligence. It did not merely conduct research; it organised knowledge as a national resource. This was the culminating institutional meaning of Strategy AV21 (*Czech Academy of Sciences, 2017*).

The idea of a strategic knowledge institution differs from the older image of a classical academy. A classical academy is often associated with scholarly prestige, learned authority, disciplinary excellence, and the cultivation of science for its own sake. These qualities remained essential to AV ČR, and Strategy AV21 did not abolish them. However, the 21st century required the Academy to show how such qualities matter under conditions of technological acceleration, ecological instability, public health risks, geopolitical uncertainty, social polarisation, and cultural conflict. Strategy AV21 made it possible to connect the Academy's inherited authority with a more active public role. The Academy could remain a place of fundamental research while also becoming an institution that helps society interpret and prepare for change. Its strategic character lay precisely in this combination of depth and responsiveness.

This transformation was not a simple act of branding. It was rooted in the Academy's structural capacities. AV ČR contains institutes across natural sciences, technical sciences, life sciences, social sciences, and humanities. It maintains laboratories, archives, observatories, collections, field stations, instruments, databases, libraries, long-term research schools, expert communities, and international networks. Such capacities are not easily produced by short-term projects or policy initiatives. They accumulate over decades and require stable institutional support. Strategy AV21 gave these accumulated capacities a public architecture. It showed how the Academy's diversity could be mobilised around energy, climate, health, AI, materials, biodiversity, public policy, memory, identity, communication, and resilience. This made the Academy strategically legible.

The national dimension of this role is equally important. The Academy is not merely one research performer among many in a global system. It is a Czech public institution with responsibilities towards the Czech Republic, while remaining fully embedded in international science. Its research must contribute to global knowledge, but it also has to address the specific needs of Czech society, Czech landscapes, Czech institutions, Czech history, Czech culture, and Czech future development. Strategy AV21 expressed this dual orientation with unusual clarity. It allowed AV ČR to participate in global research on universal challenges while translating those challenges into national conditions. Climate change, AI, infectious disease, energy security, and cultural memory are global themes, but they acquire concrete meaning in

Czech forests, Czech hospitals, Czech schools, Czech public debates, Czech industries, and Czech archives.

The Academy's strategic role therefore depends on mediation. It mediates between global science and national needs, between fundamental research and practical application, between specialised expertise and public understanding, between long-term knowledge and immediate crises, between disciplinary depth and interdisciplinary cooperation. This mediating function is not secondary to research; it is one of the reasons a national academy remains necessary. No single ministry, university, company, or civic organisation can perform this function in the same way. The Academy's advantage lies in its combination of autonomy, breadth, continuity, and scientific credibility. Strategy AV21 made this combination more explicit and more operational. It gave the Academy a language for explaining why its institutional form still matters.

The strategic national knowledge institution is also an institution of preparedness. Many of the most important public challenges cannot be solved at the moment they become visible. A pandemic requires laboratories, virologists, immunologists, diagnostic methods, modelling capacities, and public communication channels that already exist. A drought requires long-term environmental monitoring, hydrological knowledge, soil research, ecological expertise, and policy analysis. An energy crisis requires knowledge of nuclear systems, renewables, storage, materials, economics, security, and public acceptance. A digital crisis requires expertise in AI, cybersecurity, language technologies, social behaviour, media, and law. Strategy AV21 showed that the Academy's public value lies not only in reacting to events, but in maintaining capacities before they are urgently needed. This is one of the strongest arguments for stable public support of academic research.

This preparedness function also explains why fundamental research remained central to Strategy AV21. Public-interest research cannot be reduced to immediate application because society often needs knowledge whose usefulness becomes clear only later. Basic discoveries in physics, chemistry, biology, mathematics, linguistics, archaeology, or philosophy may appear remote from public life at first, but they can later support technologies, therapies, policy concepts, cultural interpretation, or democratic self-understanding. Strategy AV21 did not subordinate basic research to application; it made the long-term public meaning of basic research more visible. The Academy could therefore defend scientific freedom not as a privilege of scholars, but as a condition of society's future options. This argument was especially important in a research-policy environment often dominated by measurable outputs and short funding cycles (*Polanyi, 1962; Whitley, 2000*).

The Academy's strategic role also rested on its capacity to integrate different temporal horizons. Governments often work within electoral cycles, companies within investment and market cycles, media within news cycles, and citizens within everyday pressures. The Academy can work across longer periods. It can maintain environmental series, linguistic corpora, historical editions, biological collections, astronomical observations, archaeological documentation, and theoretical schools that outlive political and economic fashions. Strategy AV21 did not replace this long duration with short-term activism. Rather, it used long-term knowledge to address contemporary challenges. This gave the Academy a temporal authority that is rare in modern public life. It could bring memory, evidence, and continuity into debates otherwise dominated by urgency.

The concept of a strategic knowledge institution also changed the relationship between the Academy and the state. The Academy was not to become an executive agency of government, but it could become a more visible source of expert knowledge for public administration and policymaking. This required a careful balance between cooperation and independence. The state needs reliable expertise, but expertise loses its value when it is politically captured. Strategy AV21 allowed the Academy to cooperate with ministries, regional administrations, public institutions, and policy actors while preserving its own scientific logic. It thus offered a democratic model of state–science relations: close enough to inform public decisions, independent enough to remain trustworthy. This was a historically significant development after the experience of state-directed science under socialism (*Jasanoff, 2004; Pielke, 2007*).

The Academy's relationship with society was broader than its relationship with the state. Strategy AV21 connected AV ČR with universities, schools, hospitals, museums, municipalities, companies, non-governmental organisations, media, and citizens. These connections helped transform the Academy's public image from a closed world of experts into a more open knowledge institution. The public-interest formula did not mean that the Academy would satisfy every immediate social demand. It meant that the Academy would organise its research in relation to problems whose consequences matter beyond the academic community. This created a more civic form of academic responsibility. The Academy remained autonomous, but its autonomy acquired a public voice.

The strategic national knowledge institution is also an institution of translation. Scientific knowledge often exists in languages, methods, and forms inaccessible to non-specialists. Strategy AV21 created thematic programmes that translated specialised research into recognisable public questions: sustainable energy, biodiversity crisis, infectious diseases, AI for science and society, society in motion, resilient society, memory in the digital age, identities in wars and crises, breakthrough technologies, and similar programme frames. These themes did not simplify science into slogans; at their best, they made the pathways between science and public life easier to understand. Translation here means institutional interpretation. The Academy explained what its knowledge is for without surrendering the complexity of how that knowledge is produced.

The same translational role operated inside the Academy. Institutes often develop their own disciplinary languages and professional cultures. Strategy AV21 translated across these internal languages by creating programme platforms where physicists, biologists, chemists, computer scientists, historians, sociologists, economists, philosophers, linguists, and legal scholars could recognise shared problems. This internal translation was a condition for external communication. The Academy could speak coherently to society only if it could also connect its own internal diversity. Strategy AV21 therefore worked simultaneously as an internal integrative mechanism and an external public narrative. It strengthened institutional unity without demanding disciplinary uniformity.

This unity was especially important because the Academy's decentralised structure is both strength and vulnerability. Its institutes are strong because they are specialised, historically grounded, and internationally connected. Yet public visibility can suffer when each institute appears separately and the Academy as a whole seems fragmented. Strategy AV21 helped overcome this problem by presenting the Academy through strategic themes rather than administrative units. The public did not need to understand the whole institutional map in order to see the Academy's relevance. It could recognise the Academy through energy, health, AI,

biodiversity, memory, society, and future technologies. This changed the Academy's public form. It became more than a sum of institutes.

The role of the Academy as a strategic knowledge institution was also visible in the innovation sphere. Strategy AV21 linked basic research with application laboratories, industrial cooperation, technological development, diagnostics, materials, energy systems, digitalisation, and future industries. This did not transform the Academy into a business incubator or applied research contractor. Rather, it positioned AV ČR as a source of advanced knowledge within the national innovation ecosystem. The Academy could support Czech competitiveness through research services, technologies, cooperation with firms, and participation in European innovation agendas. Yet its deeper contribution remained scientific: the creation of knowledge that allows future applications to exist. Strategy AV21 therefore framed innovation as a public-interest process rooted in high-quality research (*Czech Academy of Sciences, 2019; Mazzucato, 2018*).

This understanding of innovation was broader than the commercialisation of inventions. Innovation can mean new materials, but also new diagnostics, public-policy models, environmental monitoring systems, digital heritage tools, language technologies, social resilience concepts, and ethical frameworks for emerging technologies. Strategy AV21 made such a broader understanding possible because it included the full spectrum of Academy disciplines. The humanities and social sciences were not excluded from innovation; they contributed to social, cultural, communicative, and institutional innovation. This was one of the distinctive features of the Academy's strategic profile. It treated the future of society as a matter of knowledge in many forms, not only technological novelty.

The Academy's strategic role also concerned national resilience. A resilient society needs more than emergency services and infrastructure. It needs knowledge about health, communication, social trust, public policy, energy, environment, digital systems, history, identity, and risk. Strategy AV21 assembled these dimensions into programmes that could strengthen the country's capacity to understand and withstand crises. This became especially visible in the context of pandemic disruption, climate stress, war in Ukraine, energy insecurity, disinformation, and technological dependence. The Academy could not control these crises, but it could improve the intellectual resources available to society. In this sense, Strategy AV21 connected scientific research with the deeper security of democratic life.

The cultural dimension of this resilience should not be underestimated. Societies under pressure often turn to memory, identity, and history. They ask who they are, what they have endured, whom they trust, what values they defend, and how they interpret danger. The Academy's humanities institutes contribute to these questions through historical research, philosophy, philology, archaeology, literary studies, art history, and cultural analysis. Strategy AV21 placed this contribution inside the same public-interest framework as energy, medicine, and AI. This was institutionally important because it rejected a narrow, technocratic definition of national strategy. A national knowledge institution must care for meaning as well as infrastructure, for memory as well as innovation, for identity as well as technology.

The Academy's role in protecting cultural memory also has democratic significance. Authoritarian regimes often manipulate history, language, symbols, and collective identity. Democratic societies require independent scholarship capable of examining the past critically. Strategy AV21's programmes on memory, European society, materiality, and identities in crises helped present this work as part of public interest. The Academy's task was

not to produce official myths, but to preserve evidence, analyse complexity, and keep public memory open to critical interpretation. This function is strategic because societies without reliable memory are more vulnerable to propaganda and identity manipulation. The Academy therefore contributes to democratic resilience by sustaining historical and cultural knowledge.

The strategic knowledge institution also supports public reason. In a digital media environment marked by misinformation, polarisation, and rapid emotional circulation, societies need institutions that can defend standards of evidence and argument. Strategy AV21 strengthened the Academy's public voice by connecting expertise with visible programmes and communication channels. The Academy could speak on climate, health, AI, energy, public policy, biodiversity, memory, and identity not as an occasional commentator, but as an institution systematically working on these themes. This systematic character matters. It distinguishes research-based expertise from opinion and makes public communication more credible.

At the same time, the Academy's public voice must remain cautious. A strategic knowledge institution should not behave as a political actor competing for power. Its authority rests on evidence, method, peer review, disciplinary competence, and intellectual honesty. Strategy AV21 expanded the Academy's public presence, but it did not remove the need for scholarly restraint. The Academy must communicate uncertainty, explain limits, and avoid exaggerating the immediate power of science. Its strategic importance lies not in claiming omniscience, but in helping society reason better under uncertainty. This is a more modest and more durable form of authority.

The Academy's international position was also strengthened by Strategy AV21. A national academy must be national in responsibility, but international in scientific standard and cooperation. Strategy AV21's themes aligned with global and European research agendas: climate, health, AI, energy, biodiversity, resilience, heritage, and responsible innovation. This made it easier for AV ČR to participate in international networks while presenting a distinctive Czech contribution. The Academy could show that it was not isolated within national borders, but nor was it dissolved into generic global science. It occupied a productive middle position: globally connected, nationally responsible, and institutionally autonomous.

This middle position is especially important for a medium-sized European country. The Czech Republic cannot dominate global research through scale alone, but it can build strong niches, maintain excellent institutes, participate in European consortia, support specialised infrastructures, and translate international knowledge into national benefit. Strategy AV21 helped define how the Academy could contribute to this strategy. It concentrated dispersed capacities into visible themes and connected them with public needs. It also showed that national scientific capacity is not a luxury, but a condition of informed participation in the world. Countries without strong knowledge institutions become dependent on external expertise and imported technologies.

The Academy's strategic role also had implications for human capital. A national knowledge institution must cultivate future researchers, experts, technicians, communicators, and interdisciplinary leaders. Strategy AV21 created programme environments in which younger researchers could participate in cross-institute cooperation, public communication, application-oriented projects, and international networks. This did not solve all career problems, but it helped define a modern research culture. A younger scientist in AV ČR could see their work not only as a disciplinary career, but as part of a broader public-interest mission.

Such a culture matters for attracting and retaining talent. It gives scientific work social meaning without sacrificing intellectual ambition.

The relationship between Strategy AV21 and research evaluation also shaped the Academy's strategic identity. AV ČR had already developed evaluation practices to maintain quality and international credibility. Strategy AV21 added another dimension by asking how excellent research contributes to public-interest programmes. This did not mean replacing scholarly evaluation with impact rhetoric. It meant recognising that a strategic academy must assess both scientific quality and public relevance in appropriate ways. Different fields produce different kinds of value: articles, monographs, technologies, data sets, policy advice, exhibitions, diagnostics, software, methods, public communication, and expert platforms. A mature knowledge institution must understand this plurality of outputs without lowering standards.

The Academy's strategic profile therefore required plural accountability. It had to be accountable to international science through quality, to the Czech public through relevance, to the state through responsible use of public resources, to future generations through long-term capacity, and to its own scholarly communities through autonomy and integrity. Strategy AV21 helped connect these forms of accountability. It gave the Academy a framework in which excellence, service, communication, cooperation, and responsibility could be discussed together. This was one of its most important institutional achievements. It turned accountability from a defensive obligation into part of the Academy's mission.

The strategic knowledge institution also depends on infrastructure. Research infrastructures are often invisible to the public: instruments, databases, collections, laboratories, animal facilities, field stations, observatories, archives, digital platforms, and technical staff. Yet they are the material foundation of expertise. Strategy AV21 made their public meaning clearer by showing how infrastructures support programmes in energy, health, environment, AI, materials, heritage, and society. A laboratory becomes not merely a scientific workplace, but part of national preparedness. An archive becomes not merely a storage facility, but part of democratic memory. A data infrastructure becomes not merely a technical system, but part of society's capacity to understand itself.

This infrastructural view also helps explain why the Academy cannot be replaced by short-term project networks. Projects can produce important results, but they usually rely on capacities built elsewhere. A strategic academy maintains those capacities across time. Strategy AV21 did not deny the value of projects; it organised them within broader programmes and institutional continuities. This is especially important in fields where expertise must be ready before it is demanded. The Academy's long-term infrastructures and personnel make it possible for society to respond to unexpected problems. Strategy AV21 gave this argument a public form.

The Academy's relationship with citizens was also transformed by this strategic role. Citizens may not directly use most research results, but they benefit from living in a society with stronger knowledge institutions. They benefit when public policy is better informed, when health risks are studied, when environmental change is monitored, when cultural memory is preserved, when technologies are developed responsibly, and when misinformation is countered by reliable expertise. Strategy AV21 made this indirect benefit more visible. It helped citizens understand that the Academy is not remote from their lives even when its research is

highly specialised. The public-interest formula turned specialised knowledge into a civic resource.

This civic dimension also gives the Academy a moral responsibility. A strategic national knowledge institution must not serve only the strongest actors: not only ministries, large companies, elite universities, or metropolitan audiences. It should also consider the needs of regions, schools, cultural institutions, vulnerable groups, future generations, and citizens outside expert circles. Strategy AV21's public communication, thematic breadth, and openness to partners created opportunities for such a wider orientation. The Academy's public-interest mission is strongest when it recognises that knowledge serves society as a whole, not only those already capable of accessing expertise.

At the same time, the Academy must protect itself from overextension. A strategic knowledge institution cannot solve every public problem, respond to every political debate, or satisfy every demand for expertise. Strategy AV21 had to choose themes where the Academy had real capacities and where research could make a meaningful contribution. This selectivity was essential. Without it, public interest would become a vague phrase covering everything and therefore guiding nothing. The Academy's strategic maturity lies partly in knowing where it can contribute deeply and where other institutions have the primary role. Strategy is not only expansion; it is disciplined prioritisation.

The development of Strategy AV21 over more than a decade shows that the Academy learned to combine continuity with renewal. The original programmes established the public-interest orientation, while later programmes responded to emerging themes such as artificial intelligence, biodiversity, infectious diseases, identities in crises, materiality, and breakthrough technologies. This adaptability is a defining feature of a strategic institution. It keeps a stable mission while updating its agenda. Strategy AV21 therefore became not merely a programme cycle, but a mechanism of institutional learning. The Academy could revise its priorities without losing its identity.

The long-term significance of Strategy AV21 is that it gave the Academy a post-transformation narrative. After 1989 and 1993, the Academy had to justify itself through reform, autonomy, survival, restructuring, and reintegration into international science. By the 2010s and 2020s, the question had changed. The Academy no longer needed only to prove that it had escaped the socialist model. It needed to show what kind of institution it wanted to be in a democratic, European, technologically changing, and crisis-prone world. Strategy AV21 answered that question. It presented AV ČR as a public-interest academy: independent, excellent, interdisciplinary, communicative, and strategically engaged.

This narrative also connected the Academy with its earlier historical layers. The learned societies of the Czech lands had linked scholarship with culture and national self-understanding. The Czechoslovak Academy had linked science with state power, though under ideological constraint. The post-1993 Academy had linked science with autonomy and international evaluation. Strategy AV21 added a new layer: science as coordinated public-interest knowledge in a democratic society. This does not erase the previous layers. It reorganises them. The Academy remains a guardian of scholarship, a national cultural institution, a research performer, an international scientific actor, and now also a strategic knowledge institution for public challenges.

The phrase "strategic national knowledge institution" therefore captures the Academy's modern synthesis. "Strategic" points to long-term orientation, preparedness, programme

coordination, and response to major challenges. “National” points to responsibility towards Czech society, statehood, culture, regions, citizens, and future development. “Knowledge” points to the full spectrum of scientific, technical, social, and humanistic research. “Institution” points to continuity, infrastructure, autonomy, governance, and collective capacity. Strategy AV21 brought these dimensions together. It made the Academy’s mission more explicit and more persuasive in public life.

Thus, Strategy AV21 transformed the modern image of the Czech Academy of Sciences by presenting it as a strategic national knowledge institution. The Academy was no longer visible only as a federation of specialised institutes or as the successor of earlier academic traditions. It appeared as an institution capable of organising excellent research around the public interest, connecting disciplines, advising the state, serving society, communicating with citizens, cooperating with industry and universities, preserving cultural memory, supporting innovation, and preparing the country for future challenges. This transformation did not abandon the classical academy; it gave the classical academy a new civic form. AV ČR remained committed to fundamental research, scholarly autonomy, and international excellence, but Strategy AV21 showed how these values could serve the Czech Republic in the 21st century. In this sense, the strategy became one of the most important expressions of the Academy’s post-socialist maturity: not merely reformed, not merely evaluated, not merely internationally integrated, but strategically present in the public life of the nation.

References

Abbott, A. (2001). *Chaos of disciplines*. University of Chicago Press.

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory, 18*(4), 543–571.

Arthur, W. B. (2009). *The nature of technology: What it is and how it evolves*. Free Press.

Assmann, A. (2011). *Cultural memory and Western civilization: Functions, media, archives*. Cambridge University Press.

Assmann, J. (2011). *Cultural memory and early civilization: Writing, remembrance, and political imagination*. Cambridge University Press.

Beck, U. (1992). *Risk society: Towards a new modernity*. Sage.

Bozeman, B. (2007). *Public values and public interest: Counterbalancing economic individualism*. Georgetown University Press.

Braun, D. (1998). The role of funding agencies in the cognitive development of science. *Research Policy, 27*(8), 807–821.

Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton.

Bucchi, M., & Trench, B. (Eds.). (2014). *Routledge handbook of public communication of science and technology* (2nd ed.). Routledge.

Burns, T. W., O’Connor, D. J., & Stocklmayer, S. M. (2003). Science communication: A contemporary definition. *Public Understanding of Science, 12*(2), 183–202.

Cairney, P. (2016). *The politics of evidence-based policy making*. Palgrave Macmillan.

Czech Academy of Sciences. (2015). *Annual report of the Czech Academy of Sciences 2015*. CAS.

Czech Academy of Sciences. (2016). *Annual report of the Czech Academy of Sciences 2016*. CAS.

Czech Academy of Sciences. (2017). *Strategy AV21: Strategy of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2019). *Application laboratories of the Czech Academy of Sciences*. Czech Academy of Sciences.

Czech Academy of Sciences. (2021). *Concept for development of activities of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2023). *Annual report of the Czech Academy of Sciences 2023*. CAS.

Czech Academy of Sciences. (2024). *Identity, space and fungi: Coordinators of Strategy AV21 presented new programmes*. CAS.

Czech Academy of Sciences. (2026). *The CAS launches new research programs as part of its Strategy AV21*. CAS.

Czech Academy of Sciences. (n.d.). *A/V projects*. CAS.

Czech Academy of Sciences. (n.d.). *AI: Artificial intelligence for science and society*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Anatomy of European society, history, tradition, culture, identity*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Brain awareness week*. CAS.

Czech Academy of Sciences. (n.d.). *Breakthrough technologies for the future*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Citizen science*. Czech Academy of Sciences.

Czech Academy of Sciences. (n.d.). *Diagnostic methods and techniques*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Fungi: New threats and opportunities*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Future of assisted reproduction*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Global biodiversity crisis: Risks and opportunities for human society*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Identities in the World of Wars and Crises*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Infectious diseases: New targets and strategies*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Land Conservation and Restoration*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Light at the Service of Society*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Memory in the Digital Age*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *New materials based on metals, ceramics and composites*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Public events*. CAS.

Czech Academy of Sciences. (n.d.). *Research programmes of Strategy AV21*. Czech Academy of Sciences.

Czech Academy of Sciences. (n.d.). *Resilient society for 21st century: Crisis potentials and effective transformation*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Science Fair*. Czech Academy of Sciences.

Czech Academy of Sciences. (n.d.). *Society in motion and public policy*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Space for the Mankind*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Strategy AV21: About Strategy AV21*. Czech Academy of Sciences.

Czech Academy of Sciences. (n.d.). *Sustainable Energy*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Sustainable Food Production and Consumption*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *The Power of Objects: Materiality between Past and Future*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Towards precision medicine and gene therapy: A new hope in the treatment of human diseases*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Virology and antiviral therapy*. Strategy AV21.

Czech Academy of Sciences. (n.d.). *Week of the Czech Academy of Sciences*. CAS.

Edler, J., & Kuhlmann, S. (2008). Coordination within fragmentation: Governance in knowledge policy in the German federal system. *Science and Public Policy, 35*(4), 265–276.

Erll, A. (2011). *Memory in culture*. Palgrave Macmillan.

Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: From national systems and "Mode 2" to a triple helix of university–industry–government relations. *Research Policy, 29*(2), 109–123.

European Commission. (2012). *Responsible research and innovation: Europe's ability to respond to societal challenges*. Publications Office of the European Union.

European Commission. (2019). *The European Green Deal*. European Commission.

European Commission. (2021). *Horizon Europe: Strategic plan 2021–2024*. Publications Office of the European Union.

European Commission. (2023). *Digital Decade policy programme 2030*. European Commission.

European Commission. (2024). *Advanced materials for industrial leadership*. European Commission.

Floridi, L. (2014). *The fourth revolution: How the infosphere is reshaping human reality*. Oxford University Press.

Frodeman, R. (Ed.). (2017). *The Oxford handbook of interdisciplinarity* (2nd ed.). Oxford University Press.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. Sage.

Hagendorff, T. (2020). The ethics of AI ethics: An evaluation of guidelines. *Minds and Machines, 30*, 99–120.

Harrison, R. (2013). *Heritage: Critical approaches*. Routledge.

Head, B. W. (2016). Toward more "evidence-informed" policy making? *Public Administration Review, 76*(3), 472–484.

Hoskins, A. (Ed.). (2018). *Digital memory studies: Media pasts in transition*. Routledge.

Intergovernmental Panel on Climate Change. (2023). *Climate change 2023: Synthesis report*. IPCC.

Irwin, A. (1995). *Citizen science: A study of people, expertise and sustainable development*. Routledge.

Jacobs, J. A. (2013). *In defense of disciplines: Interdisciplinarity and specialization in the research university*. University of Chicago Press.

Jasanoff, S. (2004). *States of knowledge: The co-production of science and social order*. Routledge.

Klein, J. T. (1990). *Interdisciplinarity: History, theory, and practice*. Wayne State University Press.

Klein, J. T. (2010). *Creating interdisciplinary campus cultures: A model for strength and sustainability*. Jossey-Bass.

Lewenstein, B. V. (1992). The meaning of "public understanding of science" in the United States after World War II. *Public Understanding of Science, 1*(1), 45–68.

Lowenthal, D. (2015). *The past is a foreign country — Revisited*. Cambridge University Press.

Mazzucato, M. (2018). *The value of everything: Making and taking in the global economy*. Allen Lane.

Merton, R. K. (1973). *The sociology of science: Theoretical and empirical investigations*. University of Chicago Press.

Nisbet, M. C., & Scheufele, D. A. (2009). What's next for science communication? Promising directions and lingering distractions. *American Journal of Botany, 96*(10), 1767–1778.

Nora, P. (1989). Between memory and history: Les lieux de mémoire. *Representations, 26*, 7–24.

Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re-thinking science: Knowledge and the public in an age of uncertainty*. Polity.

Nutley, S. M., Walter, I., & Davies, H. T. O. (2007). *Using evidence: How research can inform public services*. Policy Press.

Organisation for Economic Co-operation and Development. (2019). *Health for everyone? Social inequalities in health and health systems*. OECD Publishing.

Organisation for Economic Co-operation and Development. (2019). *OECD principles on artificial intelligence*. OECD.

Organisation for Economic Co-operation and Development. (2020). *Building capacity for evidence-informed policy-making: Lessons from country experiences*. OECD Publishing.

Owen, R., Macnaghten, P., & Stilgoe, J. (2012). Responsible research and innovation: From science in society to science for society, with society. *Science and Public Policy, 39*(6), 751–760.

Parkhurst, J. (2017). *The politics of evidence: From evidence-based policy to the good governance of evidence*. Routledge.

Pielke, R. A., Jr. (2007). *The honest broker: Making sense of science in policy and politics*. Cambridge University Press.

Polanyi, M. (1962). The republic of science: Its political and economic theory. *Minerva, 1*(1), 54–73.

Powell, W. W., & Grodal, S. (2005). Networks of innovators. In J. Fagerberg, D. C. Mowery, & R. R. Nelson (Eds.), *The Oxford handbook of innovation* (pp. 56–85). Oxford University Press.

Renn, O. (2008). *Risk governance: Coping with uncertainty in a complex world*. Earthscan.

Repko, A. F., Szostak, R., & Buchberger, M. P. (2017). *Introduction to interdisciplinary studies* (2nd ed.). Sage.

Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences, 4*(2), 155–169.

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., III, Lambin, E., Lenton, T. M., Scheffer, M., Folke, C., Schellnhuber, H. J., Nykvist, B., de Wit, C. A., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P. K., Costanza, R., Svedin, U., … Foley, J. A. (2009). A safe operating space for humanity. *Nature, 461*, 472–475.

Rutter, M. (2012). Resilience as a dynamic concept. *Development and Psychopathology, 24*(2), 335–344.

Schwab, K. (2016). *The fourth industrial revolution*. World Economic Forum.

Smith, L. (2006). *Uses of heritage*. Routledge.

Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., de Vries, W., de Wit, C. A., Folke, C., Gerten, D., Heinke, J., Mace, G. M., Persson, L. M., Ramanathan, V., Reyers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science, 347*(6223), 1259855.

Stilgoe, J., Lock, S. J., & Wilsdon, J. (2014). Why should we promote public engagement with science? *Public Understanding of Science, 23*(1), 4–15.

Trench, B. (2008). Towards an analytical framework of science communication models. In D. Cheng, M. Claessens, T. Gascoigne, J. Metcalfe, B. Schiele, & S. Shi (Eds.), *Communicating science in social contexts: New models, new practices* (pp. 119–135). Springer.

United Nations Development Programme. (2022). *New threats to human security in the Anthropocene: Demanding greater solidarity*. United Nations Development Programme.

United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. United Nations.

Weiss, C. H. (1979). The many meanings of research utilization. *Public Administration Review, 39*(5), 426–431.

Whitley, R. (2000). *The intellectual and social organization of the sciences* (2nd ed.). Oxford University Press.

World Health Organization. (2021). *Building health systems resilience for universal health coverage and health security during the COVID-19 pandemic and beyond*. World Health Organization.

World Health Organization. (2022). *Global report on infection prevention and control*. World Health Organization.

Wynne, B. (1992). Misunderstood misunderstanding: Social identities and public uptake of science. *Public Understanding of Science, 1*(3), 281–304.

Yasseri, T., Gildersleve, P., & David, L. (2022). Collective memory in the digital age. *arXiv*.

Chapter Fourteen

Innovation, Technology Transfer, and the Academy's Contribution to the Czech Future

From Fundamental Research to Innovation

1. The Specific Innovation Role of a National Academy

The innovation role of a national academy cannot be understood if innovation is reduced to the language of patents, start-ups, licences, and commercial products alone. A national academy does not normally enter the innovation system as an ordinary market actor, nor does it simply imitate the behaviour of private corporate research and development units. Its deeper function is to preserve, renew, and concentrate the long-term intellectual capacity of a country, especially in fields where immediate profitability is uncertain, time horizons are long, and public value may appear before commercial value. In the Czech case, this distinction is especially important, because the Academy of Sciences of the Czech Republic inherited not only institutes, laboratories, archives, and disciplinary traditions, but also a complicated historical memory of science under different political regimes. After the institutional break with the Czechoslovak Academy of Sciences and the creation of the modern Academy in the early 1990s, the question was not merely how to keep research alive, but how to redefine the public meaning of research in a democratic, market-oriented, and internationally integrated society. The Academy's statutes define its mission broadly: it conducts research in natural, technical, social, and human sciences, advances knowledge internationally, educates researchers, disseminates and applies results for education, culture, competitiveness, and the solution of social problems (*Czech Academy of Sciences, 2006*). This formulation already indicates that innovation is not an external supplement to academic work, but one of the ways in which public research becomes institutionally meaningful. At the same time, the Academy remains a public, non-university research body funded through the Czech national budget, which means that its innovation role is inseparable from public responsibility, scientific autonomy, and the national capacity to produce independent expertise.

In this sense, the Academy's specific contribution to innovation begins before any technology is transferred and before any company is founded. It begins in the accumulation of knowledge, methods, instruments, collections, datasets, schools of thought, and highly specialised personnel. Private firms often innovate within a shorter cycle: they improve products, optimise processes, search for market niches, reduce costs, or respond to customer demand. A national academy, by contrast, works in the deeper layers of the innovation system, where future possibilities are prepared long before they become visible as marketable technologies. This is why the Academy's laboratories, institutes, and research teams should not be judged only by immediate commercial outputs. Their public value lies also in maintaining scientific fields that may later become crucial for medicine, energy, cybersecurity, environmental resilience, advanced materials, artificial intelligence, historical memory, or crisis governance. The history of Czech and Czechoslovak science shows that important applications often

emerge from research cultures that were not originally organised around direct commercialisation. The symbolic examples of Jaroslav Heyrovský's polarography and Otto Wichterle's soft contact lenses are not simply stories of individual genius; they reveal how fundamental inquiry, instrumentation, chemical imagination, and institutional continuity can unexpectedly become part of global technological change (*Míšková & Franc, 2014*; *Pokorný, 2009*). Therefore, the innovation role of the Academy is best described as infrastructural, anticipatory, and strategic rather than narrowly entrepreneurial.

The modern Academy of Sciences of the Czech Republic occupies a position between the university, the state, industry, and civil society. It is not a university, although it educates doctoral students, trains researchers, cooperates with higher education institutions, and participates in the formation of scientific careers. It is not a ministry, although its statutes explicitly state that it participates in the formation of Czech and European research and development policy (*Czech Academy of Sciences, 2006*). It is not an industrial corporation, although it cooperates with companies, develops technologies, sells licences, supports spin-offs, and increasingly professionalises technology transfer. This intermediate position gives the Academy a distinctive institutional identity. It can act as a reservoir of expertise for the state, a partner for universities, a source of high-risk knowledge for industry, and a guardian of disciplines that are indispensable for national culture but not always commercially attractive. Such a role corresponds to the broader European idea of public research organisations as institutions that connect scientific excellence with societal resilience, competitiveness, and evidence-based governance (*European Commission, 2025*). In the Czech environment, this role is sharpened by the country's post-socialist transformation, its integration into the European Research Area, and the continuing need to reduce dependence on imported technologies, external expertise, and fragmented innovation capacities.

The innovation function of the Academy is also shaped by historical discontinuity. During the socialist period, the Czechoslovak Academy of Sciences operated within a planned research system in which the relationship between science, production, and the state was formally close but politically distorted. Applied research existed, and some institutes achieved significant results, yet the system was constrained by ideological supervision, limited international exchange, bureaucratic planning, and weak market feedback. After 1989, the Academy had to pass through a difficult transformation: de-ideologisation, institutional reorganisation, budgetary pressure, evaluation, internationalisation, and the search for a new place in a pluralist research system. Innovation after socialism therefore could not simply mean "more application". It had to mean a different relationship between knowledge and society, one based on scientific credibility, institutional autonomy, legal transparency, intellectual property regimes, competition for funding, and cooperation with external partners. The Academy's post-1993 development gradually moved from survival and restructuring towards evaluation, strategic programming, and public-interest research. In this longer arc, the current emphasis on knowledge and technology transfer should be understood not as an abrupt neoliberal turn, but as a new phase in the Academy's attempt to demonstrate that long-term fundamental research is indispensable for the Czech future.

The motto of Strategy AV21, "Top research in the public interest", captures this transformation particularly well. It does not present public-interest research as a rejection of excellence, nor excellence as a self-enclosed academic value detached from society. Instead, it tries to connect the two: the Academy is expected to conduct research at an international level while orienting part of its collective capacity towards problems that exceed the boundaries of single

disciplines and single institutions. Strategy AV21 is based on coordinated research programmes and has become one of the principal formats through which the Academy presents itself as an institution capable of responding to complex societal challenges (*Czech Academy of Sciences, n.d.*). The significance of this strategy lies not only in the themes it supports, but in the institutional logic it creates. It encourages institutes to cooperate across disciplinary borders, to build links with universities, public authorities, companies, and other partners, and to articulate the public relevance of research without dissolving the autonomy of research into immediate political or commercial demand. In innovation terms, Strategy AV21 functions as a bridge between fundamental science and future application. It acknowledges that society needs not only finished technologies, but also reliable knowledge about risks, transformations, environments, health, energy, culture, and governance.

The specific innovation role of a national academy is therefore different from that of a technology agency. A technology agency normally supports applied projects, proof-of-concept schemes, and cooperation between research organisations and firms. A national academy, however, creates the knowledge base from which such projects may later emerge. It can host disciplines with no immediate market demand but high future significance, such as theoretical mathematics, fundamental physics, evolutionary biology, archaeology, linguistics, philosophy, history, or social theory. It can also sustain expensive instruments and highly specialised facilities that no individual firm or university department could maintain alone. In fields such as materials research, plasma physics, molecular biology, nanotechnology, climate science, or digital humanities, innovation depends on precisely such long-term institutional concentration. This is why the Academy's contribution should not be measured exclusively by technology transfer indicators. Patents, licences, prototypes, spin-offs, and contractual research are important, but they are only the visible part of a wider innovation ecology. Beneath them stand methods, people, tacit skills, research cultures, and the ability to ask questions that do not yet have a market.

At the same time, the Academy's innovation role cannot remain purely latent. A public research institution that insists only on long-term autonomy but cannot explain how its knowledge enters social, economic, cultural, or technological life risks political vulnerability. This was already visible in the difficult debates over the position and funding of the Academy after 1989 and again during later disputes about the value of basic research. In a democratic society, autonomy is not isolation; it is a protected condition for producing knowledge that can be trusted precisely because it is not immediately subordinated to party power, administrative convenience, or corporate profit. The Academy must therefore show how autonomy becomes usefulness without allowing usefulness to become subordination. This balance is one of the central themes of the modern AV ČR. Its statutes combine international advancement of knowledge with application of results and participation in research policy (*Czech Academy of Sciences, 2006*). The institutional message is clear: the Academy is not a secluded republic of scholars, but neither is it a contract laboratory for short-term external demand. Its task is to transform independent scientific capacity into long-term public value.

This explains why technology transfer at the Academy has increasingly become an organised institutional priority. The existence and development of the CAS Technology Transfer Centre, known as CeTTAV or CETAV, indicate that the Academy recognises the need for professional mediation between research teams and the world of intellectual property, licensing, prototypes, investors, and spin-off creation. In 2022, the Academy presented the centre as a point of guidance for institutes moving from discovery towards application, especially in areas

where researchers need legal, economic, and business support (*Czech Academy of Sciences, 2022*). The head of CeTTAV described transfer not merely as a financial mechanism, but as a way of helping researchers see their work implemented in practice and appreciated beyond the publication record. This is an important cultural shift. In older academic cultures, commercialisation could be viewed with suspicion, as if it necessarily threatened the purity of science. In contemporary public research organisations, however, the question is no longer whether knowledge should circulate beyond the laboratory, but how it can circulate without damaging scientific integrity, public ownership, and institutional fairness. The Academy's transfer structures therefore represent a new administrative and cultural layer added to its traditional research mission.

The launch of CAS Innovations, a joint-stock company fully owned by the Academy, marks a further stage in this institutionalisation of innovation. According to the Academy's announcement, the company was designed to connect scientists and investors, accelerate the path from laboratory to marketplace, introduce transparent procedures for founding technology companies, and define clear rules for bringing external capital into Academy projects (*Czech Academy of Sciences, 2026*). The announcement also stated that several CAS institutes were among the first shareholders and that the initiative would support spin-offs, start-ups, and the commercialisation of research outputs. This development is historically significant because it suggests that the Academy is moving from a decentralised and partly advisory model of transfer towards a more systematic platform for investment, incubation, and company creation. It also shows that the Academy's leadership understands innovation as a strategic matter of institutional governance, not merely as a peripheral service. However, the establishment of such a company also raises important questions that will define the next phase of Czech academic innovation: how to protect the public interest, how to distribute benefits between institutes and inventors, how to avoid premature commercial pressure on basic research, and how to maintain academic credibility while cooperating with private capital. The national academy's role here is delicate. It must help technologies leave the laboratory, but it must also ensure that public science is not reduced to an upstream subsidy for private profit.

The Academy's leadership has recently connected this transfer agenda with a broader strategic programme for institutional development. At the Academy Assembly, thirteen priorities were presented to strengthen basic and applied research, including strategic management, economy, public policy, European funding, knowledge and technology transfer, international cooperation, evaluation, scientific careers, cooperation with universities, digital transformation, research security, public communication, and Strategy AV21 (*Czech Academy of Sciences, 2026*). This list is revealing because technology transfer appears not as a solitary agenda, but as part of a wider governance architecture. Innovation depends on legislation, finance, evaluation, careers, public communication, and international partnerships. It also depends on the ability to retain excellent researchers and provide them with instruments, administrative support, and institutional confidence. If a national academy loses its best people, weakens its laboratories, or becomes trapped in bureaucratic insecurity, technology transfer will not compensate for this loss. Conversely, when excellent research is combined with professional transfer support, public policy links, and international cooperation, the Academy can become a central actor in national development. In this sense, innovation is not an isolated output category; it is the cumulative effect of a healthy research institution.

A national academy also differs from corporate R&D because it can pursue innovation in non-commercial domains. Some of the most important innovations produced by public science are conceptual, methodological, diagnostic, regulatory, educational, cultural, or institutional rather than directly technological. A new method of measuring air pollution, a historical database used in cultural policy, an epidemiological model, a legal analysis, a linguistic corpus, a biodiversity monitoring system, or an expert report for government may not become a product sold on the market. Yet each can change decisions, reduce uncertainty, preserve memory, prevent damage, or improve public governance. This is particularly relevant to AV ČR because its disciplinary range includes not only natural and technical sciences, but also social sciences and humanities. The Academy's innovation role therefore includes what might be called cognitive infrastructure: stable knowledge systems that allow society to understand itself and act more intelligently. In this respect, the humanities and social sciences are not marginal to innovation. They help define values, interpret social risks, preserve cultural memory, analyse institutions, and identify the consequences of technological change. A mature innovation system needs such knowledge just as much as it needs laboratories and prototypes.

This broader understanding of innovation is essential for the Czech case because the country's future challenges are not only industrial. They include demographic ageing, regional inequality, energy transformation, climate adaptation, public trust, disinformation, security risks, education, urban development, cultural heritage, and the changing position of small and medium-sized economies in global value chains. The Academy can contribute to these challenges precisely because it is not bound to one ministry, one industrial sector, or one electoral cycle. It can assemble interdisciplinary teams, compare long-term data, maintain continuity in expertise, and offer analyses that are not immediately reducible to political messaging. In this sense, the Academy functions as a national memory and foresight institution. It remembers what short-term policy forgets, and it investigates what markets may not yet value. The phrase "Czech future" in the title of this chapter should therefore not be read as a rhetorical flourish. It points to the Academy's role in helping Czech society imagine, test, and prepare alternative futures. Innovation, in this framework, is not only the production of new devices; it is the disciplined expansion of national possibilities.

The Academy's specific role also depends on trust. Scientific knowledge enters public decision-making only when institutions are perceived as competent, independent, and oriented towards the public good. Under authoritarian or ideologically controlled systems, academies can be mobilised to legitimise power; under market-dominated systems, they can be pressured to justify themselves by immediate economic returns. The Czech Academy's post-1989 legitimacy has rested on a different claim: that public research should be autonomous, internationally evaluated, socially useful, and institutionally accountable. This claim is not easy to sustain, because different audiences expect different things from science. Politicians may demand visible national benefits; companies may demand usable results; citizens may demand trustworthy explanations; researchers may demand freedom to pursue difficult questions. The Academy's innovation role lies in mediating these expectations without becoming captive to any single one. It must remain sufficiently close to society to be useful and sufficiently independent from society's immediate pressures to be reliable. This is a demanding institutional position, but it is precisely what distinguishes a national academy from a commercial research supplier.

The importance of this distinction becomes clearer when one considers the temporal structure of innovation. Market innovation often operates under pressure of speed: faster development, faster scaling, faster return on investment, faster product cycles. Academic innovation often begins in slowness: careful observation, method-building, replication, debate, archival work, fieldwork, instrument development, theoretical modelling, and the training of younger researchers. This slower rhythm is not inefficiency. It is the condition that makes robust knowledge possible. The Academy is especially suited to this role because its institutes can cultivate long-duration research agendas that survive beyond individual grants and political cycles. Climate science, epidemiology, archaeology, linguistics, fundamental physics, and mathematical modelling all require such continuity. When a crisis arrives, society discovers that rapid response depends on knowledge accumulated slowly before the crisis. The COVID-19 pandemic made this relationship visible across many countries, and the Academy itself presented the application of CAS research during the pandemic as an example of knowledge transfer beyond ordinary commercial metrics (*Czech Academy of Sciences, 2022*). Innovation, then, is often the delayed public return on sustained scientific patience.

The national academy's innovation role is also connected to scientific sovereignty. For a medium-sized country such as the Czech Republic, sovereignty does not mean autarky or isolation from international science. On the contrary, Czech scientific sovereignty depends on deep European and global integration. But it also requires domestic competence: the ability to understand, evaluate, adapt, and sometimes create advanced knowledge rather than merely import it. A country without strong public research institutions becomes dependent on external suppliers of technology, external interpretations of data, and external definitions of its own problems. The Academy helps prevent such dependence by sustaining expertise in fields that are strategically important even when they are not immediately profitable. This is visible in areas such as energy, materials, environmental monitoring, biomedicine, artificial intelligence, cybersecurity, and cultural heritage. It is equally visible in the social sciences, where independent analysis of inequality, public policy, political behaviour, and social change strengthens democratic self-understanding. In this sense, innovation is bound to national intellectual independence. The Academy's task is not to close Czech science within national borders, but to ensure that Czech society participates in global knowledge from a position of competence rather than dependence.

The Czech innovation system has long faced the problem of fragmentation. Public research organisations, universities, technology transfer offices, regional innovation centres, ministries, agencies, and firms do not automatically form a coherent ecosystem. The European Commission's Policy Support Facility review of the Czech knowledge transfer system identified the need to reform technology transfer and knowledge valorisation practices, improve the institutional framework for technology transfer offices, and align them better with the needs of the Czech research, development, and innovation environment (*European Commission, 2025*). This diagnosis is important for understanding the Academy's current direction. CAS Innovations, CeTTAV, Strategy AV21, and application-development programmes can be seen as Academy-level responses to a wider national problem: how to move from dispersed excellence and isolated transfer initiatives towards more coherent pathways from knowledge to use. The Academy alone cannot solve the structural weaknesses of the Czech innovation system. Yet because it is the largest non-university research institution in the country and has institutes across many disciplines, it can act as one of the system's stabilising platforms. Its

innovation role is therefore both internal and external: it must organise transfer within its own institutes and help improve the wider national architecture of knowledge circulation.

The Academy's role is further complicated by the dual expectation that it should support both basic and applied research. In public debates, these categories are often treated as opposites, as if basic research were abstract and applied research practical. In reality, they are historically interdependent. Many applied breakthroughs depend on discoveries that were originally basic, while applied problems often generate new theoretical questions. The Academy's specific value lies in being able to hold these two dimensions together. It can protect curiosity-driven research while also building mechanisms that allow promising results to move towards application. This is why the Academy's recent priorities refer to both basic and applied research, rather than presenting innovation as a replacement for scientific excellence. The distinction matters politically: if innovation policy weakens basic research, it undermines the very source of future innovation. If basic research refuses all pathways to application, it becomes vulnerable to the charge of public irrelevance. The Academy must therefore defend a dynamic continuum rather than a rigid hierarchy.

This continuum is also visible in the way the Academy cooperates with industry. Industrial partners often seek solutions, expertise, measurement, prototypes, analyses, or access to specialised equipment. Academy institutes can provide these, but their strongest contribution often lies not in routine service work, but in the capacity to address problems that exceed ordinary corporate laboratories. When cooperation is well designed, industry gains access to high-level knowledge, while researchers gain insight into practical constraints, technological needs, and possible applications of their work. However, the Academy must avoid becoming dependent on low-value contractual tasks that consume scientific capacity without advancing research. The innovation role of a national academy is not to replace private R&D, but to complement it where public research has comparative advantage. This includes high-risk inquiry, long-term exploration, interdisciplinary methods, sophisticated instrumentation, and independent validation. The Academy's cooperation with firms is therefore most valuable when it transforms both sides: companies become more knowledge-intensive, and research teams become more aware of the technological and social environments in which their discoveries may matter.

The same logic applies to cooperation with ministries, regions, and municipalities. Public authorities need expert knowledge in areas such as environmental protection, transport, education, social policy, public health, energy, regional development, and cultural heritage. The Academy can offer this knowledge because its institutes often maintain long-term datasets, historical expertise, modelling capacity, and specialist communities that are not available inside administrative bodies. Unlike private consultancy, academic expertise is ideally grounded in peer-reviewed knowledge, methodological transparency, and institutional independence. This does not mean that academy experts are infallible or politically neutral in a simplistic sense. It means that their authority derives from professional standards rather than from immediate political advantage. For a democratic state, such expertise is a form of institutional capital. It allows public decision-making to be more informed, and it helps society distinguish between knowledge, opinion, lobbying, and propaganda. In this respect, the Academy's innovation role includes the innovation of governance itself: better concepts, better evidence, better risk assessment, and better long-term planning.

The specificity of the Academy's innovation role also comes from its disciplinary plurality. A technical university may specialise in engineering education and applied technological development; a ministry may focus on sectoral policy; a corporation may focus on market value; a regional centre may focus on local entrepreneurship. The Academy combines institutes in physics, chemistry, biology, medicine, mathematics, computer science, earth sciences, humanities, and social sciences. This breadth allows it to address problems that cannot be solved inside one disciplinary language. Climate adaptation, for example, requires atmospheric science, hydrology, ecology, economics, public policy, sociology, urban planning, and communication. Artificial intelligence requires mathematics, computer science, ethics, law, linguistics, psychology, labour-market analysis, and security studies. Biotechnology requires molecular biology, medicine, intellectual property, public trust, regulation, and bioethics. Cultural memory requires archaeology, history, philology, digital technologies, conservation science, and public education. The Academy's innovation role therefore emerges from its capacity to create interdisciplinary combinations that are difficult to generate in narrower institutions. This is one of the reasons why Strategy AV21 is not a secondary programme but a revealing expression of the Academy's institutional logic.

A national academy also contributes to innovation by forming scientific elites. Innovation systems do not consist only of organisations and funding streams; they depend on people capable of moving between fundamental research, technological development, public communication, and institutional leadership. The Academy trains such people through doctoral supervision, postdoctoral careers, research teams, international projects, and collaboration with universities. It also provides a professional environment in which younger researchers can learn how to work with complex instruments, international standards, peer review, grant competition, intellectual property, and public responsibility. This human-capital dimension is often underestimated because it is harder to measure than patents or spin-offs. Yet it may be the Academy's most durable contribution. Researchers trained in Academy institutes may later move to universities, companies, ministries, international organisations, or start-ups, carrying with them methods, standards, and networks. In this way, the Academy diffuses innovation through careers as well as through technologies. It produces not only results, but also people who know how to produce reliable results.

The Academy's innovation role is therefore inseparable from evaluation and quality control. If public research is to support innovation, it must first be excellent research. Weak science does not become useful merely because it is labelled applied. The Academy's modern development has included repeated efforts to evaluate institutes, internationalise standards, and distinguish genuine excellence from institutional inertia. Recent Academy statements have connected future priorities with evaluation, excellent research, scientific careers, and applicability of results (*Czech Academy of Sciences, 2026*). This combination is important because innovation policy can easily become performative: institutions may count outputs without asking whether they are scientifically strong or socially meaningful. A national academy must resist such superficiality. It must cultivate evaluation systems that recognise diverse forms of value: frontier publications, instruments, datasets, patents, expert reports, public engagement, cultural work, and long-term disciplinary stewardship. The challenge is to avoid both extremes: a narrow bibliometric model that ignores application, and a narrow commercial model that ignores scientific depth. The Academy's institutional maturity will be measured by its ability to evaluate innovation without simplifying science.

The Czech Academy's current movement towards more active transfer should also be read against the broader European shift from "technology transfer" to "knowledge valorisation". The older model often imagined a linear path from laboratory discovery to patent, licence, company, and market. Contemporary European policy increasingly emphasises wider circulation of knowledge: co-creation, open science, public engagement, standards, social innovation, policy advice, and responsible innovation. The Academy's own profile fits this broader model better than a purely linear commercialisation scheme. Its institutes generate technologies, but they also generate expertise, methods, databases, cultural interpretations, and public evidence. The establishment of transfer structures is therefore necessary but not sufficient. The Academy also needs channels for policy transfer, educational transfer, cultural transfer, and societal learning. Strategy AV21 partly fulfils this function by framing research around public-interest challenges rather than only around intellectual property. The future of the Academy's innovation role will depend on whether it can integrate commercial transfer with this richer understanding of public value.

The institutional identity of AV ČR therefore contains a productive tension. On the one hand, it is a guardian of long-term academic autonomy and disciplinary continuity. On the other hand, it is increasingly expected to become a visible actor in the national innovation ecosystem. This tension should not be treated as a weakness. It is precisely the tension that makes a national academy useful. If it were only autonomous, it might become socially isolated; if it were only application-oriented, it might lose the depth that makes its applications valuable. The Academy's task is to inhabit the space between these poles with intelligence and institutional discipline. It must preserve the freedom to ask questions that no client has commissioned, while also building the competence to move discoveries into public use when the opportunity arises. It must speak both the language of science and the language of society without allowing either to corrupt the other. This is why the Academy's innovation role is not an administrative add-on, but a central expression of its modern public mission.

The specific Czech dimension of this role lies in the country's historical experience with science as both a national-cultural project and a state-organised institution. From the learned societies and museums of the national revival to the Czechoslovak Academy, from socialist centralisation to post-1989 democratic reform, Czech science has repeatedly been asked to define its relation to the nation, the state, and the wider world. The modern AV ČR inherits this layered history. Its innovation role therefore cannot be reduced to the vocabulary of competitiveness alone, even though competitiveness is explicitly included in its statutory mission (*Czech Academy of Sciences, 2006*). It also concerns cultural continuity, democratic expertise, scientific freedom, and the capacity of a small European country to participate in global knowledge production. In this respect, innovation becomes a historical category. It is not merely the new replacing the old, but the ability of an institution to transform inherited capacities into future-oriented public value. The Academy's laboratories, archives, institutes, and intellectual traditions are not relics of the past; they are resources for imagining and building the future.

Thus, the specific innovation role of a national academy such as AV ČR lies in its ability to connect long-term fundamental research with public usefulness without collapsing science into short-term commercial or political demand. Its contribution begins in the maintenance of deep disciplinary competence, specialised infrastructures, international standards, and scientific elites, and only later becomes visible in licences, spin-offs, prototypes, policy advice, public expertise, and cultural knowledge. The Academy's recent development — Strategy

AV21, professional technology transfer, application-development programmes, and CAS Innovations — shows a clear movement towards a more active and organised innovation function. Yet the Academy's greatest value remains its capacity to produce knowledge that society cannot easily commission because it does not yet know that it will need it. For the Czech future, this means that AV ČR is not simply one actor among others in the innovation system. It is a long-term public institution that helps the country preserve intellectual sovereignty, prepare for technological change, and transform scientific autonomy into responsible national development.

2. Long-Term Research as the Basis of Future Technologies

Long-term research is the quiet prehistory of future technologies. It rarely looks dramatic at the moment when it is being done, because it often consists of careful measurement, theoretical clarification, patient experimentation, repeated failure, and the gradual formation of specialist communities. Yet many technologies that later appear revolutionary are not born suddenly in the marketplace; they are assembled over decades from concepts, instruments, materials, algorithms, data, and human skills produced in research environments that were not initially organised around immediate commercial use. This is why a national academy is especially important for an innovation system. It gives a country a place where questions can be pursued before they are profitable, before they are politically fashionable, and sometimes even before their practical meaning can be fully understood. In the Czech case, this function belongs at the centre of the institutional history of AV ČR, because the Academy's modern mission explicitly combines the advancement of knowledge with service to Czech society, national culture, education, competitiveness, and the solution of contemporary problems (*Czech Academy of Sciences, 2006*). The deeper point is that these aims do not contradict one another. Knowledge becomes socially useful precisely because, for a time, it is allowed to develop according to the internal standards of science.

The relation between long-term research and technology has often been described through the language of "basic" and "applied" science, but that distinction can be misleading if it is treated too mechanically. The classical post-war argument, expressed most famously by Vannevar Bush, presented basic research as a source of future practical advances, a reservoir from which medicine, defence, industry, and public welfare would later draw (*Bush, 1945*). Later scholarship complicated this linear model by showing that science and technology interact in more circular ways: application can stimulate theory, instruments can transform concepts, and practical problems can open new fields of fundamental inquiry (*Stokes, 1997*; *Edgerton, 2006*). Yet the correction of the linear model should not lead to the opposite error, namely the belief that all research must be immediately application-driven. The most productive innovation systems usually contain both curiosity-driven research and mission-oriented programmes, both disciplinary depth and interdisciplinary problem-solving, both slow accumulation and rapid translation. The Academy's specific role lies in holding these time horizons together. It is not only an institution that produces usable results; it is an institution that preserves the conditions under which unexpected future usability becomes possible.

A future technology begins as an option before it becomes an application. A new mathematical method, a new spectroscopic technique, a new understanding of protein structure, a new material, a new archaeological database, or a new model of climate risk may remain for years within a specialised scientific environment. During that time, it may not attract investors, it may

not appear in policy slogans, and it may not yet have a clear industrial partner. Nevertheless, it enlarges the field of possible action. When circumstances change — when a disease appears, an energy system becomes unstable, a manufacturing process reaches its limits, or a society faces an environmental crisis — such accumulated knowledge can suddenly become indispensable. The innovation value of long-term research is therefore partly hidden until the moment when it becomes necessary. A national academy protects this hidden value. It does so by maintaining laboratories, collections, archives, observatories, experimental platforms, computational capacity, disciplinary schools, and research careers across periods when public attention moves elsewhere.

This is particularly important for a medium-sized country such as the Czech Republic. Large states can sometimes rely on the scale of their universities, defence laboratories, private corporations, and federal research agencies to preserve scientific breadth. Smaller and medium-sized countries must be more deliberate. They need institutions that prevent strategic knowledge from becoming too fragmented, too dependent on imported expertise, or too vulnerable to short-term political budgeting. AV ČR performs this function by sustaining research across the natural, technical, medical, social, and human sciences. Its mission statement emphasises highly specialised and interdisciplinary research, international standards, Czech social needs, and national culture (*Czech Academy of Sciences, n.d.*). This is not merely institutional rhetoric. It reflects a structural necessity: Czech future technologies will not arise only from entrepreneurial energy, but from a national capacity to understand advanced science, operate complex infrastructures, train researchers, and participate in international knowledge networks from a position of competence.

The historical experience of Czech and Czechoslovak science confirms this point. The strongest technological legacies did not emerge only from formally applied programmes. They often arose from a dense interaction between theoretical curiosity, laboratory craftsmanship, disciplinary tradition, and institutional support. Jaroslav Heyrovský's polarography and Otto Wichterle's work on soft contact lenses became emblematic because they showed that Czech science could generate discoveries with international technological consequences, even when the original research context was not reducible to commercial product development (*Míšková & Franc, 2014*; *Pokorný, 2009*). These examples matter not because history should be used nostalgically, but because they reveal the anatomy of future-oriented research. The decisive factors were not only ideas, but also instruments, chemical cultures, experimental habits, institutional continuity, and the ability to transform a scientific problem into a usable method or material. The lesson for AV ČR is clear: future technologies are rarely invented by isolated acts of inspiration. They are prepared by research cultures that keep producing competence before the market knows how to value it.

After 1989, this relationship between long-term research and future application acquired a new institutional meaning. The Academy had to defend its place in a democratic and market-oriented system where public spending, evaluation, international competition, and economic usefulness were all increasingly scrutinised. In such an environment, long-term research could easily be caricatured as expensive, slow, or insufficiently responsive to society. Yet the transformation period also showed that a country which weakens its public research base loses future options. The closure, downsizing, or fragmentation of research institutes may create short-term savings, but it can destroy tacit knowledge, experimental schools, and technical capacities that cannot be rebuilt quickly. This is why the survival and later modernisation of AV ČR were not merely administrative achievements. They preserved a

national research substrate from which later innovation, technology transfer, and public-interest programmes could grow. The Academy's current innovation agenda stands on the institutional endurance created during those difficult post-socialist decades.

Long-term research also matters because technologies increasingly arise from convergence between fields. Artificial intelligence depends on mathematics, statistics, computer science, linguistics, cognitive science, ethics, law, and domain-specific data. Biotechnology depends on molecular biology, genomics, bioinformatics, imaging, chemistry, medicine, regulation, and public trust. Climate technologies depend on atmospheric science, ecology, hydrology, materials, energy systems, economics, regional policy, and social behaviour. Advanced materials depend on physics, chemistry, nanotechnology, modelling, microscopy, and industrial engineering. Cultural memory increasingly depends on history, archaeology, philology, conservation science, digital platforms, imaging, and data curation. None of these combinations can be built overnight. They require institutions that preserve disciplinary depth while making interdisciplinary contact possible. This is precisely the terrain on which AV ČR is strongest: not as a single-purpose innovation factory, but as a multi-institute environment in which future technological directions can be assembled from older scientific strengths.

Strategy AV21 represents one of the most visible attempts to translate this long-term capacity into a public-interest format. Its official presentation describes coordinated research programmes focused on contemporary social challenges and the practical application of research results in economically and socially important areas (*Czech Academy of Sciences, n.d.*). The language of Strategy AV21 is significant because it does not abandon fundamental research; rather, it asks how high-level research can be organised around problems that require time, interdisciplinarity, and cooperation outside the Academy. In this sense, the strategy is not simply an application programme. It is a mechanism for turning accumulated research competence into anticipatory capacity. It allows the Academy to say: we do not merely respond to the present; we help formulate the problems of the future. In innovation terms, Strategy AV21 therefore occupies the space between basic research and mission-oriented research. It gives long-term inquiry a public vocabulary without reducing it to short-term utility.

The Czech national system of large research infrastructures also shows why future technologies depend on long temporal investment. The Czech Roadmap of Large Research Infrastructures presents these infrastructures as strategic national capacities and places them in relation to the European research infrastructure landscape. The 2023–2026 update includes forty-three large research infrastructures across six broad fields: physical sciences and engineering, energy, environmental sciences, health and food, social sciences and humanities, and e-infrastructures or digital research infrastructures (*Ministry of Education, Youth and Sports, 2024*). These infrastructures are not ordinary laboratory equipment. They are shared platforms, often open to users from different institutions and countries, where experimental, computational, observational, or data-intensive research can be performed at a level impossible for isolated research groups. Their importance lies not only in what they currently measure or produce, but in the future communities and methods they make possible. A country that invests in such infrastructures invests in the technological questions that have not yet fully arrived.

Infrastructures such as ELI Beamlines, CzechNanoLab, ELIXIR CZ, and CzeCOS illustrate different dimensions of this long-term logic. ELI Beamlines belongs to the European Extreme

Light Infrastructure and supports frontier laser-based research with implications for physics, materials science, biomedical research, and laboratory astrophysics (*ELI Beamlines, n.d.*). CzechNanoLab provides open access to tools and expertise in nanoscience and nanotechnology, a field where future advances in electronics, materials, sensors, energy, and biomedicine depend on the ability to fabricate and analyse structures at extremely small scales (*CzechNanoLab, n.d.*). ELIXIR CZ offers data resources, specialised databases, tools, and e-infrastructure services for life-science researchers, reflecting the fact that future biology and medicine will be inseparable from data organisation and computational analysis (*ELIXIR CZ, n.d.*). CzeCOS provides a platform for interdisciplinary research on global change and its impacts on ecosystems, linking long-term environmental observation with adaptation and mitigation knowledge (*CzeCOS, n.d.*). None of these capacities can be understood as a simple "product pipeline". They are conditions for many possible future pipelines.

The same point applies to data infrastructures, which are increasingly central to future technologies. In older models of innovation, instruments and laboratories were often imagined as physical spaces filled with machines, chemicals, microscopes, or reactors. Today, data, algorithms, repositories, standards, metadata, and interoperability protocols are equally important. A future medical discovery may depend on biological databases; a future climate policy may depend on long-term environmental series; a future cultural heritage tool may depend on digitised archives and linguistic corpora; a future AI system may depend on carefully curated national-language datasets. AV ČR's long-term contribution is therefore not limited to visible inventions. It includes the creation of reliable epistemic environments in which data can be gathered, preserved, interpreted, and reused. This is why e-infrastructures in the Czech roadmap should be seen as part of scientific sovereignty rather than as a technical support function. Without data capacity, even excellent researchers become dependent on external platforms and external standards.

Long-term research also produces what might be called technological memory. This memory is not a passive archive of past results; it is a living capacity to know why certain methods work, why others failed, and how instruments, materials, and models have evolved. In laboratories, much of this memory is tacit. It is carried by technicians, senior researchers, engineers, software developers, archivists, curators, and experimental teams who know how to make complex systems function. When institutions are stable, this memory is transmitted between generations. When institutions are repeatedly disrupted, it is lost. The post-socialist transformation of Czech science was therefore not only a matter of legal reform and budgetary reallocation. It was also a struggle to preserve scientific memory while removing the political distortions of the socialist system. AV ČR's present capacity for innovation rests partly on the fact that enough of this memory survived and was reconnected to international science.

The technological future also depends on negative knowledge: knowledge of limits, risks, failures, and unintended consequences. Commercial R&D is often under pressure to produce a positive result, a deliverable, a marketable output, or a competitive advantage. Long-term academic research can investigate why a path is unsafe, why a material degrades, why an ecological intervention fails, why a model is unreliable, or why a social technology creates new inequalities. This form of knowledge may not look innovative in a narrow commercial sense, but it prevents costly mistakes and makes future technologies more robust. In climate research, for example, long-term observation helps distinguish structural trends from short-term fluctuation. In biomedicine, fundamental research helps prevent premature therapeutic claims. In artificial intelligence, theoretical and social analysis can identify risks in data, bias,

governance, and responsibility. A national academy contributes to innovation not only by accelerating technological change, but by making it more intelligent.

This is why the Academy's humanities and social sciences also belong to the foundation of future technologies. Technologies do not enter empty space; they enter societies with languages, institutions, inequalities, legal systems, memories, and cultural expectations. The future of AI in Czech society, for example, cannot be understood only through algorithms and computing power. It requires analysis of education, labour markets, public administration, ethics, media, language technologies, security, and democratic trust. Biotechnology requires not only molecular research, but also regulation, bioethics, public communication, and historical awareness of medical authority. Climate adaptation requires not only environmental modelling, but also understanding of municipalities, property relations, regional identities, public finance, and citizen behaviour. Cultural memory in the digital age requires not only scanning technologies, but also interpretation, classification, context, and responsibility towards historical evidence. AV ČR's disciplinary breadth makes it one of the few Czech institutions able to connect these layers over long periods.

The European context strengthens this argument. ESFRI describes research infrastructures as strategic instruments for scientific integration in Europe and for strengthening Europe's international outreach, while the Czech roadmap explicitly places national infrastructures in this wider European landscape (*ESFRI, n.d.*; *Ministry of Education, Youth and Sports, 2024*). For Czech science, this means that long-term research is not national isolation. It is the precondition for meaningful participation in European science. A country can join European infrastructures formally, but without domestic expertise it cannot fully use them. It can import technologies, but without its own research culture it cannot evaluate, adapt, or improve them. AV ČR's long-term research therefore supports Czech participation in the European Research Area not as a peripheral consumer, but as a contributor. This European embeddedness is one of the major differences between the contemporary Academy and the more constrained international position of science under state socialism.

The economic meaning of long-term research becomes clearer when placed against current Czech innovation challenges. The European Innovation Scoreboard 2025 notes that Czechia has a strong industrial base and performs well in medium- and high-tech product exports, but it also points to weaknesses in intellectual asset management, knowledge-intensive services, and some forms of public support for R&D (*European Commission, 2025*). This creates a specific strategic problem. Czech industry can be technologically capable, but without stronger knowledge valorisation and deeper public-private research linkages, the country may remain more dependent on manufacturing strength than on original knowledge-based value creation. AV ČR cannot solve this problem alone, but it can help shift the balance by supplying the deeper research base from which higher-value technologies, spin-offs, expert services, and advanced industrial cooperation can emerge. Its role is especially important because the country's innovation challenge is not only to produce more products, but to produce more original knowledge that can be transformed into products, policies, and platforms. Long-term research is therefore an economic resource, even when its economic value appears only after many years.

The European Commission's Policy Support Facility review of knowledge transfer in Czechia similarly emphasised fragmentation in the research and innovation system and the need for clearer responsibilities and better alignment of knowledge transfer policies (*European*

Commission, 2025). This diagnosis indirectly supports the case for a strong national academy. Fragmented systems require institutions capable of continuity, coordination, and high trust. AV ČR's institutes cannot replace ministries, universities, firms, or regional innovation centres, but they can provide stable scientific competence inside an otherwise dispersed ecosystem. The review also noted the broader interpretation of knowledge transfer visible in Czech policy discussions, including open science and popularisation, rather than only commercial technology transfer (*European Commission, 2025*). This broader concept fits the Academy's long-term role very well. It means that knowledge produced over decades can become valuable through many channels: licensing, public policy, education, expert reports, datasets, standards, crisis response, cultural interpretation, and public communication.

This broader view helps explain why technology transfer offices and innovation companies should be seen as the visible end of a much longer process. CeTTAV, CAS Innovations, and programmes supporting commercialisation are necessary because scientific results do not automatically move into practice. They require intellectual property strategy, legal protection, proof-of-concept support, business development, investor communication, and sometimes the creation of spin-off companies. The Academy has recently strengthened this layer: CAS Innovations was presented as a mechanism to connect scientists and investors and accelerate the path from laboratory to marketplace, while the PRAK programme supports research teams seeking licensing agreements, spin-offs, or positive social impact (*Czech Academy of Sciences, 2026*; *Czech Academy of Sciences Transfer Centre, 2025*). Yet these mechanisms do not create research ex nihilo. They harvest, select, protect, and develop outputs that long-term research has made possible. The danger would be to confuse the transfer mechanism with the source of innovation itself. The source remains the accumulated scientific capacity of the institutes.

A useful way to understand this relationship is to distinguish between discovery time, maturation time, and transfer time. Discovery time belongs to fundamental inquiry: it asks what is true, what is possible, what mechanisms exist, and what methods can reveal them. Maturation time belongs to the slow strengthening of a result: replication, scaling, instrumentation, comparison, data accumulation, safety assessment, and interdisciplinary interpretation. Transfer time belongs to the movement from research environment to application environment: patents, licences, prototypes, spin-offs, public policy use, or professional practice. Innovation policy often sees only the third phase because it is administratively visible. A national academy must protect all three. If it focuses only on discovery, useful results may remain locked inside laboratories. If it focuses only on transfer, it will eventually exhaust the reservoir of discoveries. If it supports maturation, it can turn scientific insight into a credible future technology without sacrificing scientific standards.

This logic is especially relevant for AI, biotechnology, climate research, materials science, and cultural memory, which will be discussed more fully in the later section on emerging fields and strategic research directions. Each of these areas depends on long-term accumulation. AI needs not only computing power, but also mathematical competence, language resources, domain datasets, ethical frameworks, and secure digital infrastructure. Biotechnology needs biological data, laboratory platforms, imaging, bioinformatics, clinical cooperation, and regulatory understanding. Climate research needs long-term observations, ecosystem monitoring, modelling, and communication with public authorities. Materials science needs laboratories that can fabricate, characterise, and test materials across scales. Cultural memory needs archives, digitisation, conservation science, historical interpretation, and tools

for public access. In each case, the future technology is not a single invention; it is a system of knowledge, infrastructure, people, standards, and institutions.

The Academy's long-term research role also has a democratic dimension. Public societies need institutions that can think beyond electoral cycles and market cycles. Climate adaptation, demographic change, energy transformation, digital security, public health, and cultural memory cannot be responsibly managed through short-term reaction alone. They require continuity of observation, independence of judgement, and the ability to compare current choices with historical experience and future scenarios. AV ČR can contribute to this democratic capacity because it is not built around one political programme or one corporate strategy. Its public funding creates obligations, but also gives it a degree of independence from immediate demand. In a well-functioning research system, this independence should not be viewed as privilege. It is a social mechanism for protecting difficult knowledge until society is ready to use it.

There is, however, a permanent institutional risk. Long-term research can become self-protective if it loses contact with external problems; innovation policy can become superficial if it measures only immediate outputs. The Academy must therefore avoid both academic isolation and managerial impatience. It needs evaluation systems that reward genuine excellence, interdisciplinary cooperation, infrastructure stewardship, public relevance, and responsible transfer. It also needs career structures that allow researchers to work on difficult long-term problems without being punished for not producing instant commercial results. This is particularly important for early-career researchers, whose work often depends on short grants and precarious project cycles. If the Academy wants to remain the basis of future Czech technologies, it must protect not only instruments and buildings, but also the time of researchers. Scientific time is itself an infrastructure.

The political economy of long-term research is also delicate. Governments often support science rhetorically but demand quick indicators when budgets are strained. Industry often praises innovation but may underinvest in risky pre-competitive knowledge. Citizens value expert knowledge in crises but may not see why it must be funded before the crisis. This creates a recurrent legitimacy problem for academies. AV ČR's answer must be not only communication, but demonstration through credible examples: crisis expertise, climate services, biomedical methods, materials innovations, digital resources, cultural heritage tools, policy analysis, and spin-offs where appropriate. The point is not to turn every institute into an innovation office. The point is to show that the Academy's long-term research is a national reserve of competence. In a century of technological volatility, such reserves may be as important as financial or military reserves.

The Czech future will depend heavily on whether the country can move from being a successful industrial and engineering economy to being a deeper knowledge economy. This does not mean abandoning manufacturing or applied engineering; it means strengthening the scientific foundations that allow industry, public policy, and culture to move upwards in complexity. Long-term research is the source of this upward movement. It produces the advanced methods that industry later uses, the datasets that ministries later need, the models that municipalities later consult, the materials that companies later commercialise, the biological understanding that medicine later applies, and the cultural interpretations that society later uses to understand itself. AV ČR's contribution is therefore not exhausted by any single technological

success. It is systemic. It helps sustain a national environment in which future technologies can be imagined, tested, criticised, matured, and responsibly applied.

Thus, long-term research is not the opposite of innovation, but its deepest temporal foundation. The Academy's laboratories, infrastructures, archives, datasets, scientific schools, and interdisciplinary programmes prepare future technologies by preserving knowledge before it becomes useful, maturing discoveries before they become transferable, and maintaining expertise before crises make it visibly necessary. For AV ČR, this role is historically and strategically decisive: it connects the Academy's inherited mission of advancing knowledge with the contemporary demand for technological sovereignty, social resilience, and public value. The future technologies of the Czech Republic will not emerge only from start-ups, industrial contracts, or short-term programmes, although all of these have their place. They will emerge from the long continuity of research cultures able to ask difficult questions, operate complex instruments, educate new scientific elites, and connect Czech society to the most demanding currents of European and global science. In this sense, the Academy is not merely a participant in innovation. It is one of the institutions that makes a Czech technological future thinkable.

3. The Difference Between Academic Innovation and Commercial R&D

Academic innovation and commercial research and development belong to the same national innovation system, but they do not obey the same institutional logic. They may meet in a patent, a licence, a prototype, a spin-off company, a public-private project, or a technological standard, yet they begin from different questions and are judged by different forms of value. Commercial R&D normally asks how a firm can create or improve a product, process, service, or business model that can be introduced into the market or brought into use within the firm. This corresponds closely to the definition of business innovation in the *Oslo Manual*, where innovation is understood through new or improved products or processes introduced into use or the market (*OECD & Eurostat, 2018*). Academic innovation, by contrast, may begin with a question whose practical meaning is not yet visible: how a material behaves under extreme conditions, how a gene regulatory network functions, how a language changes, how a climate system reacts, or how historical memory is formed. Its first result may be a theory, method, dataset, instrument, interpretation, model, or highly trained researcher rather than a saleable output. This does not make academic innovation less real. It means that its value is often mediated through time, institutions, and society before it becomes visible as economic value. The Academy of Sciences of the Czech Republic is positioned precisely in this space, because its statutory mission combines internationally recognised research with application for education, culture, competitiveness, and the solution of social problems (*Czech Academy of Sciences, 2006*). Therefore, the difference between academic innovation and commercial R&D is not a simple difference between "theoretical" and "practical" work. It is a difference between two regimes of knowledge production, each necessary, each limited, and each productive only when its specific character is understood.

Commercial R&D is usually embedded in an organisation that must survive through revenue, investment, contracts, or market position. Even when companies conduct highly sophisticated research, their research portfolios are constrained by commercial strategy, competitive advantage, intellectual property management, customer demand, regulation, and the expected return on capital. This does not mean that commercial research is intellectually

inferior; in many sectors, especially pharmaceuticals, semiconductors, engineering, artificial intelligence, energy technologies, and advanced manufacturing, companies operate at a very high scientific level. Yet the horizon of corporate R&D is normally narrower than the horizon of a national academy. A company can rarely justify a large research programme with no foreseeable path to business value, unless it is part of a long-term strategic bet supported by exceptional resources. A national academy, however, exists partly to preserve knowledge that is not yet commercially legible. This difference is crucial for Czech science because the Czech Republic's industrial structure has historically been strong, but its movement towards higher knowledge intensity requires public research institutions capable of producing knowledge beyond immediate industrial demand. The European Innovation Scoreboard 2025 classifies Czechia as a "Moderate Innovator" and identifies public-private co-publications and digital skills as relative strengths, while also implying the continuing need to improve the knowledge-based dimension of innovation performance (*European Commission, 2025*). In such a context, AV ČR's academic innovation is not a substitute for commercial R&D; it is a condition for a more demanding form of commercial R&D in the future.

The most obvious difference between academic innovation and commercial R&D is the time horizon. Business research is often organised around product cycles, investor expectations, customer needs, regulatory milestones, or the strategic plans of a firm. Even long-term corporate research normally has an internal business rationale: a future therapeutic platform, a new generation of materials, a faster chip, a more efficient production process, or a defensible technological niche. Academic innovation, especially in a national academy, may work on a much longer temporal scale. It can sustain research agendas across decades, allowing a field to mature before a clear application appears. This long temporality is not an accidental feature of academic life; it is one of its principal public functions. The OECD's *Frascati Manual* distinguishes basic research, applied research, and experimental development, but it also makes clear that all are part of a wider R&D continuum rather than isolated worlds (*OECD, 2015*). The Academy's role is to keep this continuum alive where market forces alone would shorten it. If only near-market research is funded, a country may obtain incremental improvements but lose the capacity to generate the next technological paradigm. In this sense, commercial R&D often moves along existing technological trajectories, while academic innovation helps create new trajectories.

The second difference concerns risk. Commercial R&D must manage risk in relation to investment, competition, regulation, and market failure. It can tolerate uncertainty, but uncertainty must eventually be converted into a business case. Academic research can tolerate a different kind of uncertainty: epistemic uncertainty. A scientific problem may be worth pursuing not because it is likely to generate revenue, but because it exposes a fundamental gap in knowledge. Such gaps may later become sources of technological transformation, but that cannot always be predicted at the beginning. The history of science contains many examples of discoveries that appeared remote from immediate application and later became indispensable to medicine, computing, materials, energy, or communications. This is why the linear model of innovation is too simple, but the rejection of basic research as "non-useful" is even more misleading. Donald Stokes's concept of "Pasteur's quadrant" remains useful here because it shows that research can be both fundamental in its search for understanding and oriented towards use (*Stokes, 1997*). A national academy works precisely in this zone. It can support research that is conceptually deep, socially relevant, and not yet commercially defined.

The third difference concerns the meaning of output. For a company, an innovation normally becomes meaningful when it changes a product, service, production process, business process, market position, or revenue stream. The *Oslo Manual* explicitly frames business innovation through introduction into use or the market, which makes sense for measuring innovation in the business sector (*OECD & Eurostat, 2018*). For a national academy, however, the output may be a publication, database, material, patent, prototype, expert report, software tool, methodology, public policy recommendation, conservation technique, trained doctoral student, or internationally recognised infrastructure. Some of these outputs are commercialisable, but many are not. A biodiversity dataset may help environmental governance rather than generate profit. A historical corpus may preserve cultural memory rather than become a product. An epidemiological model may support public health decisions rather than create a firm. A materials patent may become commercial property, but a climate-risk assessment may become a municipal planning instrument. Academic innovation therefore has a wider value grammar than commercial R&D. It creates economic value, but it also creates public, cultural, epistemic, strategic, and democratic value.

This wider value grammar is especially important for AV ČR because the Academy is not only a technical-scientific institution. It contains institutes in the humanities and social sciences as well as natural, medical, and technical fields. Commercial R&D usually has limited incentives to sustain archaeology, philosophy, history, linguistics, sociology, political science, or cultural heritage studies unless these areas become connected to digital services, publishing, tourism, education, or consultancy. A national academy can preserve them because they form part of national intellectual infrastructure. Their innovation does not always appear as a device or an industrial process; it may appear as a new interpretation of collective memory, a new digital corpus, a better social survey, a conceptual framework for public policy, or an expert diagnosis of institutional change. In modern societies, such knowledge is not ornamental. It shapes education, public trust, democratic resilience, cultural policy, and the capacity to understand technological transformation. When the Academy's mission refers to Czech society and culture, it recognises that national development cannot be measured only in commercial indicators (*Czech Academy of Sciences, n.d.*). The difference between academic innovation and commercial R&D is therefore also a difference between innovation for the market and innovation for society.

The 4th difference lies in governance. Commercial R&D is governed by corporate hierarchy, investor interests, strategic management, intellectual property portfolios, and market discipline. Academic innovation is governed by peer review, scientific reputation, institutional evaluation, public funding rules, research ethics, disciplinary standards, and increasingly by knowledge-transfer strategies. This does not mean that academic governance is automatically purer or more efficient. Academic institutions may suffer from bureaucracy, conservatism, fragmented incentives, weak commercial awareness, or slow decision-making. Yet their governance is designed to protect a form of judgement that cannot be reduced to immediate economic value. The Academy's evaluation processes, research councils, institute structures, and statutory mission exist to ensure that science remains accountable to standards of knowledge as well as to society. This is why the recent professionalisation of technology transfer inside AV ČR is institutionally significant. It attempts to connect scientific governance with innovation governance without allowing one to abolish the other. The CAS Technology Transfer Centre, for example, provides services such as support for spin-offs, business planning, financing models, founding documents, and implementation teams (*Czech*

Academy of Sciences Transfer Centre, n.d.). These services do not turn the Academy into a corporation; rather, they help academic knowledge enter environments where corporate forms are sometimes necessary.

The 5th difference concerns incentives for people. In commercial R&D, researchers and engineers are usually rewarded for solving defined problems, meeting milestones, producing protected intellectual property, improving performance, reducing costs, or helping deliver products. In academic research, incentives have traditionally centred on publications, citations, international recognition, grants, doctoral supervision, and disciplinary reputation. This difference can create friction. A researcher may see a promising application but hesitate because commercialisation requires time away from publications. A company may expect speed and confidentiality, while academic researchers expect openness, peer review, and publication. A technology transfer office may attempt to reconcile these interests, but the underlying incentive structures remain different. Modern academies therefore face a difficult task: they must recognise patents, prototypes, licences, expert reports, and spin-offs without undermining the prestige of fundamental research. If they reward only publications, valuable applications may be lost. If they reward only marketable outputs, scientific depth may decline. AV ČR's current transfer strategy and its CAS Innovations initiative should be understood as attempts to adjust incentives while preserving the Academy's core scientific identity.

The 6th difference is openness. Academic research normally depends on publication, critique, reproducibility, international exchange, and the circulation of knowledge. Commercial R&D often depends on secrecy, exclusivity, first-mover advantage, patents, trade secrets, and controlled disclosure. These two cultures are not irreconcilable, but they operate according to different principles. A scientist may want to present results at a conference; a firm may want to delay disclosure until a patent application is filed. A public research institute may value open data; a commercial partner may require restricted access. A national academy must manage these tensions carefully. Too much openness too early may destroy patentability or weaken a strategic position. Too much secrecy may damage academic credibility and the public character of publicly funded research. The European Union's policy shift towards knowledge valorisation is important here because it recognises many pathways from research to value, including market and non-market channels, and stresses the involvement of actors across the research and innovation ecosystem (*Council of the European Union, 2022*). For AV ČR, this broader framework allows technology transfer to coexist with open science, public communication, expert knowledge, and cultural mission.

The7th difference concerns the treatment of failure. In commercial R&D, failure may be accepted as part of innovation, but repeated failure can threaten funding, careers, and investor confidence. In academic research, failure is also costly, but negative results and conceptual dead ends can have epistemic value if they are properly understood. A failed experiment may reveal a boundary condition, a flawed assumption, or the need for a new method. A social-scientific hypothesis may be rejected but still clarify the structure of a problem. A materials approach may fail commercially but reveal useful behaviour under specific conditions. Academic innovation therefore often advances through forms of learning that are not immediately convertible into products. Commercial R&D tends to filter such learning through practical utility. This is why the two systems need each other. Academic research can explore a wider landscape of possibilities and impossibilities, while commercial R&D can discipline those possibilities through engineering, scaling, regulation, and user demand. The Academy's

task is to preserve the exploratory space from which more focused development can later select.

The 8th difference is scale of public responsibility. Commercial firms are responsible to their owners, customers, regulators, employees, and sometimes to broader social expectations, but their institutional purpose remains bounded by business success. A national academy is responsible to the public because it is funded as part of the national research system and because it carries long-term intellectual obligations that exceed the interests of any one sector. AV ČR's mission includes not only research, but also education of researchers, participation in national and European research policy, dissemination of knowledge, and application of results for Czech society (*Czech Academy of Sciences, 2006*). This gives academic innovation a normative dimension. It must ask not only whether something can be done, but whether it should be done, under what conditions, with what risks, and for whose benefit. Commercial R&D may also ask ethical questions, especially in regulated sectors, but the academy has a special responsibility to preserve independent judgement. This is particularly important in areas such as AI, biotechnology, environmental intervention, security technologies, and public health. In these fields, innovation without independent expertise may become socially dangerous.

The 9th difference is the relation to national strategy. Commercial R&D contributes to national competitiveness through productivity, exports, employment, tax revenue, and technological capability. Yet individual firms optimise for their own strategic position, not necessarily for the long-term intellectual sovereignty of the state. A national academy can help align scientific capacity with national needs without being reduced to industrial policy. Czechia's Innovation Strategy 2019–2030 sought to place science, research, and innovation at the centre of national development and promoted the ambition of making the country one of Europe's innovation leaders by 2030 (*Government of the Czech Republic, 2019*). This kind of strategy requires more than business dynamism. It requires excellent public research, coherent governance, universities, firms, infrastructures, start-up environments, and public administration able to use evidence. The OECD's 2025 Economic Survey of Czechia notes that the country has adopted several strategies and programmes to boost innovation capacity, but also emphasises that governance should be enhanced and that R&D expenditure targets remain important (*OECD, 2025*). In this national picture, AV ČR's role is distinctive because it can connect strategic research, public expertise, infrastructures, and technology transfer. Commercial R&D can commercialise opportunities; academic innovation helps define the horizon of opportunity itself.

This distinction is visible in the Academy's Strategy AV21. Its motto, "Top research in the public interest", does not mean "research with immediate commercial application". It means research organised around problems and challenges of contemporary society, often through interdisciplinary programmes and cooperation among institutes and external partners (*Czech Academy of Sciences, n.d.*). Such a strategy expands the meaning of innovation. It includes energy futures, health, artificial intelligence, public policy quality, environmental resilience, cultural identity, space research, fungi, and crises of contemporary society, depending on the programme cycle. Some of these topics may generate patents or companies, but others may generate expert knowledge, public understanding, institutional preparedness, or policy recommendations. Commercial R&D would not naturally organise itself around this full spectrum because many of the expected benefits are diffuse, long-term, and public. The Academy can do so because its legitimacy rests on public-interest research as well as

scientific excellence. This is one of the clearest differences between academic innovation and commercial R&D in the Czech context.

The 10th difference concerns the management of intellectual property. For commercial R&D, intellectual property is usually a strategic asset, a barrier to competition, a licensing opportunity, or a bargaining tool. For academic institutions, intellectual property is more ambivalent. It can protect public investment and enable transfer, but it can also restrict scientific openness or create administrative complexity. AV ČR's transfer structures have emerged precisely because researchers cannot be expected to manage this complexity alone. CeTTAV's services for spin-offs, incubation, and transfer community support indicate that the Academy recognises the need for specialised mediation between scientific discovery and commercial development (*Czech Academy of Sciences Transfer Centre, n.d.*; *Czech Academy of Sciences Transfer Centre, n.d.*). CAS Innovations, launched as a joint-stock company, goes further by creating a platform intended to connect scientists and investors, accelerate the movement from laboratory to marketplace, and support the creation of globally competitive companies from Academy research (*Czech Academy of Sciences, 2026*). This is not the same as ordinary corporate R&D. The intellectual property originates in publicly supported research and must be handled in a way that respects public ownership, inventor motivation, institute interests, investor needs, and long-term scientific reputation.

The 11th difference lies in the relation to demand. Commercial R&D is normally demand-sensitive: it responds to customers, markets, users, supply-chain pressures, regulatory opportunities, competitors, and technological bottlenecks. Academic innovation can be demand-sensitive, but it can also be demand-forming. It can reveal a problem before there is a market for solving it. Climate science revealed risks long before many industries treated them as strategic. Epidemiology, virology, and immunology create preparedness before a pandemic generates urgent demand. Social research can identify inequality, educational decline, or institutional distrust before these problems become politically unavoidable. Historical and cultural research can preserve forms of memory before they are threatened by conflict, neglect, or digital erosion. In this sense, academic innovation is anticipatory. It does not simply answer existing demand; it helps society recognise what should become demand. This anticipatory function is one of the reasons why the Academy's public-interest mission cannot be replaced by commercial R&D.

The 12th difference concerns interdisciplinarity. Companies can be interdisciplinary, especially in complex technological sectors, but their interdisciplinarity is usually organised around a product, platform, or market goal. Academic interdisciplinarity can be organised around a problem whose outcome is not pre-defined. Strategy AV21 explicitly uses coordinated research programmes and interdisciplinary cooperation as a way of addressing contemporary challenges (*Czech Academy of Sciences, n.d.*). This matters because many future technologies require not only the integration of scientific fields, but also the integration of technological, social, ethical, and cultural perspectives. Artificial intelligence is not only machine learning; it is also language, labour, law, education, media, and security. Biotechnology is not only molecular engineering; it is also regulation, bioethics, agriculture, medicine, and public trust. Energy transformation is not only physics and engineering; it is also economics, public policy, landscape, regional development, and social acceptance. Commercial R&D can develop parts of these systems, but academic innovation can hold the whole problem in view. This is a major comparative advantage of a broad national academy.

The 13th difference is that academic innovation can produce legitimacy. When public authorities, companies, or citizens face controversial technological decisions, they often need an independent knowledge institution capable of explaining evidence, risks, and uncertainty. Commercial R&D may be technically excellent but can be suspected of interest-driven interpretation. Academic expertise is not automatically neutral, but it is more credible when embedded in peer review, transparency, and institutional independence. AV ČR's role during public controversies, crises, and strategic debates therefore cannot be reduced to "technology supply". It also supplies public trust, or at least the conditions under which trust can be rationally built. This is especially significant in a society exposed to disinformation, polarisation, technological anxiety, and geopolitical uncertainty. The Academy's innovation role includes the production of trusted knowledge environments. Commercial R&D may create powerful technologies, but it cannot alone create the public legitimacy required for their responsible adoption.

The 14th difference concerns measurement. Commercial R&D can be measured through sales, productivity, market share, patents, licences, return on investment, product launches, customer adoption, or firm growth. Academic innovation is harder to measure because its effects are indirect, delayed, and distributed across many social systems. A highly cited publication may become part of a technology years later. A dataset may support dozens of future studies. A public-policy report may prevent a costly mistake rather than produce a visible product. A trained researcher may leave the Academy and create value elsewhere. A new method may spread internationally without generating local revenue. Evaluation systems often struggle to capture such effects, and this creates political risk for academies. If academic innovation is judged only by commercial indicators, much of its value disappears from view. If it is judged only by academic indicators, its public relevance may be underestimated. A mature national innovation system needs evaluation capable of recognising multiple forms of value.

The European Commission's 2025 review of the Czech knowledge transfer system is relevant precisely because it frames Czechia's challenge not as the absence of research, but as the need to move from fragmentation towards synergy and impact (*European Commission, 2025*). The review emphasises structural challenges in technology transfer offices and recommends systemic change in the knowledge-transfer environment. This diagnosis helps explain why the difference between academic innovation and commercial R&D must not become a separation. If academic institutions produce knowledge that does not circulate, the country loses value. If companies remain disconnected from public research, they lose access to high-risk and high-quality knowledge. If policy sees transfer only as commercialisation, it misses the broader forms of societal impact. The Czech challenge is therefore to connect the two logics without confusing them. AV ČR's transfer structures, CAS Innovations, and Strategy AV21 are institutional responses to this problem. They create bridges between public science and practical use while preserving the distinctiveness of academic research.

The 15th difference lies in the relationship between competition and cooperation. Commercial R&D often operates in a competitive environment in which knowledge is strategically controlled. Firms may cooperate, but cooperation is usually limited by rivalry, market protection, and intellectual property concerns. Academic innovation, by contrast, depends heavily on collaboration, publication, conferences, shared infrastructures, international consortia, and cross-institutional networks. The Academy's institutes operate inside European and global scientific systems where reputation is built through contribution to collective knowledge. This cooperative culture is one of the reasons why academic research can solve

problems too broad for one company. Large research infrastructures, open scientific databases, long-term observation networks, and international research programmes all depend on shared commitments. Czech participation in such structures strengthens national capacity because it allows domestic researchers to contribute to and benefit from wider scientific ecosystems. Commercial R&D can exploit these ecosystems, but it rarely sustains them alone. A national academy helps maintain the cooperative foundations on which later competitive advantage may rest.

The 16th difference concerns education and the formation of expertise. Commercial R&D employs researchers and engineers, but it normally does not carry the same public responsibility for reproducing scientific disciplines. AV ČR, although not a university, participates in doctoral training, postdoctoral development, joint research with universities, and the formation of scientific careers. This educational function is central to academic innovation. Future technologies require people who understand not only how to use existing tools, but how to question assumptions, design experiments, evaluate evidence, and work across disciplines. A company can train employees for specific tasks, but a national academy helps form research personalities capable of creating new fields and methods. The knowledge that moves from AV ČR into the Czech economy often travels through people, not only through patents. Researchers trained in Academy institutes may later join universities, ministries, firms, start-ups, European agencies, or international organisations. This circulation of expertise is an innovation output in its own right, even when it is not recorded as technology transfer.

The 17th difference concerns the relation to the state. Commercial R&D often interacts with the state through subsidies, tax incentives, procurement, regulation, and industrial policy. Academic innovation interacts with the state more fundamentally, because public research institutions are part of the state-supported knowledge infrastructure of society. This does not mean that the Academy should be politically obedient. On the contrary, its value to the state depends on its autonomy from day-to-day political pressure. The Academy can provide expertise to ministries, regions, and municipalities precisely because it is not itself a ministry or a commercial consultancy. It can advise, criticise, model, interpret, and warn. In fields such as public health, energy, environmental policy, education, regional development, and social inequality, this independent expert role is a form of innovation in governance. It improves the quality of decision-making and helps the state act on evidence rather than improvisation. Commercial R&D rarely performs this role because its main relation to the state is contractual, regulatory, or market-oriented.

The 18th difference is seen in crises. In a crisis, society often discovers that the most valuable knowledge was produced long before anyone could monetise it. A pandemic requires virology, immunology, modelling, public communication, and social research. An energy crisis requires physics, engineering, economics, geopolitics, and behavioural analysis. A climate emergency requires long-term environmental data, forecasting models, adaptation knowledge, and institutional coordination. A cultural or political crisis requires historical memory, social diagnosis, and democratic expertise. Commercial R&D can respond quickly when a market or procurement mechanism appears, but academic innovation supplies the prior knowledge base that makes rapid response possible. The Academy's public-interest mission is therefore partly a preparedness mission. It holds capacities that are invisible in ordinary times and decisive in exceptional times. This is another reason why academic innovation cannot be assessed only through short-term market outputs.

The 19th difference concerns the moral economy of knowledge. Commercial R&D legitimately asks how knowledge can create value for a firm and its stakeholders. Academic innovation asks how knowledge can remain credible, shareable, cumulative, and socially responsible while also becoming useful. This moral economy is not abstract. It shapes decisions about data privacy, biomedical ethics, environmental risk, artificial intelligence, dual-use research, cultural heritage, and public communication. A company may have ethical frameworks, but a national academy has a broader duty to preserve the integrity of knowledge itself. In the contemporary European framework, knowledge valorisation is increasingly understood as the transformation of research and innovation results into societal and economic value, not only into commercial value (*Council of the European Union, 2022*). This broader conception suits AV ČR because it includes the market without making the market the only judge. It allows academic innovation to remain academically grounded while becoming practically consequential. It also prevents public research from being captured by a narrow productivist imagination.

The 20th difference concerns dependence and sovereignty. Commercial R&D may be excellent but globally mobile: firms can move laboratories, outsource development, shift intellectual property, or reorient strategy according to corporate priorities. A national academy is territorially and historically embedded. AV ČR is part of Czech institutional continuity, Czech scientific culture, Czech public expertise, and Czech participation in European science. This embeddedness gives academic innovation a sovereignty function. It helps ensure that the Czech Republic possesses domestic competence in fields that matter for its future, rather than relying entirely on imported technologies or external interpretation. Sovereignty here does not mean isolation. It means the ability to participate in global knowledge with one's own expertise, instruments, data, and intellectual authority. Commercial R&D contributes to this sovereignty when firms are knowledge-intensive and rooted in the country, but it cannot replace the public research base. The Academy's role is to make sure that Czech society remains a producer, interpreter, and evaluator of advanced knowledge.

The 21st difference is that commercial R&D is usually more selective in disciplinary terms. It concentrates where business opportunities exist or can reasonably be expected. Academic innovation can support fields whose future importance is uncertain or whose public value is not market-shaped. The humanities, social sciences, environmental observation, fundamental mathematics, theoretical physics, taxonomy, archaeology, and long-term cultural projects often depend on this protection. Some of these fields later become technologically relevant in unexpected ways. Linguistics becomes essential for AI and language technologies. Archaeology and conservation science become part of digital heritage and cultural diplomacy. Social science becomes essential for public-policy design, crisis communication, and democratic resilience. Fundamental mathematics becomes crucial for cryptography, modelling, and data science. By preserving disciplinary diversity, the Academy keeps open future pathways that a market-based R&D system would likely ignore. Diversity of knowledge is therefore a strategic asset, not an academic luxury.

The 22nd difference concerns the path from idea to use. In commercial R&D, the path is often internally organised: research, development, testing, production, marketing, and sales are coordinated within or around the firm. In academic innovation, the path is fragmented and requires institutional mediation. A discovery made in an institute must be evaluated for protectability, maturity, market relevance, regulatory risk, funding needs, and possible partners. This is why technology transfer structures matter. CAS Innovations describes its

mission as transforming deep-tech and life-sciences research emerging from the Academy into globally competitive companies through investment, incubation, and structured venture support (*CAS Innovations, n.d.*). The Academy's own announcement emphasised that the new joint-stock company should accelerate the path from laboratory to marketplace and help bring external capital into promising technologies (*Czech Academy of Sciences, 2026*). These mechanisms recognise that academic innovation cannot simply be left to chance. Yet they also show that academic research and commercial development remain distinct phases requiring translation, negotiation, and institutional design.

The 23rd difference lies in speed and depth. Commercial R&D often values speed because late entry can mean market loss. Academic innovation values depth because shallow knowledge can produce fragile technologies. A healthy innovation system needs both. Without speed, knowledge may remain unused; without depth, technology may be unreliable, unsafe, or easily imitated. AV ČR's task is not to imitate start-up culture in its entirety, nor to withdraw into slow academic autonomy. It must create conditions under which deep research can be translated quickly when appropriate. This means early identification of promising results, professional IP support, proof-of-concept funding, entrepreneurial education, and reliable partnerships. But it also means defending research that has no immediate transfer pathway. The Academy's future success will depend on whether it can combine depth with selective acceleration. That combination, rather than simple commercialisation, is the proper meaning of academic innovation.

The 24th difference concerns public visibility. Commercial R&D often becomes visible through products, brands, services, and market stories. Academic innovation is less visible because its effects are distributed through expert systems, standards, methods, policies, trained people, and long-term capacities. This invisibility can create a political problem for the Academy. Citizens may recognise a new medical device or digital application more easily than the decades of research that made it possible. Politicians may prefer visible outputs to invisible preparedness. Media may focus on spectacular technologies rather than cumulative research cultures. Therefore, AV ČR must narrate academic innovation more effectively. Strategy AV21, public communication, transfer success stories, and collaboration with regions and ministries are not merely promotional activities. They help society see how academic knowledge becomes public value. Without such narration, the difference between academic innovation and commercial R&D may be misunderstood as a hierarchy in which only marketable outputs appear useful.

The 25th difference is that academic innovation can challenge the direction of commercial R&D. It does not merely feed firms with discoveries; it can ask whether certain technological trajectories are socially desirable, environmentally sustainable, ethically legitimate, or culturally acceptable. This critical function is essential in an age when innovation is often treated as an unquestioned good. Not every new technology improves society. Some create dependency, inequality, surveillance, ecological damage, or democratic vulnerability. A national academy can contribute to responsible innovation by examining both technological possibilities and their consequences. This is particularly important for artificial intelligence, biotechnology, climate engineering, digital platforms, and security technologies. Commercial R&D may internalise responsibility when regulation, reputation, or values demand it, but the academy's responsibility is more fundamental: to sustain independent, evidence-based, and historically informed judgement. In this sense, academic innovation is not only a source of new things. It is also a source of intelligent restraint.

Thus, academic innovation and commercial R&D should be understood not as rivals, but as different and complementary regimes within the Czech innovation system. Commercial R&D is indispensable for turning knowledge into products, processes, services, productivity, and market value, while academic innovation preserves the deeper, slower, riskier, and broader forms of knowledge from which future technologies and public capacities emerge. AV ČR's distinctive contribution lies in maintaining this academic regime while building bridges to commercial and public use through Strategy AV21, CeTTAV, CAS Innovations, infrastructures, partnerships, and expert activity. The Academy must not become a corporation, because its public value depends on autonomy, disciplinary diversity, trust, and long-term research. Yet it must not remain indifferent to application, because public science gains strength when society can see how knowledge becomes useful, protective, and future-forming. The real task is therefore not to erase the difference between academic innovation and commercial R&D, but to organise their encounter intelligently. For the Czech future, this encounter may determine whether the country remains mainly a capable industrial economy or becomes a deeper knowledge society able to create, evaluate, and govern the technologies that will shape the coming decades.

Cooperation with Industry and Public Institutions

1. Applied Projects and Contractual Research

Applied projects and contractual research occupy a sensitive but increasingly important place in the institutional history of the Czech Academy of Sciences. They do not replace fundamental research, nor do they convert the Academy into an industrial service organisation. Rather, they form one of the principal channels through which knowledge accumulated in Academy institutes enters the technological, administrative, medical, environmental, and cultural life of Czech society. In the post-socialist period, this channel became especially significant because the Academy had to prove that publicly funded research could serve a democratic and market-oriented society without losing its autonomy. The legal and statutory framework of the Academy already made this dual orientation possible: the Academy conducts research through its institutes, develops international cooperation in science and technology, and operates as a publicly financed institution of the Czech Republic (*Czech Academy of Sciences, 1992*). Its current mission also explicitly includes highly specialised and interdisciplinary research, attention to the needs of Czech society and national culture, and cooperation with applied research and industry (*Czech Academy of Sciences, n.d.*). Applied projects and contractual research should therefore be understood as instruments of circulation: they allow knowledge to move from the institute to the factory, hospital, ministry, region, municipality, public agency, or company, while still remaining rooted in academic standards.

The first distinction to make is between applied research and contractual research. Applied research is usually organised around a practical problem, technological possibility, social need, or public challenge, but it can still be scientifically exploratory. It may be supported by national agencies, European programmes, Strategy AV21, ministerial schemes, public-private

consortia, or internal Academy instruments. Contractual research, by contrast, is more directly connected to an external client or partner who commissions analysis, measurement, testing, modelling, technological development, expert assessment, or another defined service. The two forms overlap, but their institutional meaning is not identical. Applied projects often extend the Academy's own research agenda towards use; contractual research more often brings external demand into contact with Academy expertise. A mature public research institution must know how to handle both, because each can enrich the other. Applied projects may create technologies that later attract companies, while contractual work may expose researchers to problems that stimulate new scientific questions.

This distinction matters because the Academy's public mission would be weakened if applied work were reduced to routine external service. A national academy has no reason to compete with private consultancies or commercial laboratories in low-complexity tasks. Its comparative advantage lies in problems that require deep disciplinary competence, specialised instruments, methodological credibility, long-term datasets, or interdisciplinary interpretation. When a company or public authority turns to an Academy institute, it is usually not only buying labour time; it is accessing a research culture that has developed over many years. The Academy's value in contractual research therefore depends on the depth of its basic research base. If the basic research weakens, the quality of applied work will eventually decline. Conversely, if applied projects are intelligently selected, they can strengthen the research base by bringing new data, new technical challenges, new partnerships, and new pathways for impact. The institutional art lies in selecting contractual work that is scientifically meaningful rather than merely financially convenient.

Historically, this balance was difficult in the Czech lands because the relation between science and practical use had been shaped by several different regimes. In the 19th and early 20th centuries, learned societies, technical schools, museums, and national scientific institutions connected research with education, industry, agriculture, medicine, and national culture. Under socialism, the Czechoslovak Academy of Sciences formally had a strong relationship with state planning, production, and technological development, but this relationship was filtered through ideological supervision, administrative centralisation, and political priorities. After 1989, the task changed completely. The Academy had to move from a planned system of science and production towards a pluralist system of universities, ministries, agencies, firms, European programmes, intellectual property regimes, and competitive grants. Applied projects and contractual research after the Velvet Revolution were therefore not simply technical arrangements. They were part of the broader transformation of the Academy's public identity. The question was no longer how research could serve a socialist plan, but how autonomous public science could contribute to an open society and a knowledge-based economy.

The Academy's statutes reveal that cooperation with external institutions was not left outside governance. Institute Boards are required to discuss research objectives, research and development projects, agreements on international cooperation, and agreements on collaboration with domestic institutions; they may also participate in decisions concerning separate legal entities established to apply research results (*Czech Academy of Sciences, 2006*). This is important because applied projects and contractual research are not merely the private initiative of individual laboratories. They must be integrated into the governance of institutes and aligned with their public mission. The statutes also require Institute Boards to include external experts from other research institutions and users of research results, which

gives the governance structure a built-in connection to wider research and application environments (*Czech Academy of Sciences, 2006*). In institutional terms, this is a safeguard against both isolation and uncontrolled commercialisation. It means that the Academy's cooperation with external partners is formally recognised, but also subject to public, academic, and supervisory responsibility.

Applied projects are especially visible in Strategy AV21, because this programme was designed to connect excellent research with public-interest challenges. In 2026, the Academy described Strategy AV21 as a format that had connected Academy institutes, universities, industrial partners, and the state and public sectors for more than a decade (*Czech Academy of Sciences, 2026*). This formulation is significant because it presents applied cooperation not as a marginal activity, but as a central mode of interdisciplinary research. Strategy AV21 does not simply fund isolated technical solutions; it creates research programmes around themes that require knowledge transfer, social relevance, and cooperation beyond one institute. Its new programmes on materiality, biodiversity, and infectious diseases show that applied relevance can emerge in very different domains, from health and ecology to cultural interpretation and the management of social risk (*Czech Academy of Sciences, 2026*). In this model, applied projects do not merely follow from finished discoveries. They become a way of organising research around problems that society is likely to face over many years.

The Academy's cooperation with the Technology Agency of the Czech Republic also belongs to this broader architecture. TA ČR is the state institution most directly associated with support for applied research and innovation, and its programme portfolio includes national and international schemes aimed at industrial cooperation, energy, biodiversity, bilateral collaboration, and other areas of practical research (*Technology Agency of the Czech Republic, 2026*). For AV ČR, such funding schemes provide one route through which institutes can transform scientific competence into application-oriented projects without relying solely on direct contracts with private firms. This is important because not every socially valuable applied project has an immediate commercial client. Energy resilience, environmental monitoring, public health, security, digital infrastructures, and social-policy analysis may require state-supported applied research because the benefits are distributed across society. The Academy's applied role is therefore inseparable from the Czech public funding landscape. It works through a combination of institutional financing, competitive grants, agency programmes, European projects, contractual agreements, and internal transfer instruments.

The existence of CeTTAV, the Technology Transfer Centre of the CAS, indicates how applied and contractual research have become professionalised. The Centre was presented as a point of guidance for CAS institutes in the movement from discovery to practical application, including patents, inventions, legal issues, business questions, and economic support (*Czech Academy of Sciences, 2022*). Its head, Martin Smekal, emphasised that the Academy leadership regards knowledge and technology transfer as a strategic priority and that scientists benefit from professional assistance when navigating the legal, commercial, and economic maze of transfer (*Czech Academy of Sciences, 2022*). This is highly relevant to contractual research because many applied collaborations fail not for scientific reasons, but because responsibilities, intellectual property, confidentiality, pricing, deadlines, or development expectations are unclear. CeTTAV helps create a more professional interface between Academy institutes and external partners. It translates between academic time and commercial time, between discovery and application, and between public research values and business requirements.

The PRAK programme, the Academy's programme for application development and commercialisation, represents a further step in this institutional maturation. It is designed to motivate research teams and institute management to apply results in practice and to accelerate the transformation of the Czech economy towards products and services with higher added value (*Czech Academy of Sciences Transfer Centre, 2025*). This wording is important because it links individual research outputs to national economic transformation. PRAK does not simply reward researchers for having an interesting idea. It supports the difficult middle phase between scientific result and application: market assessment, patent protection, proof-of-concept work, communication strategy, investor contact, and preparation for spin-off creation. In this sense, PRAK occupies the gap that often separates public research from contractual or commercial uptake. It recognises that applied research requires not only scientific quality, but also resources for development, validation, communication, and negotiation.

By 2026, the Academy had placed PRAK, Strategy AV21, and CAS Innovations together as pillars of cooperation with the application sphere. At the Academy Assembly, the CAS President presented knowledge and technology transfer among thirteen strategic priorities for the 2025–2029 term and described CAS Innovations as a new pillar alongside Strategy AV21 and the PRAK programme (*Czech Academy of Sciences, 2026*). The same presentation noted that CAS Innovations was designed to translate research results into real-world applications and to consolidate procedures for creating and managing spin-offs and start-ups (*Czech Academy of Sciences, 2026*). This sequence shows how applied projects and contractual research have moved from dispersed institute-level practice towards a more coordinated Academy-wide system. The change is not merely administrative. It reflects a new understanding of public research: scientific excellence must be protected, but the pathways from excellence to use must be actively built.

CAS Innovations adds an investment and company-formation layer to this system. The Academy announced in February 2026 that it was establishing a joint-stock company to bring scientists and investors together, accelerate the path from laboratory to marketplace, and introduce transparent procedures for founding technology companies based on CAS research outputs (*Czech Academy of Sciences, 2026*). Its own presentation describes the initiative as transforming deep-tech and life-sciences research emerging from the Academy into competitive companies through a structured venture incubation and investment programme (*CAS Innovations, 2026*). For applied projects and contractual research, this is institutionally important because it creates an alternative to the older pattern in which applied results depended mainly on individual contacts, isolated licence agreements, or ad hoc cooperation. CAS Innovations can help projects that are too mature for ordinary academic publication but not yet ready for market. It also creates a more visible interface for investors and business leaders who may not know how to approach a public research institute.

Nevertheless, contractual research must be handled carefully because it changes the rhythm of academic work. A contract usually brings deadlines, deliverables, confidentiality clauses, performance expectations, and sometimes commercial pressure. A research institute operates with different norms: peer review, reproducibility, openness, publication, uncertainty, and long-term method-building. These norms can conflict if the contract is poorly designed. A company may want fast results and exclusive control; a researcher may need time to verify findings and publish. A public authority may want a clear recommendation; a scientist may be able to provide only a range of scenarios and probabilities. Therefore, contractual

research is not simply a financial transaction. It is a negotiated institutional form in which the Academy must protect scientific integrity while accepting practical responsibility.

The Academy's applied projects can also generate economic value without immediately becoming spin-offs. Testing, measurement, modelling, consultancy, access to instruments, clinical cooperation, environmental assessment, software development, and expert methodology may all support external partners. For industry, this can reduce technological risk, improve product development, validate a process, or solve a problem that exceeds internal R&D capacity. For public institutions, it can improve policy design, regulation, risk management, and long-term planning. For the Academy, it can bring resources, practical problems, contacts, and new questions. However, economic value should not be equated with direct income to an institute. Sometimes the most important value of an applied project lies in preventing failure, improving safety, or strengthening public decision-making. This is why the Academy's applied role should be evaluated by multiple criteria rather than only by contractual revenue.

Examples from recent Academy transfer communication demonstrate how diverse applied pathways can be. At a 2026 conference on real-world results of CAS research, the Academy presented cases ranging from antiviral drug-development traditions at IOCB Prague to improved heart diagnostics, laser technologies, radionuclides for cancer treatment, and industrial high-speed water jets (*Czech Academy of Sciences Transfer Centre, 2026*). The ECG case from the Institute of Scientific Instruments in Brno is especially instructive: researchers identified overlooked high-frequency components of the ECG signal, developed a method to extract more information from standard ECG data, replicated the results, patented the discovery in the European Union and the United States, founded the spin-off VDI Technologies, and supplied the technology to hospitals across Europe (*Czech Academy of Sciences Transfer Centre, 2026*). This was not a simple linear passage from idea to product. It required scientific discovery, clinical cooperation, replication, patenting, company formation, investment, and adoption by medical institutions. Applied research here became a chain of translation between physics, instrumentation, cardiology, business, and hospital practice.

The HiLASE Centre at the Institute of Physics of the CAS provides another model of applied and contractual cooperation. HiLASE has developed close industrial links in areas such as space applications, defence projects, nuclear power, laser components, ophthalmology, dermatology, automotive applications, energy, and holographic nanostructuring (*Czech Academy of Sciences Transfer Centre, 2026*). Its cooperation with industrial partners illustrates the special role of large research facilities in contractual research. Companies often cannot build or maintain comparable laser infrastructures internally, especially when the technology is experimental, expensive, or requires deep specialist knowledge. By providing access to advanced laser expertise, HiLASE transforms fundamental and experimental physics into industrial capability. At the same time, industrial problems can help refine the technology, identify new application domains, and strengthen the relevance of the research centre.

The LASER-PRO project shows how applied projects can expand beyond bilateral contracts into international innovation ecosystems. Led by HiLASE and Lithuania's FTMC, the project is framed as a cross-border initiative aimed at strengthening European laser innovation, supporting academia-industry collaboration, developing skills, promoting green and digital industrial transformation, and helping start-ups, spin-offs, and SMEs use advanced laser technologies (*Czech Academy of Sciences, 2025*). This example is important because it shows

that applied projects are not always small-scale local arrangements. They may become part of European industrial strategy, regional development, sustainability policy, and the technological positioning of Central and Eastern Europe. In such projects, the Academy acts not only as a research performer but as a coordinator of ecosystems. It links laboratories, companies, regions, European funding instruments, training programmes, and industrial transformation.

Applied projects in the life sciences show a different but equally important pattern. The long legacy of Antonín Holý's antiviral research at IOCB Prague demonstrates that application in biomedicine often requires strong international partners, long development cycles, preclinical and clinical validation, and professional technology transfer structures. The Academy's 2026 transfer conference explicitly connected IOCB's experience with its subsidiary IOCB Tech, the i&i Prague biotechnology incubator, the i&i BIO venture capital fund, and the newer PharmTheon centre for preclinical drug development (*Czech Academy of Sciences Transfer Centre, 2026*). This is a good example of how contractual and applied research require more than a single agreement with a company. They require an institutional ecosystem capable of moving compounds from discovery to a stage attractive for commercial and clinical development. In biomedicine, the gap between academic discovery and patient benefit is especially wide. The Academy's applied role is therefore not merely to discover molecules, but to build structures through which discoveries can survive the difficult journey towards therapeutic relevance.

Applied projects with public institutions differ from industrial contracts because their main purpose is not market value but public decision-making. Ministries, regions, municipalities, hospitals, museums, conservation authorities, environmental agencies, and security institutions need reliable expertise. The Academy can provide modelling, diagnostics, risk assessment, historical interpretation, legal analysis, social research, ecological monitoring, and technological evaluation. In these cases, contractual research may produce a report, database, method, policy recommendation, expert opinion, or implementation framework rather than a product. This form of applied work is central to the Academy's public mission. It also links the natural sciences with the social sciences and humanities. A municipality facing climate adaptation, for example, may need hydrology, ecology, urban sociology, economics, and public communication; a ministry facing disinformation may need media studies, psychology, political science, digital analysis, and legal expertise. The Academy's breadth allows it to serve public institutions in ways that narrower technical organisations cannot.

The importance of expert support for public decision-making has become more visible in recent years. At the same 2026 transfer conference, Jiří Drahoš, former President of the Academy and then Vice-President of the Senate, stated that a modern state cannot function without reliable data, analyses, and expert support (*Czech Academy of Sciences Transfer Centre, 2026*). This statement captures a key difference between applied projects for industry and applied projects for public institutions. Industry often needs a technological advantage; the state needs epistemic reliability. Public authorities must decide under uncertainty, and poor decisions can produce long-term social costs. Academy expertise can reduce such uncertainty because it is grounded in research rather than lobbying or short-term political calculation. Applied research for public institutions is therefore part of democratic infrastructure. It helps public power act with better knowledge.

The Academy's cooperation with applied research and industry also depends on funding structure. The CAS mission page notes that the Academy is primarily financed from the state budget, but that target-oriented financing is increasingly used for research projects and grant projects selected through public competition (*Czech Academy of Sciences, n.d.*). This mixed funding structure encourages institutes to combine stable long-term research with competitive project activity. Applied projects often arise through such competitive instruments, while contractual research may provide additional resources and application links. However, the Academy must avoid overdependence on external short-term funding. If institutes become too reliant on contracts, they may distort their research agenda towards immediate demand. If they remain entirely dependent on institutional funding, they may lack incentives and structures for application. The proper balance is neither commercialisation for its own sake nor academic isolation. It is a diversified funding ecology in which long-term public financing supports research depth and applied instruments support circulation into practice.

Contractual research also has an organisational dimension inside institutes. Directors, Institute Boards, Supervisory Boards, transfer specialists, legal departments, principal investigators, and technical staff all play roles in turning an external opportunity into a responsible agreement. A successful contract must clarify ownership of results, publication rights, confidentiality, liability, pricing, milestones, data handling, and future development. In a public research institution, these questions are not merely commercial. They concern public property, scientific reputation, and the rights of researchers and institutes. The statutes' requirement that Institute Boards discuss research and development projects and collaboration agreements with domestic institutions helps situate external cooperation within internal governance (*Czech Academy of Sciences, 2006*). This matters because an institute's reputation can be damaged if contracts are poorly aligned with its mission. Good governance is therefore one of the hidden conditions of successful applied research.

The rise of internal transfer specialists across CAS institutes indicates a movement towards professional network governance. Academy Vice-President Ilona Müllerová noted in 2026 that the Technology Transfer Centre had been developed, the PRAK programme launched, and a strong network of transfer specialists at individual CAS institutes created in cooperation with CeTTAV experts (*Czech Academy of Sciences, 2026*). She also referred to plans to deepen collaboration with key stakeholders such as TA ČR, the Ministry of Industry and Trade, and the Ministry of Transport, and to establish a Council for the Support of Innovation and Knowledge Transfer of the CAS (*Czech Academy of Sciences, 2026*). This is more than a managerial detail. It shows that applied projects and contractual research are becoming part of a structured institutional ecosystem rather than isolated episodes. The Academy is building the capacity to recognise promising results, connect them to partners, manage intellectual property, and learn from previous transfer experience.

At the same time, applied projects must not be imagined only in technological fields. The Academy's social-science and humanities institutes also conduct applied and contractually relevant work, although the outputs are different. They may produce policy analysis, legal expertise, demographic interpretation, economic modelling, social surveys, archaeological assessments, linguistic resources, historical databases, heritage documentation, or cultural-policy recommendations. Such work may be commissioned by ministries, municipalities, courts, public agencies, cultural institutions, schools, or non-governmental organisations. Its value is not always captured by patents or spin-offs, but it can strongly influence public decisions and cultural development. For example, research on social risks, collective memory,

public administration, inequality, education, or digital communication may be applied without being commercial. This wider understanding is essential if the Academy's contribution is to be measured fairly.

The contractual dimension also raises questions of autonomy. A public research institute must be able to say no to contracts that compromise scientific credibility, ethical standards, or long-term research priorities. This is especially important in sensitive fields such as defence, surveillance, biomedical data, environmental risk, public health, cultural heritage, and social policy. Cooperation with industry and public authorities can produce enormous public value, but it can also create conflicts of interest. The Academy's credibility rests on the expectation that its results are not dictated by the payer. Therefore, applied and contractual work must be governed by transparency, clear methodology, ethical review where needed, and institutional oversight. Scientific autonomy does not mean refusing external cooperation. It means entering cooperation from a position where the integrity of evidence is non-negotiable.

The economic significance of applied projects is not limited to direct revenue. They can help the Czech economy move towards higher added value by strengthening the connection between research organisations and firms. This is one reason why the PRAK evaluation panel explicitly linked the application of CAS results to the transformation of the Czech economy towards products and services with higher added value (*Czech Academy of Sciences Transfer Centre, 2025*). Such language reflects a broader national concern: Czech industry has strong manufacturing and engineering traditions, but long-term competitiveness depends increasingly on original research, intellectual property, advanced services, and technological upgrading. Academy institutes can contribute to this transition by supplying expertise that firms cannot easily develop alone. In this sense, contractual research is not merely a way for an institute to earn additional money. It is part of the national effort to deepen the knowledge content of the economy.

Applied projects also support the Academy's international integration. Many contemporary projects are not purely national; they involve European consortia, foreign companies, international infrastructures, or cross-border policy challenges. LASER-PRO is an example of such international applied cooperation, but similar logics are visible in biomedical research, environmental monitoring, materials science, digital infrastructures, and social-science platforms. International applied projects strengthen Czech science by exposing institutes to demanding partners, technical standards, regulatory frameworks, and comparative knowledge. They also allow the Academy to contribute to European technological sovereignty. For a medium-sized country, this European dimension is vital. Contractual and applied research should therefore not be seen only as domestic service; it is also a route into transnational innovation networks.

The Academy's applied work has a pedagogical effect on researchers themselves. Young scientists trained only in publication-oriented environments may not learn how to communicate with companies, negotiate intellectual property, prepare a prototype, write a policy brief, or understand the constraints of public administration. Applied projects teach these skills. They expose researchers to users of knowledge and make them aware of how scientific results change when they enter the world beyond the laboratory. This does not mean every researcher must become an entrepreneur or consultant. It means that a modern Academy needs a spectrum of research careers: some more theoretical, some more applied, some crossing the boundary between the two. Programmes such as PRAK and support

structures such as CeTTAV make this boundary-crossing less accidental and more professionally supported. This is essential for a new generation of Czech researchers who will work in a world where scientific excellence and societal relevance are increasingly intertwined.

There is also a cultural change inside the Academy. In older academic environments, applied work could sometimes be regarded as secondary to "pure" science, while contractual work could be seen as a distraction from scholarship. Such attitudes did not arise without reason; poorly designed application pressure can indeed damage research quality. Yet the contemporary challenge is more complex. The Academy must defend fundamental research while recognising that application is one of the ways in which public science becomes historically effective. The current leadership's emphasis on transfer, PRAK, CAS Innovations, cooperation with industry, and public administration shows that applied engagement is becoming part of the Academy's self-understanding (*Czech Academy of Sciences, 2026*; *Czech Academy of Sciences, 2026*). The danger is not application itself. The danger is losing the ability to distinguish serious application from superficial impact rhetoric.

This distinction leads back to the question of evaluation. Applied projects and contractual research must be evaluated differently from basic research, but not less rigorously. A publication can be judged by peer review, originality, method, and international contribution. A contract or applied project must be judged by problem definition, scientific validity, partner relevance, ethical soundness, intellectual property management, implementation, and long-term impact. Some results may be confidential and therefore difficult to evaluate through ordinary academic indicators. Others may create value only after many years. The Academy's evaluation systems must therefore recognise applied work without allowing it to become a box-ticking exercise. A strong institute should be able to show how contractual and applied projects support its research identity, not merely how much income they generate.

Applied and contractual research also expose the Academy to the practical limits of innovation policy. Not every promising result becomes a technology. Not every contract leads to a sustained partnership. Not every public authority uses expert advice. Not every patent attracts investors. Failure is part of the process, but failure can be productive if institutions learn from it. The professionalisation of CeTTAV, the accumulation of PRAK experience, the creation of CAS Innovations, and the formation of transfer networks across institutes suggest that the Academy is trying to convert isolated successes and failures into institutional learning. This is an important stage in the modernisation of AV ČR. Innovation is no longer treated simply as the heroic success of a few exceptional laboratories. It is becoming a managed, supported, and evaluated institutional process.

Thus, applied projects and contractual research should be understood as one of the main practical interfaces between the Czech Academy of Sciences and the wider world of industry, public administration, healthcare, regions, municipalities, and European innovation networks. Their significance lies not only in income, patents, spin-offs, or technologies, but in the transformation of accumulated academic knowledge into usable forms of social, economic, medical, environmental, and cultural value. The Academy's contemporary structures — Strategy AV21, CeTTAV, PRAK, CAS Innovations, institute-level transfer specialists, cooperation with TA ČR and ministries, and European projects such as LASER-PRO — show a clear movement towards a more coordinated and professional applied-research ecosystem. Yet the Academy's strength in contractual work depends precisely on what precedes it: long-term fundamental research, scientific autonomy, specialised infrastructures, credible

methods, and public trust. Applied cooperation is therefore not a departure from the Academy's mission. Properly governed, it is one of the most important ways in which that mission becomes visible in the Czech future.

2. Partnerships with Companies, Ministries, Regions, and Municipalities

Partnerships with companies, ministries, regions, and municipalities reveal the Czech Academy of Sciences not simply as a research organisation, but as a connective institution within the Czech knowledge system. The Academy stands between the laboratory and the state, between long-term scholarship and immediate social need, between national scientific autonomy and the practical demands of public administration and industry. This position is historically important because AV ČR emerged after 1993 from the transformation of the socialist Czechoslovak Academy of Sciences, where science had formally been connected to the state and production but was also embedded in central planning and ideological control. In the democratic and market-oriented Czech Republic, cooperation had to acquire a different meaning. It could no longer be understood as the administrative fulfilment of a state plan. It had to become a negotiated relationship among autonomous research institutes, elected public authorities, competitive firms, universities, civic institutions, regions, and European partners. This shift changed the Academy's public role: it was not enough to produce knowledge; the Academy had to learn how to place knowledge into the hands of actors capable of using it responsibly. The Academy's mission explicitly combines research at the international level with attention to the specific needs of Czech society and national culture (*Czech Academy of Sciences, n.d.*). This formulation is crucial because it makes cooperation not an external supplement to academic work, but one of the ways in which the Academy fulfils its national function.

The cooperation of AV ČR with companies is the most visible form of partnership in the innovation sphere, but it is not the only one. Firms need scientific knowledge in order to develop technologies, improve products, test materials, validate methods, increase productivity, enter new markets, and reduce technological uncertainty. The Academy can provide this knowledge when problems require expertise beyond routine industrial capacity. Yet the Academy's partnership with business is not identical to private outsourcing. A company normally approaches research through the language of competitiveness, intellectual property, product development, and market opportunity. The Academy approaches the same terrain through the language of evidence, method, reproducibility, research integrity, and long-term public value. Successful cooperation requires these two languages to be translated into a common project. That translation can occur through contractual research, joint projects, licences, spin-offs, shared infrastructures, expert services, or public-private consortia. The emergence of CeTTAV, PRAK, and CAS Innovations shows that the Academy has increasingly recognised this translation as a professional institutional task rather than as an accidental result of personal contacts between researchers and entrepreneurs (*Czech Academy of Sciences, 2022*; *Czech Academy of Sciences, 2026*).

The partnership with companies is particularly effective when it is based on asymmetry rather than imitation. AV ČR should not try to become a corporate R&D department, because its strength lies in areas where firms often cannot or will not invest alone: high-risk research, long-term experimentation, specialised instrumentation, interdisciplinary modelling, and fields whose future value is not yet obvious. Companies bring knowledge of markets, production,

regulation, scaling, user behaviour, investment, and competitive positioning. Academy institutes bring research depth, methodological credibility, scientific networks, and access to infrastructures. When the partnership works well, the company does not merely purchase a service, and the institute does not merely sell time. Both sides learn something that they could not have produced alone. The company may discover that a technological problem is scientifically deeper than expected. The research team may discover that a theoretical result has practical constraints and possible applications that were not visible inside the laboratory. This mutual correction is one of the strongest forms of knowledge transfer.

Laser technologies provide a clear example of this relationship between academic capacity and industrial partnership. The LASER-PRO initiative, launched at the HiLASE Centre in Dolní Břežany in March 2025, brought together eighteen partners from Czechia, Lithuania, and Ukraine with the stated aim of strengthening European high-tech industry through advanced laser technologies (*Czech Academy of Sciences, 2025*). The public launch included representatives of the Central Bohemian Region, the Czech Ministry of Industry and Trade, the Ministry of Foreign Affairs, the Confederation of Industry of the Czech Republic, and strategic industrial partners such as Crytur, ONSEMI, and IQS Group (*Czech Academy of Sciences, 2025*). This example is revealing because it shows that Academy-industry cooperation is rarely only bilateral. It often becomes a multi-level ecosystem that includes regional government, national ministries, European networks, industrial associations, firms, and research infrastructures. In such a setting, the Academy acts not merely as a supplier of laser knowledge, but as a convenor of actors around a strategic technology field.

The same logic applies in biomedicine, materials science, environmental technologies, digital infrastructures, and energy research. A private firm may be able to identify a promising market, but it may lack the advanced research base needed to produce a genuinely new technology. An Academy institute may have a strong discovery, but it may lack the regulatory, financial, or commercial pathway needed for application. Between these two capacities stands the institutional machinery of transfer: intellectual property support, proof-of-concept funding, licensing, incubation, investor communication, and spin-off governance. The Academy's 2026 announcement of CAS Innovations as a joint-stock company fully owned by AV ČR is significant precisely because it was designed to connect scientists and investors, accelerate the movement from laboratory to marketplace, and create transparent procedures for founding technology companies based on Academy research (*Czech Academy of Sciences, 2026*). This development indicates that partnerships with companies are becoming part of the Academy's strategic governance. They are no longer treated as secondary, dispersed, or purely local matters. They are becoming part of the Academy's institutional identity as a public research organisation in a knowledge economy.

At the same time, the Academy's cooperation with companies must be protected from two opposite distortions. The first distortion is commercial reductionism: the belief that the value of science can be measured only by licences, revenues, spin-offs, and market uptake. The second is academic isolationism: the belief that cooperation with firms necessarily corrupts scientific autonomy. Both views are inadequate for the modern Academy. Public science must preserve the freedom to pursue fundamental questions, but it must also recognise that some of its results acquire full social meaning only when they leave the laboratory. The proper question is therefore not whether AV ČR should cooperate with companies, but under what conditions it should do so. Contracts must preserve research integrity, clarify intellectual property, protect the public interest, and allow researchers to publish where appropriate.

Partnerships must not turn institutes into low-cost industrial subcontractors. They should connect companies with the Academy precisely where academic depth can create technological originality.

Partnerships with ministries belong to a different but equally important sphere. Ministries do not usually seek products in the commercial sense; they seek evidence, scenarios, expert opinions, analytical frameworks, regulation-sensitive knowledge, and often legitimacy for difficult decisions. The Academy's relationship with ministries therefore belongs to the domain of science for policy. AV ČR has long been connected to national science policy through its leadership, councils, and participation in the Czech research, development, and innovation system. The current Academy Council formally assigns responsibilities for cooperation with specific state bodies and ministries: science policy and public funding support in cooperation with state authorities, technology transfer and cooperation with the commercial sector in relation to the Ministry of Industry and Trade, cooperation with the Ministry of Health, cooperation with the Ministry of Culture, cooperation with the Ministry of Labour and Social Affairs and the Ministry of Regional Development, and cooperation with the Ministry of Foreign Affairs in the context of international research policy (*Czech Academy of Sciences, 2025*). This structure shows that ministerial cooperation is not incidental. It is written into the distribution of responsibilities at the Academy's highest level.

The Ministry of Education, Youth and Sports has a special place in this network because it is central to science policy, research funding, higher education, operational programmes, and international research infrastructures. The Academy is not a university, but it is deeply connected to doctoral training, joint research with universities, and the national research environment. Cooperation with the Ministry of Education therefore affects not only individual projects, but the architecture of Czech science itself. It concerns questions of institutional funding, evaluation, infrastructures, doctoral education, European programmes, and the position of public research institutions in the national system. This relationship is historically sensitive because the Academy's autonomy depends partly on stable and intelligent public funding. If state science policy is fragmented or short-sighted, the Academy's long-term research capacity weakens. If the Academy is isolated from state policy, its expertise may not influence the rules under which Czech science develops. Ministerial partnership is therefore a channel through which AV ČR helps shape the conditions of its own scientific future and the wider future of Czech research.

The Ministry of Industry and Trade represents another type of partnership. Here the Academy meets the state not only as a research funder, but as an actor concerned with competitiveness, industrial transformation, digitalisation, energy, advanced manufacturing, and innovation policy. The current Academy Council assigns coordination of knowledge and technology transfer to the application sphere, cooperation with the commercial sector, and cooperation with relevant providers such as the Ministry of Industry and Trade to the Academy's vice-presidential level (*Czech Academy of Sciences, 2025*). This link is strategically important because it connects AV ČR's scientific outputs with the industrial policy of a country that has a strong manufacturing base but needs higher knowledge intensity. The Ministry of Industry and Trade may think in terms of economic transformation, investment, and competitiveness; the Academy thinks in terms of research quality, applicability, and public value. Their partnership is productive when these perspectives are not collapsed into one another. The Academy should not become an instrument of industrial policy alone, but industrial policy without a strong public research base remains shallow.

The Ministry of Health forms a similarly crucial partner for biomedical and life-science institutes. Modern medicine increasingly depends on molecular biology, immunology, neuroscience, data science, imaging, pharmacology, epidemiology, and translational research. Academy institutes do not replace hospitals or medical faculties, but they provide parts of the research ecosystem without which advanced medicine cannot develop. Cooperation with the Ministry of Health can therefore involve research priorities, public-health preparedness, biomedical infrastructures, disease research, diagnostics, and expert advice. The COVID-19 pandemic demonstrated across Europe that public-health response depends on knowledge accumulated before the crisis. In such moments, the Academy's value is not merely academic; it becomes part of national resilience. Partnerships with health authorities are therefore not only about developing therapies or diagnostics. They concern the state's ability to understand biological risk and respond to it with scientifically grounded measures.

The Ministry of Culture is especially important for the Academy's humanities and social-science institutes. Czech cultural memory, language, archaeology, archives, literature, heritage protection, and historical interpretation are not marginal to national development. They form the symbolic and intellectual infrastructure of society. The current Academy Council includes coordination of cooperation with the Ministry of Culture and activities in archaeology, archaeological heritage protection, and state monument care within the responsibilities of the leadership connected to the third research area (*Czech Academy of Sciences, 2025*). This indicates that partnerships with ministries are not limited to technological or industrial fields. The Academy also supports the state's cultural responsibilities by providing expertise that ministries and heritage bodies cannot easily produce internally. Archaeological research, linguistic scholarship, historical databases, conservation science, and cultural analysis can all become applied knowledge when they inform legislation, heritage management, education, museum practice, or public memory. In this sense, cultural research is also part of national innovation, though its innovation is institutional and interpretive rather than purely technological.

The Ministry of Labour and Social Affairs and the Ministry of Regional Development connect the Academy to questions of social transformation, inequality, housing, demographic change, migration, local governance, labour markets, regional disparities, and public services. These are not peripheral questions in the Czech future. A technologically advanced society can still become fragile if it fails to understand social risks, demographic pressures, regional inequalities, and institutional distrust. The Academy's social-science institutes have the capacity to produce long-term analyses that ministries need for policy design. The current Academy Council explicitly associates regional cooperation, applied research in social sciences and humanities, interdisciplinary cooperation between social sciences and natural sciences, and Science for Policy with cooperation with these ministries (*Czech Academy of Sciences, 2025*). This is institutionally meaningful because it links social-science knowledge to public decision-making. It also suggests a broader understanding of application: applied research is not only a new material, device, or drug, but also a better understanding of society itself.

Science for policy has become a more visible element of the Academy's contemporary cooperation with the state. In 2026, Jan Mareš from the Transfer Centre of the CAS introduced Science4Policy as a platform launched the previous year with two aims: to support knowledge transfer and science-for-policymaking activities, and to prepare analyses used by the Academy leadership in communication with political representatives (*Czech Academy of Sciences,*

2026). The platform includes policy papers and policy briefs and is intended to help research teams design activities for public administration and evidence-based decision-making (*Czech Academy of Sciences, 2026*). This is a significant institutional development. It means that the Academy is not only waiting for ministries to request expertise; it is building a format through which scientific knowledge can be translated into policy-relevant language. Such translation is not a simplification of science into slogans. It is a professional form of mediation between the complexity of research and the practical constraints of governance.

Partnerships with regions form another layer of the Academy's public mission. Czech regions differ in economic structure, industrial history, demographic development, environmental burdens, educational resources, infrastructure, and innovation capacity. Prague and Brno do not face the same challenges as structurally affected regions, border areas, post-industrial localities, or rural municipalities. If the Academy remains concentrated only in national-level debates, it risks missing the territorial reality of Czech society. The existence of the Committee for Regional Cooperation of the CAS, chaired by Tomáš Kostelecký of the Institute of Sociology, indicates that regional cooperation is now formally recognised within the Academy's advisory structure (*Czech Academy of Sciences, n.d.*). Its presence alongside committees for energy, information technology, sustainability, environment, innovation and knowledge transfer, and other strategic areas shows that regional cooperation is not an afterthought. It is one of the channels through which the Academy connects national science with territorial development.

Regional cooperation has several possible forms. It may involve research infrastructures located outside Prague, partnerships with regional universities, cooperation with regional authorities, support for innovation centres, environmental monitoring, public lectures, educational outreach, archaeological work, social research, and advice on development strategies. In some cases, regional cooperation is technological, as in the case of HiLASE in Central Bohemia and its connections with industry, local government, and European partners. In other cases, it is social or cultural: demographic analysis, regional identity, heritage documentation, public policy, or the study of local institutions. The Academy's advantage lies in its ability to bring national and international expertise into local contexts without reducing those contexts to administrative categories. A region is not merely a recipient of expert knowledge. It has its own problems, histories, stakeholders, and forms of practical intelligence. Effective regional partnership therefore requires dialogue rather than one-way transfer.

Municipalities are the most concrete level of public cooperation because they are closest to everyday life. Cities and towns face problems of transport, housing, energy efficiency, water management, green infrastructure, heritage preservation, public space, demographic ageing, local education, environmental risk, and social cohesion. Many municipalities do not have the analytical capacity to solve these problems alone, especially when they require interdisciplinary expertise. The Academy can contribute through expert reports, modelling, historical and cultural analysis, environmental assessment, social surveys, urban studies, and public communication. This form of partnership is less visible than cooperation with ministries or companies, but it is often directly felt by citizens. A better flood-risk model, a more informed heritage decision, a biodiversity plan, a study of local social exclusion, or expert support for climate adaptation can materially change municipal governance. In this sense, AV ČR's contribution to the Czech future is not only national or European; it is also local.

However, municipal cooperation requires careful institutional design. A municipality may need clear, practical, and timely advice, while researchers may be trained to produce complex and cautious analyses. Local politicians may operate under electoral pressure, budget constraints, and public expectations. Scientists may insist on uncertainty, evidence limits, and long-term consequences. These differences can lead to frustration if they are not acknowledged. The Academy's role is not to replace municipal decision-making, but to improve its knowledge base. It can offer scenarios rather than commands, evidence rather than political choice, and methodological clarity rather than administrative convenience. The best form of municipal partnership respects democratic responsibility: elected bodies decide, but they decide with better information. This is one of the most important meanings of science for policy at the local level.

Strategy AV21 offers a useful framework for bringing these levels together. It has connected Academy institutes, universities, industrial partners, and state and public sectors for more than a decade, and in 2026 it continued to develop new interdisciplinary programmes on biodiversity, infectious diseases, and materiality (*Czech Academy of Sciences, 2026*). This structure is important because social challenges do not respect institutional borders. Biodiversity loss affects ministries, municipalities, farmers, industry, schools, public health, and local communities. Infectious diseases require biomedical laboratories, hospitals, public authorities, citizens, international partners, and communication experts. Materiality connects cultural memory, consumption, technology, ecology, and social inequality. Strategy AV21 therefore operates as a partnership architecture. It allows the Academy to assemble networks around problems rather than around the internal divisions of institutes.

The Academy's partnerships with companies, ministries, regions, and municipalities also depend on public communication. Scientific knowledge cannot influence partners if it remains locked in specialised language. Companies need to understand what the Academy can offer. Ministries need concise, reliable, and relevant analysis. Regions need visible channels of contact. Municipalities need formats that fit their administrative reality. Citizens need to see why scientific expertise matters. The Academy's current strategic priorities include communication with the public, public policy and European funding, knowledge and technology transfer, cooperation with universities, digital transformation, research security, and the implementation of Strategy AV21 (*Czech Academy of Sciences, 2026*). This combination reveals that communication is not public relations in a narrow sense. It is part of the infrastructure of partnership. Without communication, even excellent research may remain unused; without credibility, communication becomes mere promotion.

There is also a European dimension to these partnerships. Czech companies, ministries, regions, and municipalities operate within European regulatory, funding, technological, and environmental frameworks. Academy partnerships therefore often connect domestic actors to European programmes, infrastructures, and standards. A regional innovation project may depend on European funds; a company may need access to European research networks; a ministry may need evidence compatible with EU policy; a municipality may implement climate or energy policies shaped by European commitments. AV ČR can help mediate these European connections because its institutes participate in international research communities and European projects. The Academy's involvement in the European Research Area, Horizon Europe, research infrastructures, and open-science initiatives gives it knowledge that domestic partners may not possess. This European embeddedness transforms the Academy into a bridge between Czech needs and European scientific capacity.

Partnerships with public institutions also bring the Academy into contact with the politics of evidence. Scientific advice is often requested when decisions are uncertain, contested, or costly. In such situations, expertise may be welcomed rhetorically but resisted in practice. A ministry may prefer evidence that supports an existing policy. A region may seek expert legitimacy for a decision already made. A municipality may need a quick answer where science can provide only probabilities. A company may want confidentiality where public research requires transparency. The Academy must therefore defend the integrity of knowledge in cooperative settings. It should be useful, but not obedient; responsive, but not servile; practical, but not opportunistic. This is the ethical centre of partnership. AV ČR's authority depends on the belief that its expertise is not for sale, even when its services are contractually organised.

The Academy's cooperation with ministries and public institutions also has a legislative dimension. Science policy, research funding, intellectual property, data governance, heritage protection, environmental regulation, biomedical ethics, AI governance, and public procurement all depend on legal frameworks. Academy representatives participate in expert and advisory bodies, and members of the Academy leadership have been involved in Czech science policy and government advisory structures (*Czech Academy of Sciences, n.d.*). This participation is not merely personal prestige. It allows research knowledge to enter the formation of rules that shape the entire system. The Academy must care about legislation because legislation defines the conditions under which knowledge is produced and used. A poorly designed law can inhibit transfer, weaken autonomy, create bureaucratic burdens, or reduce the capacity of public institutions to act on evidence. Partnership with the state therefore includes the defence of institutional conditions for science itself.

Regional and municipal partnerships also raise the question of equality in access to expertise. If only large ministries, wealthy companies, or major cities can cooperate with the Academy, the public value of science becomes unevenly distributed. Smaller municipalities and less prosperous regions may need scientific knowledge most precisely because they lack internal analytical capacity. The Academy's regional cooperation structures can help reduce this imbalance by creating channels through which research expertise reaches beyond Prague and the major university centres. This is not only a matter of fairness. It is also a matter of national cohesion. A knowledge society cannot be built only in metropolitan cores while peripheral regions remain dependent on outdated industries, weak infrastructure, or insufficient data. AV ČR can contribute to more balanced development by bringing long-term research into regional planning, environmental adaptation, cultural heritage, education, and social policy.

The partnership with municipalities is also important for environmental and climate research. Climate adaptation is experienced locally: in heat islands, floods, droughts, forest management, water retention, landscape planning, biodiversity loss, and energy use in buildings. Academy institutes can provide data, models, and expert interpretation, but implementation often depends on municipal action. The Strategy AV21 programme on sustainable energy, for example, addresses renewable resources, distributed energy systems, energy storage, hydrogen technologies, circular economy for the energy industry, nuclear fusion, fission challenges, and social and economic issues of energy transformation (*Czech Academy of Sciences, n.d.*). Such topics cannot remain abstract national priorities. They eventually appear in local decisions about infrastructure, planning, transport, procurement, and public behaviour. Partnerships with municipalities are therefore a necessary route from national research priorities to everyday transformation.

The cooperation of AV ČR with public institutions also includes crisis preparedness. Pandemics, energy shocks, cyber threats, disinformation, climate events, migration pressures, and cultural conflicts all require knowledge that cuts across institutional boundaries. Ministries have administrative authority, companies have technical resources, regions and municipalities have local implementation capacity, and the Academy has long-term knowledge. No single actor can manage complex crises alone. The Academy's role is not command but interpretation, modelling, warning, and synthesis. It can identify slow-moving risks before they become emergencies. It can explain uncertainty in ways that support responsible action. It can also help evaluate measures after a crisis, so that the state learns institutionally rather than merely reacting politically. This crisis function makes partnerships not a matter of optional outreach, but a core element of national resilience.

A further dimension is cooperation with universities, which often mediates relations with regions and public institutions. Many regional innovation ecosystems are built around universities, applied research centres, hospitals, technology parks, and municipal or regional authorities. Although the present point focuses on companies, ministries, regions, and municipalities, the university link cannot be ignored because it often forms the human and territorial infrastructure through which Academy expertise reaches local environments. The Academy Council assigns responsibilities for cooperation with universities, joint institutes, doctoral programmes, and providers such as the Ministry of Education (*Czech Academy of Sciences, 2025*). This means that partnership is rarely dyadic. The Academy does not simply cooperate with one ministry, one firm, or one region. It operates within triangular and multi-actor arrangements in which universities, public authorities, and companies each play distinct roles. Such arrangements are increasingly characteristic of knowledge-based regional development.

The partnership agenda also has a generational dimension. Younger researchers increasingly enter academic life in a world where cooperation with non-academic actors is expected, but where the rules of such cooperation are not always clear. They need training in communication, project design, intellectual property, policy writing, stakeholder engagement, and ethical negotiation. At the same time, they need protection from a model of academic work that would turn them into permanent project managers or service providers. The Academy must therefore create a culture in which cooperation is valued but not fetishised. Not every researcher must cooperate with a company or ministry. Yet every institute should understand how its knowledge might enter society, and every researcher should be able to recognise when cooperation is scientifically and publicly meaningful. This cultural change is one of the deeper transformations of AV ČR in the21st century.

Partnerships with companies and public institutions are also linked to evaluation. If the Academy is judged only by publications, its public partnerships may be undervalued. If it is judged only by applied outputs, its long-term research base may be weakened. The 2026 Academy Assembly emphasised thirteen strategic priorities, including public policy and European funding, knowledge and technology transfer, cooperation with universities, digital transformation, research security, communication with the public, and Strategy AV21 (*Czech Academy of Sciences, 2026*). This broad list suggests that the Academy's leadership understands impact as multidimensional. A successful partnership may produce a patent, a start-up, a policy brief, a public database, a regional strategy, a conservation method, a clinical diagnostic tool, or a more informed public debate. Evaluation must be capable of recognising these differences. Otherwise, institutions will adapt to the wrong incentives.

There are, however, structural difficulties in the Czech knowledge-transfer environment. The European Commission's 2025 review of Czech knowledge transfer described a need to move from fragmentation towards synergy and impact, indicating that the Czech system still faces coordination challenges (*European Commission, 2025*). This diagnosis is relevant to the Academy's partnerships because even strong research institutes cannot produce national impact in a fragmented environment. Companies may not know whom to contact. Ministries may lack mechanisms for commissioning or using scientific advice. Regions may have uneven capacities. Municipalities may lack resources. Technology transfer offices may differ in experience and authority. The Academy's current effort to strengthen CeTTAV, CAS Innovations, Science4Policy, regional cooperation, and Strategy AV21 can therefore be seen as a response to systemic fragmentation. AV ČR is not only producing knowledge; it is helping to build the channels through which knowledge circulates.

The Academy's partnerships must also be understood in relation to trust. Companies need trust that the Academy can deliver reliable expertise. Ministries need trust that Academy advice is competent and independent. Regions and municipalities need trust that researchers understand local realities. The public needs trust that cooperation with external partners does not compromise academic integrity. Trust is built slowly through successful projects, transparent governance, responsible communication, and visible public benefit. It can be lost quickly if cooperation appears opaque, politically captured, or commercially biased. This is why the Academy's partnership architecture must include ethical safeguards, clear rules, conflict-of-interest management, and public communication. The more deeply AV ČR enters the application sphere, the more carefully it must protect the symbolic capital of independence that makes its knowledge valuable.

The deepest importance of these partnerships lies in the transformation of the Academy's historical mission. Earlier Czech scientific institutions helped form national culture, language, education, and intellectual identity. The Czechoslovak Academy of Sciences later became a centralised institution of state science, with all the achievements and constraints of that model. The modern AV ČR must operate in a far more plural environment: democratic politics, European integration, market competition, regional self-government, public scepticism, and global technological change. Partnerships with companies, ministries, regions, and municipalities are the forms through which the Academy inhabits this environment. They prevent the Academy from becoming a closed scholarly world. At the same time, the Academy's autonomy prevents partnership from becoming subordination. This balance is the institutional essence of AV ČR's contemporary public role.

Thus, partnerships with companies, ministries, regions, and municipalities show that the Czech Academy of Sciences has become a multi-level institution of knowledge circulation. With companies, it transforms long-term research into technological possibilities, prototypes, spin-offs, licences, and industrial learning. With ministries, it contributes to science policy, health, culture, industry, regional development, labour policy, foreign affairs, and evidence-based governance. With regions and municipalities, it brings research into territorial development, environmental adaptation, heritage, social analysis, and local public decision-making. These partnerships are not secondary to the Academy's mission; they are one of the principal ways in which the mission becomes socially effective. Yet their success depends on a constant balance between openness and autonomy, usefulness and independence, application and scientific depth. For the Czech future, AV ČR's value will depend not only on

what its institutes discover, but on how intelligently those discoveries are connected to the actors who shape the country's economic, institutional, cultural, and regional life.

3. Expert Knowledge for Policy and Public Decision-Making

Expert knowledge for policy and public decision-making is one of the most demanding forms of the Academy's public mission, because it requires science to enter the world of power without becoming an instrument of power. The Czech Academy of Sciences is not a ministry, a political party, a consultancy firm, or a lobbying organisation. Its authority rests on a different foundation: long-term research, methodological discipline, peer judgement, institutional memory, and the capacity to formulate knowledge independently of immediate political advantage. This distinction matters because public decision-making often takes place under pressure: electoral cycles, fiscal constraints, media attention, crises, administrative routines, and competing interests. In such circumstances, expert knowledge is not merely additional information; it is a corrective against improvisation, short-termism, and politically convenient simplification. The statutes of the Academy explicitly define its role as applying the results of its activities for education, culture, competitiveness, and the solution of current social problems, while also stating that the Academy participates in the formation of research and development policies of the Czech Republic and the European Union (*Czech Academy of Sciences, 2006*). This statutory formulation gives the Academy a recognised place within the Czech policy environment, but it also creates a responsibility to protect the integrity of knowledge when that knowledge becomes politically relevant.

The term "science for policy" is useful here because it captures a specific mode of public research. It does not mean that science dictates policy, nor does it mean that policymakers simply obey experts. The European Commission defines Science for Policy as the use of scientific evidence, expertise, and knowledge to improve policymaking; in this framework, science helps identify policy challenges, evaluate interventions and alternatives, make informed decisions, and design effective interventions (*European Commission, n.d.*). This definition is important because it preserves the distinction between evidence and decision. Evidence can clarify the problem, reveal uncertainty, compare options, and warn about risks, but democratic institutions still decide among competing values, costs, and political responsibilities. AV ČR's role is strongest when it respects this boundary. It should not pretend to replace politics, but it should insist that politics must not act as if evidence were optional.

For the Academy, expert knowledge for decision-making begins with the breadth of its disciplinary structure. Ministries and municipalities often need knowledge that cannot be produced within one administrative department. Climate adaptation requires atmospheric science, hydrology, ecology, economics, public administration, and social behaviour. Public health requires molecular biology, epidemiology, medicine, statistics, sociology, communication, and ethics. Regional development requires demography, geography, economics, housing analysis, infrastructure studies, environmental knowledge, and cultural understanding. Cultural heritage policy requires archaeology, history, conservation science, law, digital technologies, and public education. The Academy's combination of natural, technical, social, and human sciences makes it unusually capable of supplying this kind of integrated expertise. The Academy's mission statement itself emphasises research across the broad spectrum of sciences and humanities, including highly specialised and interdisciplinary

research that takes account of the needs of Czech society and national culture (*Czech Academy of Sciences, n.d.*).

The expert role of AV ČR should be understood historically, not only administratively. In the socialist period, expert knowledge was often formally close to state power, but its autonomy was limited by ideological supervision and centralised planning. Scientific expertise could influence technical and economic decisions, yet the public meaning of expertise was compromised by the political structure within which it operated. After 1989, the problem changed. The new democratic state needed expert knowledge, but it also needed to ensure that knowledge was no longer subordinated to party doctrine. The modern Academy's authority therefore emerged from a double transformation: the liberation of research from ideological control and the redefinition of public usefulness in a pluralist society. Expert advice in this context became not obedience to the state, but a democratic service to the state and society. This is why the Academy's contemporary policy role is inseparable from autonomy.

The statutes also show that the Academy is expected to take into account proposals and suggestions from governmental bodies, public institutions, the business sector, and scientific, technological, and cultural organisations (*Czech Academy of Sciences, 2006*). This clause is institutionally revealing. It does not make the Academy passive before external demand; rather, it recognises that research policy and public expertise emerge in dialogue with society. Government may signal a problem, but the Academy must analyse it scientifically. A ministry may request an expert opinion, but the Academy must preserve methodological independence. A public institution may need a practical recommendation, but researchers must still communicate uncertainty honestly. The value of the Academy's expertise lies precisely in this disciplined responsiveness: it listens to public needs without allowing those needs to predetermine scientific conclusions.

The Academy's current development shows a more explicit institutionalisation of science-for-policy functions. In 2026, the Academy presented Science4Policy as a platform launched the previous year with two main purposes: supporting knowledge transfer and science-for-policymaking activities, and preparing analyses used by the Academy leadership in communication with political representatives (*Czech Academy of Sciences, 2026*). The same source noted that policy papers and policy briefs form an important part of these activities. This is a significant change because it recognises that scientific knowledge does not automatically become usable in public administration. It must be translated into formats that policymakers can read, compare, and use under time constraints. A policy brief is not a diluted academic article; when done well, it is a specialised genre of knowledge mediation. It condenses evidence without erasing complexity, and it helps decision-makers understand what is known, what is uncertain, and what consequences follow from different options.

Strategy AV21 provides another institutional framework for this policy role. The Academy describes Strategy AV21 as a programme of "top research in the public interest" that has connected Academy institutes, universities, industrial partners, and the state and public sectors for more than a decade (*Czech Academy of Sciences, 2026*). This connection between research and the public sector is not accidental. Strategy AV21 was designed precisely to organise excellent research around broad social challenges that cannot be solved by isolated disciplinary work. Its policy significance lies in the fact that it creates communities of expertise before a ministry or municipality may need a specific answer. When a crisis or strategic challenge appears, the Academy can draw on already existing networks, data, and

interdisciplinary conversations. This anticipatory capacity is one of the most important differences between an academy and a consultancy firm.

The policy value of Strategy AV21 can be seen in programmes devoted to society, public policy, identity, energy, biodiversity, infectious diseases, artificial intelligence, and other themes. These are not simply academic topics; they correspond to areas in which Czech public authorities must make decisions under uncertainty. The "Society in Motion and Public Policy" programme, for example, combines behavioural sciences, economics, sociology, psychology, law, ethics, and other perspectives in order to study social and policy problems (*Czech Academy of Sciences, n.d.*). Such programmes demonstrate that expert knowledge is no longer only the work of individual eminent scholars advising ministers. It is increasingly organised through interdisciplinary research platforms that generate data, concepts, diagnoses, and policy-relevant interpretations. This development is especially important in social sciences and humanities, where public value often appears through analysis, interpretation, and institutional advice rather than through patents or prototypes.

The Czech context makes this role particularly important because the country has been actively discussing how to strengthen evidence-informed policymaking. A 2025 Joint Research Centre report on evidence-informed policymaking in Czech governance and public administration noted the growing importance of integrating scientific knowledge into policymaking and analysed the Czech science-for-policy ecosystem in detail (*Petr et al., 2025*). The report identified the Czech Academy of Sciences as one of the key research organisations in the wider supply landscape of scientific knowledge for policy. It also observed that academic institutions in Czechia are broad and diverse, while the policy system still faces problems of coordination, demand, and uptake. This diagnosis clarifies the Academy's task. It is not enough to produce expertise; expertise must reach public administration through stable channels, mutual trust, appropriate formats, and trained intermediaries.

The same report pointed to tensions between the academic and policymaking worlds, including different evaluation criteria, different timelines, discontinuities caused by political change, the greater continuity of academic research, and different levels of caution and certainty in interpreting evidence (*Petr et al., 2025*). These tensions are not accidental defects; they are built into the relationship between science and politics. Policymakers often need a clear answer quickly, while scientists may need time to verify, compare, and qualify results. Administrations may prefer operational recommendations, while researchers may see a problem as structurally complex. Political leaders may need to justify decisions publicly, while experts may insist on uncertainty and probability. The Academy's role is to manage this tension without surrendering the standards of research. Its expertise is valuable precisely because it resists the pressure to convert complex evidence into convenient certainty.

Evidence-informed decision-making also requires capacity on the side of public administration. Even the best research is ineffective if ministries, regions, or municipalities lack officials able to commission, interpret, and use it. The JRC report identified gaps in analytical skills and the need for stronger competencies among civil servants, including mechanisms for exchange between ministries, EU institutions, and research organisations (*Petr et al., 2025*). This means that AV ČR's policy contribution cannot be limited to producing reports. It may also involve training, dialogue, secondments, policy seminars, expert workshops, and long-term relationships with public officials. The most successful science-for-

policy systems are not built on one-off advice during emergencies. They are built on repeated contact, mutual literacy, and a shared understanding of how evidence can and cannot be used.

Policy expertise from the Academy can take many forms. It may appear as a policy brief, analytical report, expert statement, advisory-board participation, legislative consultation, public lecture, database, risk model, evaluation, or strategic scenario. It may support a ministry preparing reform, a region designing an adaptation strategy, a municipality addressing environmental risk, a hospital working with diagnostic evidence, or a cultural institution managing heritage protection. Some outputs are visible to the public; others remain part of internal decision-making. This variety matters because expert knowledge is not only a matter of public speeches by famous scientists. It is often quiet institutional work: preparing evidence, checking assumptions, clarifying definitions, comparing data sources, and preventing poor decisions before they become public problems. In this sense, the Academy's policy function is partly preventive.

The Academy's expert role is also linked to its governance structure. The Academy Assembly includes representatives of Academy institutes, universities, government bodies, industry, the business sector, banks, and distinguished scientists, which embeds the Academy within a wider public and institutional environment (*Czech Academy of Sciences, 2006*). This structure does not remove the Academy's autonomy, but it makes the institution porous to different social needs. The Council for Sciences is primarily engaged in setting the Academy's science policy, while the Academy Council functions as the executive body (*Czech Academy of Sciences, n.d.*). This internal architecture is important because policy expertise cannot be left only to informal personal influence. It must be supported by bodies that can coordinate priorities, protect standards, and represent the Academy in dialogue with the state.

The Academy's thirteen strategic priorities for the 2025–2029 leadership period also show that policy expertise has become part of its explicit strategic agenda. These priorities include public policy and European funding, knowledge and technology transfer, international cooperation, evaluation, cooperation with universities, digital transformation, research security, communication with the public, and the implementation of Strategy AV21 (*Czech Academy of Sciences, 2026*). The inclusion of public policy alongside transfer, security, digitalisation, and communication is revealing. It suggests that the Academy sees its public role not as occasional advice, but as a structured dimension of institutional development. Policy expertise is therefore becoming one of the Academy's professional interfaces, comparable in importance to technology transfer and international cooperation. The Academy is moving towards a model in which public decision-making is treated as a legitimate destination for research outputs.

One of the most important areas of Academy expertise is science policy itself. AV ČR is not only a producer of research; it is also a major actor in debates over how Czech science should be funded, evaluated, internationalised, and protected. The statutes state that the Academy participates in the formation of research and development policies of the Czech Republic and the European Union (*Czech Academy of Sciences, 2006*). This role is particularly significant because public research institutions must defend the conditions that make long-term research possible. Funding models, evaluation procedures, intellectual-property rules, open-science obligations, doctoral training, career structures, and research security policies all affect the future of Czech science. If the Academy does not participate in these debates, policy may be shaped by actors with shorter horizons or narrower interests. Its expert role therefore includes reflexive expertise: knowledge about the governance of knowledge itself.

The Academy's social-science and humanities institutes are especially important for public decision-making because many policy problems are social, institutional, cultural, and historical rather than purely technical. The Institute of Sociology's policy brief activity, for example, illustrates how Academy-based research can enter the policy world through concise and targeted formats. One listed policy brief series was prepared in cooperation with the Institute of Sociology of the Czech Academy of Sciences and European partners in the context of gender-equality policy work (*Puy, González Orta, & Linková, 2019*). Such outputs may not attract the same public attention as a new technology, but they influence how institutions understand inequality, representation, governance, and reform. In this respect, the humanities and social sciences provide policy innovation: they reshape categories, reveal hidden structures, and make institutional problems visible.

Expert knowledge for policy is also essential in crises. During crises, public authorities often need quick advice, but good advice depends on knowledge accumulated before the crisis. A pandemic requires virology, immunology, modelling, public-health communication, economics, and social analysis. An energy shock requires physics, engineering, economics, geopolitics, and public behaviour. A flood or drought requires hydrology, meteorology, ecology, urban planning, and municipal governance. A security or disinformation crisis requires political science, media studies, sociology, psychology, law, and historical knowledge. The Academy's value in such moments lies in its ability to mobilise long-term expertise under conditions of urgency. It cannot improvise knowledge from nothing; it can only respond effectively if the relevant fields have been cultivated beforehand.

The COVID-19 pandemic made visible the need for stronger links between research and public administration across Europe. The JRC report on Czech evidence-informed policymaking was explicitly developed in the post-pandemic context, as part of a multi-country project aimed at improving the capacity of public administrations to use scientific knowledge, evaluation, and evidence in policymaking (*Petr et al., 2025*). This context is important because the pandemic exposed both the value of expert knowledge and the fragility of its public reception. Scientific advice had to compete with misinformation, political pressure, changing evidence, administrative overload, and public fatigue. For AV ČR, the lesson is not only that scientists should communicate better. The deeper lesson is that science-for-policy must be institutionalised before crisis conditions arise.

Policy expertise also requires a careful treatment of uncertainty. Scientific knowledge often comes with margins of error, competing models, incomplete data, and changing conditions. Public decision-making, however, cannot always wait for complete certainty. The Academy's responsibility is therefore to communicate uncertainty in a way that is honest but useful. It must distinguish between what is known, what is probable, what is contested, and what remains unknown. This is especially important in climate policy, health policy, AI governance, energy choices, demographic forecasts, and economic modelling. Poor communication of uncertainty can lead either to paralysis or to false confidence. Good expert advice does not eliminate uncertainty; it disciplines it.

The Academy's expert function also has a democratic dimension. In a democratic society, public decisions should not be justified only by authority, charisma, or ideological conviction. They should be open to evidence, criticism, comparison, and revision. Expert institutions such as AV ČR help create the conditions for such decisions. They supply knowledge that can be scrutinised, debated, and corrected. They also help citizens distinguish between evidence-

based analysis and political rhetoric. This democratic role is particularly important in an era of disinformation and polarised public debate. A national academy cannot by itself restore public trust, but it can provide stable reference points in a volatile information environment.

At the same time, expert knowledge must avoid technocracy. Scientists are not elected representatives, and public policy always involves values, priorities, and conflicts that cannot be resolved by data alone. The Academy should therefore resist the temptation to present expert judgement as a substitute for democratic choice. Its role is to clarify consequences, test assumptions, identify risks, and compare options. It can say which policy is likely to produce which effects, but society must still decide what effects it values most. This distinction protects both science and democracy. Science becomes dangerous when it pretends to rule; politics becomes dangerous when it ignores evidence.

The Academy's policy role also depends on public communication. Evidence that remains in expert reports cannot shape public decision-making if citizens do not understand why it matters. The Academy's strategic priorities include communication with the public, which indicates that public explanation is now treated as part of the institution's broader mission (*Czech Academy of Sciences, 2026*). This is not merely a matter of visibility or reputation. Public communication creates a social environment in which evidence-informed policy becomes possible. If citizens distrust science, politicians have less incentive to use it. If scientists fail to explain uncertainty, citizens may interpret changing recommendations as incompetence. Therefore, expert knowledge for policy must be accompanied by expert communication with society.

Another important dimension is research security. The Academy's strategic priorities for 2025–2029 include research security, which reflects the fact that expert knowledge now operates in a world of geopolitical risk, cyber threats, dual-use technologies, hostile influence, and sensitive data (*Czech Academy of Sciences, 2026*). Policy advice in fields such as AI, biotechnology, energy, defence-related technologies, and information infrastructure cannot be naïve about security. The Academy must support openness and international cooperation while recognising that not all knowledge circulates in politically neutral conditions. This creates a new responsibility for expert institutions. They must advise the state not only on how to innovate, but also on how to protect knowledge, infrastructures, and society from misuse.

Expert knowledge for public decision-making also has a local and regional aspect. National ministries often attract attention, but many decisive public choices are made by regions and municipalities. They concern housing, transport, schools, local energy systems, environmental adaptation, water management, heritage protection, social services, and public space. Municipalities may lack the analytical capacity to evaluate complex scientific or technical issues on their own. Academy institutes can help by providing models, surveys, historical context, environmental analysis, and expert interpretation. This local dimension is essential because the Czech future will not be shaped only by national strategies. It will also be shaped by thousands of practical decisions made in cities, towns, and regions.

The Academy's expert role is especially valuable where public authorities need long-term memory. Governments change, ministers rotate, municipal coalitions shift, and administrative priorities are often rewritten. Research institutes, by contrast, can preserve datasets, archives, methods, and expert communities across political cycles. This continuity allows the Academy to remember past reforms, failed interventions, environmental trends, demographic shifts, and institutional patterns. Such memory is not conservative in the narrow sense; it is a

condition of intelligent change. Public policy without memory repeats errors. A national academy helps society learn cumulatively.

The policy function of AV ČR therefore belongs to the same historical line as its innovation role, but it produces a different kind of innovation. Technology transfer produces devices, methods, licences, companies, and industrial applications. Science for policy produces better questions, better options, better diagnoses, better risk assessment, and better governance. In both cases, research leaves the institute and enters society. The difference is that policy expertise enters the space of collective decision-making, where evidence must interact with law, values, finance, political legitimacy, and public trust. This is why it may be even more delicate than commercial transfer. A failed product may disappear from the market; a failed public decision may affect millions of people.

Thus, expert knowledge for policy and public decision-making is one of the central ways in which the Czech Academy of Sciences transforms scientific autonomy into public value. The Academy's statutes, Strategy AV21, Science4Policy platform, policy briefs, social-science expertise, interdisciplinary programmes, and strategic priorities all show a movement towards a more professional science-for-policy role. Yet the Academy's contribution is valuable only if it remains independent, methodologically serious, transparent about uncertainty, and resistant to political capture. Its task is not to govern in place of elected authorities, but to make governance more informed, historically aware, and intellectually responsible. For the Czech future, AV ČR is therefore not merely a producer of research results. It is a public knowledge institution that can help the state, regions, municipalities, and citizens act with greater foresight, evidence, and democratic seriousness.

Research Infrastructures and Technological Capacity

1. Large Instruments, Laboratories, and Specialised Facilities

Large instruments, laboratories, and specialised facilities are among the least visible yet most decisive foundations of modern scientific power. They are often absent from popular narratives of discovery, where attention is given to the individual scientist, the breakthrough article, the patent, or the public announcement. Yet contemporary research increasingly depends on instruments that are too expensive, technically demanding, spatially complex, and organisationally delicate to be owned by small groups or used casually. A synchrotron beamline, a high-power laser, a tokamak, a nanofabrication cleanroom, a cryo-electron microscopy platform, a biomedical imaging facility, or a research reactor is not merely equipment. It is an institutional ecosystem composed of buildings, machines, engineers, technicians, safety regimes, data systems, user policies, maintenance budgets, international access rules, and scientific communities. For a national academy, such infrastructures are not decorative signs of prestige. They are material conditions of scientific autonomy and technological capacity.

In the Czech case, this material dimension is inseparable from the post-1993 history of AV ČR. The Academy's modern mission is to conduct research across natural, technical and social

sciences and the humanities, including highly specialised and interdisciplinary work that advances international knowledge while responding to Czech social and cultural needs (*Czech Academy of Sciences, n.d.*). This mission cannot be fulfilled by intellectual talent alone. It requires laboratories where experiments can be performed, instruments where matter and life can be observed at scales inaccessible to ordinary perception, and facilities where researchers from different institutions can meet around shared technological capacity. The Academy's cooperation with applied research and industry, also named in its mission, depends on the same material base: firms, ministries, hospitals, and regions turn to academic science when they need access to capacities that cannot be improvised inside ordinary organisations.

Large research infrastructures therefore form a bridge between scientific excellence and national development. The Czech Roadmap of Large Research Infrastructures presents these infrastructures as a strategic policy area of the Czech Republic and as the Czech contribution to the European and global research-infrastructure landscape (*Ministry of Education, Youth and Sports, 2024*). Its current 2023–2026 framework includes forty-three large research infrastructures in six fields: physical sciences and engineering, energy, environmental sciences, health and food or biological and medical sciences, social sciences and humanities, and e-infrastructures or digital research infrastructures (*Ministry of Education, Youth and Sports, 2024*). The Roadmap also emphasises open-access use, internationalisation, peer-review evaluation, and a funding model combining state-budget support for operations with European structural funds for investment. This means that infrastructure policy is not a technical appendix to science policy; it is one of the ways in which the Czech state defines the conditions of future research.

For AV ČR, large instruments have a special institutional meaning because the Academy is both a host, a partner, and a user of such infrastructures. Some facilities are directly embedded in Academy institutes; others are shared with universities, European consortia, or specialised research organisations. This distributed character matters because contemporary infrastructure is rarely a closed property of one institution. It functions as a node in a national and European network. The Academy's role is therefore not merely to "own" instruments, but to operate, coordinate, sustain, and intellectually populate them. A large facility without excellent research groups becomes an expensive machine; an excellent research group without access to facilities becomes dependent on external capacity. The Academy's strength lies in connecting these two elements.

The Extreme Light Infrastructure, and especially ELI Beamlines in Dolní Břežany, is the clearest symbol of the Czech Republic's entry into the world of large European scientific facilities. ELI is described as the world's largest and most advanced high-power laser infrastructure and as the first ESFRI Landmark constructed in Central and Eastern European member states (*ELI ERIC, n.d.*). ELI Beamlines is one of ELI's principal sites and operates cutting-edge high-power femtosecond laser systems that provide users with sources of X-rays and accelerated particles for research in physics, materials science, life sciences, laboratory astrophysics, and chemistry (*ELI Beamlines, n.d.*). Its importance for Czech science lies not only in its lasers, but in the fact that it places Czech research inside a European user-facility model, where international teams come to the Czech Republic for experiments that cannot be performed elsewhere.

ELI Beamlines also shows how infrastructure changes the geography of scientific prestige. For much of the 20th century, Czech and Czechoslovak science had to negotiate its place between national ambitions, political constraints, and unequal access to Western facilities. The creation of a world-class laser infrastructure in the Czech Republic altered that position. It made the country not only a participant in European science, but a host of capacity needed by others. This is a crucial difference. A scientific community that only travels abroad to use instruments remains dependent; a community that operates major facilities becomes part of the architecture of international research. In this sense, ELI Beamlines is not merely a laser centre. It is an institutional statement that advanced science can be materially anchored in Czech territory.

The HiLASE Centre, also located in Dolní Břežany and connected with the Institute of Physics of the Czech Academy of Sciences, represents a related but distinct model. While ELI Beamlines is oriented towards frontier high-intensity laser science, HiLASE has been presented as a high-technology laser research centre focused on innovative laser technologies and applications in industry, space, and defence (*HiLASE Centre, n.d.*). This distinction is important because it shows how a national research ecosystem can contain both curiosity-driven and application-oriented laser capacity. HiLASE is not simply a smaller companion to ELI; it is part of the mechanism through which laser physics becomes usable in industrial processes, surface treatment, materials engineering, precision manufacturing, and strategic technologies. Large instruments here become platforms for technology transfer and industrial upgrading.

The Prague Asterix Laser System, or PALS, adds another historical layer to Czech laser capacity. PALS is a joint research laboratory of the Institute of Physics and the Institute of Plasma Physics of the Academy of Sciences, established in 1998 as a research centre, and it has long functioned as a European laser facility for plasma research (*PALS Research Centre, n.d.*). The Czech research-infrastructure portal describes PALS as one of Europe's largest lasers of its kind, with a pulsed terawatt iodine laser and experimental capacities for laser-plasma interaction, laboratory astrophysics, fusion-related experiments, laser plasma chemistry, and the testing of optical materials and detectors (*Ministry of Education, Youth and Sports, n.d.*). In institutional terms, PALS is important because it shows continuity from earlier Academy laboratory cultures into the later infrastructure age. It prepared scientific and technical experience that could interact with newer facilities such as ELI and HiLASE.

Fusion research provides another example of how large instruments connect scientific ambition, energy policy, and international cooperation. The COMPASS tokamak placed the Institute of Plasma Physics of the CAS among the European research environments studying high-temperature plasma and thermonuclear fusion. Its successor project, COMPASS-U, is designed as a high-magnetic-field device with plasma geometries relevant to ITER and DEMO, intended to address key challenges in plasma exhaust physics and future fusion-reactor design (*Institute of Plasma Physics of the CAS, n.d.*). This is not ordinary laboratory equipment; it is a specialised experimental platform in a field where national capacity depends on integration with European programmes and long-term technological patience. Fusion research is the kind of activity that has little meaning if judged by short-term commercial outputs, but enormous strategic meaning if judged by future energy sovereignty.

The nuclear research reactors LVR-15 and LR-0, operated at Řež, illustrate the same logic from another angle. The Czech infrastructure portal describes LVR-15 as a multi-purpose research

reactor producing 10 MW of thermal power and supporting neutron-field research, medical radionuclide production, radiation-resistance testing of construction materials, and experiments relevant to nuclear technologies of different generations (*Ministry of Education, Youth and Sports, n.d.*). LR-0 is described as a zero-power experimental reactor that allows highly accurate measurements in reactor physics and the verification of computational tools and nuclear data (*Ministry of Education, Youth and Sports, n.d.*). These reactors are not formally Academy institutes in the narrow sense, yet they belong to the broader Czech research-infrastructure environment in which Academy scientists, engineers, and policy debates operate. Their existence shows that technological capacity is national before it is institutional.

Nanoscience and nanotechnology require a different type of infrastructure: cleanrooms, nanofabrication tools, microscopy, lithography, thin-film deposition, surface analysis, and theoretical modelling. CzechNanoLab provides open access to a comprehensive set of tools and expertise in nanoscience, including preparation and characterisation of nanostructures, production and functionalisation of components and devices, and first-principles theoretical description (*CzechNanoLab, n.d.*). The infrastructure reports more than 120 instruments, 2,500 square metres of cleanroom area, more than 400 users, and expert staff supporting different forms of access, including self-service, proposal-based full-service access, and paid full-service access (*CzechNanoLab, n.d.*). This model is especially important because it allows both academic and industrial users to access capabilities that would otherwise be prohibitively expensive.

CzechNanoLab also reveals the relationship between instruments and communities. A cleanroom is not merely a sterile technical space; it is a disciplined culture of fabrication, training, contamination control, equipment booking, calibration, and shared protocols. Users must be trained, approved, and supported. Projects must be selected, measured, fabricated, repeated, and interpreted. Such infrastructures therefore create what may be called technological literacy. Researchers and engineers learn not only how to use a tool, but how to think in terms of nanoscale constraints, fabrication sequences, material behaviour, and device reproducibility. For the Czech innovation system, this is crucial because advanced manufacturing, nanoelectronics, sensors, photonics, energy devices, and biomedical technologies all depend on the ability to work at such scales.

In the life sciences, large infrastructure takes the form of imaging, genomics, animal models, structural biology, biobanks, bioinformatics, and translational platforms. Czech-BioImaging is a national research infrastructure for biological and medical imaging, distributed across leading facilities in the Czech Republic, and it offers open access to advanced imaging technologies, professional services, training, data processing expertise, and image analysis support (*Czech-BioImaging, n.d.*). Its website describes coverage from organisms, tissues, and cells down to organelles, biomolecules, transport processes, and interactions in healthy and pathological states (*Czech-BioImaging, n.d.*). The Institute of Molecular Genetics of the CAS coordinates the Czech-BioImaging Hub, which provides logistical support, open access to light and electron microscopy, consultation, sample preparation, data acquisition and analysis, and training workshops (*Institute of Molecular Genetics of the CAS, n.d.*).

This type of infrastructure transforms biological and medical research because it makes invisible life processes experimentally visible. A modern biomedical discovery often depends on the ability to image cells, tissues, organelles, protein localisation, cell dynamics, or

pathological changes with high resolution and reliable analysis. Without imaging platforms, biology remains partly descriptive and fragmented. With them, researchers can connect molecular mechanisms with cellular behaviour and disease processes. The relevance for the Academy is clear: institutes in molecular genetics, physiology, experimental medicine, botany, biology, and biotechnology require imaging capacity not as an auxiliary service, but as part of their scientific grammar. Czech-BioImaging therefore functions as a shared language through which different fields of life science communicate.

BIOCEV, the Biotechnology and Biomedicine Centre of the Academy of Sciences and Charles University, illustrates how large laboratories become institutional platforms for interdisciplinary biomedical research. Its research and development focus covers biotechnology and biomedicine, with programmes in functional genomics, cellular biology and virology, structural biology and protein engineering, biomaterials and tissue engineering, and development of diagnostic and therapeutic procedures (*BIOCEV, n.d.*). The BIOCEV presentation also notes that its core facilities provide a methodological basis open to external users, and that research infrastructures at BIOCEV include the Czech Centre for Phenogenomics, the Czech Infrastructure for Integrative Structural Biology, Czech-BioImaging, ELIXIR-CZ, and the National Centre for Medical Genomics (*BIOCEV, n.d.*). This shows how one site can become a meeting point for several infrastructure logics: experimental biology, imaging, genomics, structural methods, bioinformatics, and translational potential.

The importance of core facilities in biomedicine should not be underestimated. A scientific paper may list only authors and methods, but behind the methods stand facilities that maintain instruments, prepare samples, standardise protocols, train users, and interpret data. In this sense, specialised facilities are institutional co-authors of modern science, even when they do not appear as such. They create reproducibility and make complex methods available beyond the small circle of groups that could build them independently. For a national academy, this is a public function: it democratises access to advanced methods inside the research community. It also allows smaller teams, regional partners, and early-career scientists to conduct work at a level that would otherwise be restricted to a few wealthy laboratories.

Large instruments and specialised laboratories also reshape the relationship between science and industry. Industrial firms may approach Academy-linked infrastructures not only to commission a measurement, but to test a material, validate a process, improve a prototype, solve a production problem, or explore a new technology. Facilities such as CzechNanoLab, HiLASE, PALS, Czech-BioImaging, and BIOCEV-linked platforms make this possible because they combine instruments with expertise. The decisive factor is not the instrument alone, but the staff who understand how to use it, maintain it, and interpret the results. For this reason, infrastructure policy is also a human-resource policy. Engineers, technicians, operators, data specialists, safety officers, and facility managers are part of the scientific workforce, not merely its support layer.

The open-access principle is especially important in this context. The Czech Roadmap emphasises that large research infrastructures operated in the Czech Republic or participated in by the Czech Republic are made available to users on an open-access policy basis (*Ministry of Education, Youth and Sports, 2024*). This principle distinguishes research infrastructures from closed institutional laboratories. A national or European facility must justify itself by serving a wider community, not only its host institute. Open access also creates scientific competition because users must formulate projects, apply for time, and demonstrate research

quality. At the same time, it creates knowledge circulation across institutions and borders. The Academy's role as host or partner therefore involves both privilege and responsibility: it gains infrastructure capacity, but it must maintain it for others.

Large facilities also create new administrative and financial challenges. They require long-term operational funding, continuous upgrades, maintenance, safety compliance, energy supply, procurement, international user support, data management, and periodic evaluation. The Czech Roadmap's funding model, combining state-budget support for operations with European investment support, reflects the fact that one-off construction is not enough (*Ministry of Education, Youth and Sports, 2024*). A facility may be spectacular at opening, but it becomes scientifically meaningful only if it remains operational, staffed, upgraded, and accessible. This is a lesson that matters for all countries building infrastructure with European structural funds. The true test is not whether a building can be built, but whether a research culture can be sustained inside it.

The Academy's specialised facilities also have an educational role. Doctoral students and postdoctoral researchers learn experimental science not only from supervisors and articles, but from direct contact with instruments. They learn how to align a beam, prepare a sample, calibrate a microscope, model a plasma, fabricate a nanostructure, interpret a spectrum, or handle biological data. This training creates embodied competence that cannot be obtained from textbooks alone. In the long run, the infrastructure educates a national scientific elite capable of moving into universities, companies, hospitals, ministries, and international organisations. Therefore, large instruments are also schools. They form people as much as they produce data.

The presence of large instruments also changes the Academy's international position. Facilities such as ELI Beamlines, PALS, Czech-BioImaging, and CzechNanoLab are connected to European structures, user communities, and international standards. The Roadmap explicitly places Czech infrastructures in relation to ESFRI and European Research Infrastructure Consortia, including Czech participation in infrastructures such as ELI ERIC, Euro-BioImaging ERIC, CLARIN ERIC, DARIAH ERIC, BBMRI-ERIC, EATRIS, ELIXIR, and others (*Ministry of Education, Youth and Sports, 2024*). This means that Czech scientific sovereignty is not achieved through isolation, but through integration into shared infrastructures where Czech teams contribute capacity, expertise, and governance. A country becomes sovereign in science when it can cooperate from a position of competence.

Large instruments are also important for regional development. Several major facilities are located outside Prague or in its broader metropolitan and regional surroundings: Dolní Břežany with ELI Beamlines and HiLASE, Vestec with BIOCEV, Brno with advanced microscopy and nanotechnology facilities, and other regional nodes of distributed infrastructures. Such geography matters because research capacity can become a driver of local technological ecosystems, university cooperation, specialised labour markets, and high-technology firms. It can also alter the symbolic map of Czech science by showing that advanced research is not confined to historic central institutions. The Academy's infrastructure role therefore intersects with regional innovation policy and the broader question of how knowledge-based development is distributed across the country.

At the same time, infrastructure concentration can produce inequalities if access is poorly organised. Large facilities may unintentionally favour already strong groups that know how to apply, have travel resources, or possess prior technical expertise. Open-access systems,

training, user support, and national coordination are therefore essential if infrastructures are to serve the wider scientific community. Czech-BioImaging's emphasis on logistical support, training, professional assistance, data processing, and open access for both academia and the business sector is a good example of how access must be actively enabled rather than merely declared (*Czech-BioImaging, n.d.*). Similarly, CzechNanoLab's different access modes show that users may need either independent instrument use, full-service collaboration, or paid measurement and fabrication services (*CzechNanoLab, n.d.*).

The strategic value of large laboratories becomes especially clear in crisis and security contexts. Public health crises require imaging, genomics, virology, diagnostics, animal models, and data platforms. Energy crises require nuclear, plasma, materials, and systems expertise. Climate and environmental crises require observation networks, experimental ecology, sensors, modelling, and long-term monitoring. Technological security requires capacity in photonics, nanotechnology, cyber-physical systems, and dual-use risk assessment. Facilities built for normal science become reserves of national competence in exceptional moments. This is why infrastructure should be understood not only as a research asset, but as part of national resilience.

There is also a cultural and institutional risk in large-infrastructure policy. Instruments can become prestige objects, and buildings can become political symbols, while the slower work of maintenance, staffing, and scientific use receives less attention. A national academy must resist this temptation. It should not treat infrastructure as a monument to science, but as a living organism that requires care, renewal, and critical evaluation. Large instruments can empower research, but they can also consume budgets, generate managerial burdens, and create dependency on specific technological paths. The Academy's responsibility is to ensure that facilities serve scientific questions and public value, rather than allowing scientific priorities to be determined by the need to justify expensive machines.

For this reason, infrastructure governance must remain linked to research strategy. Strategy AV21, technology transfer, Science4Policy, industrial cooperation, and international projects all depend on the existence of laboratories and instruments, but they also give those infrastructures direction. A laser facility becomes socially meaningful when it contributes to materials, industry, space, energy, health, or fundamental physics. A biomedical imaging infrastructure becomes socially meaningful when it supports disease research, diagnostics, cellular biology, and translational medicine. A nanotechnology cleanroom becomes socially meaningful when it supports electronics, photonics, sensors, advanced materials, and energy devices. Infrastructure without strategy risks becoming underused capacity; strategy without infrastructure risks becoming rhetoric.

The Academy's historical development makes this point especially visible. Earlier chapters of this project traced the Czech scientific tradition from learned societies and national revival institutions through the Czechoslovak Academy, socialist centralisation, normalisation, the Velvet Revolution, and post-1993 reform. The contemporary infrastructure landscape is the material outcome of that long history. The modern Academy inherited institutes, traditions, scientific schools, and intellectual authority, but it also had to acquire new material forms suitable for 21st-century science. The emergence of large facilities, distributed infrastructures, open-access laboratories, and European research nodes marks a new stage in the institutional history of Czech science. It is the stage in which scientific autonomy becomes inseparable from technological capacity.

Thus, large instruments, laboratories, and specialised facilities are not secondary technical elements of AV ČR's work; they are the material basis of its contemporary scientific and innovation role. Facilities such as ELI Beamlines, HiLASE, PALS, COMPASS-U, CzechNanoLab, Czech-BioImaging, BIOCEV-linked core facilities, and the wider national infrastructure system make it possible for Czech science to conduct experiments, train researchers, cooperate internationally, support industry, advise public institutions, and preserve scientific sovereignty. Their importance lies not only in the machines themselves, but in the communities, skills, protocols, access systems, and long-term institutional commitments that surround them. For the Czech future, the Academy's technological capacity will depend on whether these infrastructures remain scientifically excellent, financially sustainable, openly accessible, strategically governed, and connected to both fundamental research and public need. In this sense, the infrastructure of AV ČR is not merely where research happens. It is one of the forms through which the Czech Republic remains capable of producing advanced knowledge on its territory.

2. Data Infrastructures, Digital Platforms, and Computational Capacity

Data infrastructures, digital platforms, and computational capacity have become the nervous system of contemporary science. In an earlier period, the material power of research was most visibly associated with laboratories, instruments, collections, observatories, and experimental facilities. These remain indispensable, but they now operate inside a new digital environment in which data must be generated, stored, curated, transferred, processed, interpreted, cited, protected, and reused. The modern Academy cannot be understood only through buildings and institutes; it must also be understood through repositories, metadata systems, software tools, high-performance computing, digital identities, data-management plans, cloud services, disciplinary databases, and platforms for collaboration. For AV ČR, this transformation is not a technical detail. It changes how research is organised, how knowledge is preserved, how disciplines communicate, how open science is practised, and how Czech science participates in European and global infrastructures.

The growth of data-intensive science has altered the meaning of research infrastructure itself. A laboratory may produce measurements, images, sequences, texts, simulations, survey responses, or sensor outputs, but these objects become scientifically valuable only when they can be managed and interpreted. In climate research, long time series must remain comparable across decades. In biomedicine, genetic, molecular, and imaging data must be linked to analytical tools and ethical safeguards. In the humanities, digitised manuscripts, language corpora, archaeological datasets, and historical records require structured description and long-term preservation. In the social sciences, surveys, administrative data, and interviews must be documented in ways that allow secondary analysis. Thus, data infrastructure is not simply storage. It is the institutional organisation of memory, reproducibility, and future use.

The Czech national framework reflects this shift very clearly. The Roadmap of Large Research Infrastructures of the Czech Republic for 2023–2026 includes e-infrastructures and digital research infrastructures as one of its six major fields, alongside physical sciences, energy, environmental sciences, health and food, and the social sciences and humanities (*Ministry of Education, Youth and Sports, 2024*). The Roadmap places e-INFRA CZ, LINDAT/CLARIAH-CZ, the Czech Social Science Data Archive, SHARE-CZ, and other digital or data-based

infrastructures inside the same strategic universe as lasers, reactors, imaging facilities, and environmental observatories. This is institutionally important because it recognises that digital capacity is no longer auxiliary. It is now part of the core architecture of national research capability.

The most general Czech digital backbone is e-INFRA CZ. It describes itself as a unique research and development e-infrastructure in the Czech Republic, providing capacities and resources for the transmission, storage, and processing of scientific and research data (*e-INFRA CZ, 2026*). Its service areas include network, computing, data storage, security, network identity, and user cooperation, which means that it is not only a computing centre but a broad digital environment for research activity. The consortium brings together CESNET, CERIT-SC, and IT4Innovations, thereby connecting national networking, grid and cloud services, storage, and supercomputing capacity into one infrastructural system. This structure is decisive for AV ČR because Academy institutes cannot build complete digital environments independently for every field. They need access to national platforms that allow them to move, compute, preserve, and secure research data.

The importance of e-INFRA CZ lies partly in its invisibility. When a researcher runs a simulation, moves a dataset, stores biological images, authenticates access, collaborates with foreign partners, or prepares data for a European repository, the underlying e-infrastructure may disappear from view. Yet without it, the research would slow down, fragment, or become dependent on commercial cloud systems and foreign platforms. Digital sovereignty in science does not mean refusing global services; it means having domestic and European capacity sufficient to protect public research from complete infrastructural dependence. For a medium-sized country such as the Czech Republic, this is a strategic matter. Scientific autonomy increasingly depends on the ability to store and compute data under reliable legal, technical, and institutional conditions.

High-performance computing is one of the most visible parts of this digital capacity. IT4Innovations, the National Supercomputing Centre in Ostrava, states that it operates the most powerful supercomputing systems in the Czech Republic and provides them to Czech and foreign research teams from academia and industry (*IT4Innovations, 2026*). It works in high-performance computing, high-performance data analysis, quantum computing, artificial intelligence, and applications across science, industry, and society. Its Karolina supercomputer, acquired under the EuroHPC Joint Undertaking, reaches a theoretical peak performance of 15.7 PFlop/s and includes GPU acceleration, a large-memory data-processing part, cloud-service nodes, high-speed interconnect, and storage for user data (*IT4Innovations, 2026*). Such capacity changes what Czech researchers can ask. Problems that would once have remained theoretical because they were computationally inaccessible can now be approached through simulation, modelling, machine learning, and large-scale data analysis.

For the Academy, computational capacity is not a separate discipline but a shared condition for many disciplines. Plasma physics, climate modelling, materials science, bioinformatics, structural biology, linguistics, social simulation, archaeology, economics, and artificial intelligence all depend on computation, although they use it in different ways. A physicist may simulate plasma behaviour, a biologist may analyse genomic data, a historian may process digitised corpora, and a sociologist may work with survey datasets. The common feature is that research increasingly takes place through interaction between domain knowledge and digital method. This means that the future Academy needs not only computers, but researchers who

understand how computation changes the epistemology of their fields. Computational capacity is therefore both a technical and intellectual resource.

The emergence of quantum computing deepens this transformation. In 2025, the VLQ quantum computer of the LUMI-Q consortium was inaugurated at IT4Innovations, and it is designed to integrate with EuroHPC supercomputers including Karolina in Czechia, LUMI in Finland, and EHPCPL in Poland (*IT4Innovations, 2025*). This development does not mean that quantum computing is already a routine tool for all scientific fields. Its practical range remains specialised and developing. Yet its symbolic and strategic significance is considerable. It shows that Czech computational infrastructure is entering the European frontier where high-performance computing, quantum systems, and AI-oriented research begin to converge. For AV ČR institutes, this may eventually open new possibilities in materials, cryptography, optimisation, molecular modelling, and complex-system simulation.

CERIT-SC, the CERIT Scientific Cloud, represents another part of the Czech computational ecology. It describes itself as a national centre operating computing and data-storage infrastructure for research and development, with approximately 7,000 CPU cores and more than 10 PB of storage capacity; it is the largest node of the Czech national e-Infrastructure MetaCentrum (*CERIT-SC, 2026*). It also emphasises data processing, storage, authentication, FAIR data, data-management planning, tools, applications, and data workflows. This is important because not every research problem requires a top supercomputer. Many require flexible cloud environments, stable storage, workflow management, secure access, and data-processing services. CERIT-SC therefore helps fill the space between ordinary institutional IT and the most extreme forms of high-performance computing.

The digital transformation of AV ČR also depends on open science. The Open Science Principles of the Czech Academy of Sciences, approved by the Academy Council in November 2024, recommend that CAS institutes manage research data in accordance with FAIR principles, using appropriate metadata, open formats, persistent identifiers, and data-management planning (*Czech Academy of Sciences, 2024*). The same principles recommend that data, tools, and supporting resources necessary to verify publication conclusions should be made accessible together with publications, and that research software needed for reuse or validation should be made openly available under an open-source licence where possible. This is a major cultural shift. In the older academic world, the publication was often treated as the final output. In the open-science world, the publication becomes only one element in a wider constellation of data, code, protocols, metadata, and repositories.

The Academy's ASEP repository is one of the practical instruments of this shift. ASEP is the institutional data repository of the Czech Academy of Sciences, storing data files with metadata created by authors from CAS institutes, enabling versioning of data files and linking of data and bibliographic records (*Library of the Czech Academy of Sciences, 2026*). Its records receive persistent identifiers, with handles assigned to all ASEP records and DOIs assigned to data records stored directly in ASEP, and its metadata are freely accessible. The repository also allows different access regimes, including public access, institute-level access, embargoed public access, and access on request, while prohibiting the storage of non-anonymised sensitive data (*Library of the Czech Academy of Sciences, 2026*). This flexibility is essential because not all data can or should be open immediately. Ethical, legal, commercial, and security constraints must be handled without abandoning the broader movement towards transparency and reuse.

ASEP also demonstrates that digital infrastructure is partly a library function. The Library of the Czech Academy of Sciences is no longer only a guardian of books, journals, bibliographies, and scholarly communication in the traditional sense. It has become a digital-curation institution, helping researchers meet open-science requirements, prepare data-management plans, store research data, link datasets and publications, and preserve outputs in a structured repository environment. This is historically significant because it connects older scholarly memory with new digital forms of knowledge. The academy library becomes not only a place where past knowledge is kept, but a platform through which contemporary research can remain discoverable and verifiable in the future. In institutional terms, the library helps convert research activity into long-term public knowledge.

The Czech implementation of the European Open Science Cloud deepens this process at the national level. EOSC CZ explains that a national node of the European initiative is being established in the Czech Republic to promote good practice in research data management across the scientific community, based on a federated principle (*EOSC CZ, 2026*). The intended National Data Infrastructure is described as a common platform for sharing, managing, and accessing data and computing resources for research purposes, and its key elements include working groups, the EOSC CZ Secretariat, the National Metadata Directory, the EOSC CZ Training Centre, the National Repository Platform, interconnection of thematic and disciplinary repositories, and human-resource upskilling (*EOSC CZ, 2026*). This is not a simple digitisation project. It is an attempt to reorganise Czech research data as a coordinated national system connected to Europe.

The National Repository Platform for Research Data is a central component of this reorganisation. It is scheduled for implementation from 2024 to 2028 and is designed to support effective management, long-term preservation, and sharing of scientific data in the Czech Republic (*EOSC CZ, 2026*). Its stated aim is to consolidate the fragmented research-data environment, provide tools and facilities for FAIR data management, ensure sufficient storage capacity and reliable repositories, and create coordinated educational and methodological support. Its development includes repository software systems such as CESNET Invenio, CLARIN DSpace, and ASEP ARL, which means that the Academy's institutional repository is being positioned within a wider national platform (*EOSC CZ, 2026*). For AV ČR, this is a strategic opportunity. It allows Academy data practices to become part of a national and European ecosystem rather than remaining a set of institute-level solutions.

The disciplinary dimension of data infrastructure is equally important. ELIXIR CZ, the Czech national infrastructure for biological data, states that it is dedicated to the organisation, storage, sharing, and interoperability of life-science data and that it belongs to the European life-science infrastructure for biological information (*ELIXIR CZ, 2026*). It offers data resources, tools, specialised databases, e-infrastructure services, training, and five platforms: Data, Tools, Compute, Interoperability, and Training. This shows how biological research has become inseparable from data stewardship. A genomic sequence, protein structure, single-cell dataset, or pathogen database is not useful simply because it exists. It must be standardised, documented, linked, computable, and interpretable across laboratories and countries.

The life-science data problem also illustrates the link between AI and data quality. ELIXIR CZ's current strategy emphasises that AI can improve metadata quality, dataset annotation, and semantic enrichment, while AI methods themselves depend on well-curated, interoperable,

machine-actionable data (*ELIXIR CZ, 2026*). This circular relation is central to the future of Academy research. Artificial intelligence is not merely an algorithmic layer added to science; it depends on the quality of the data infrastructures that feed it. Poor metadata, inconsistent formats, and inaccessible datasets produce weak AI systems. Well-curated data create the possibility of discovery. In this sense, data infrastructure is one of the foundations of the Academy's future AI capacity.

In the humanities and social sciences, digital infrastructures are transforming fields that were once imagined as text-based, archival, or interpretive in a non-computational sense. LINDAT/CLARIAH-CZ is described as a digital research infrastructure for language technologies, arts, and humanities, providing open access to linguistic and other digital resources and tools for processing them (*LINDAT/CLARIAH-CZ, 2026*). It connects the Czech environment with CLARIN ERIC and DARIAH ERIC, while the broader Czech and European context also links it to digital humanities and language-technology networks. Such infrastructure is essential for Czech language technologies, corpus linguistics, digital philology, historical text processing, speech technologies, cultural heritage, and AI applications involving Czech and other languages. The protection and computational development of a national language is not merely a cultural issue. It is also a technological and sovereignty issue in the age of large language models.

The Czech Social Science Data Archive, operated at the Institute of Sociology of the Czech Academy of Sciences, provides another example of digital infrastructure as institutional memory. The Institute of Sociology states that ČSDA collects data files from Czech sociological surveys, public-opinion polls, and international sociological surveys involving Czech participation, with the primary objective of making data accessible for academic research and education and supporting secondary analysis (*Institute of Sociology of the CAS, 2026*). ČSDA is also a member of CESSDA and the East European Data Archive Network. This matters because social knowledge is cumulative only when data can be preserved and reused. Without archives, every generation of researchers must begin again, and public policy loses the possibility of comparison over time.

Social-science data archives also show that digital infrastructures are not neutral technical containers. Survey data require documentation, anonymisation, sampling information, questionnaires, variable labels, methodological notes, and ethical governance. They must be made usable not only by the original research team but by future scholars, students, policymakers, and international comparative projects. This is especially important for themes central to Czech public life: social inequality, trust, migration, ageing, democratic attitudes, education, labour markets, regional differences, and public opinion. A society without accessible social data cannot easily diagnose itself. The Academy's role in this domain is therefore not only scholarly but democratic. It preserves the empirical foundations of social self-knowledge.

Digital platforms also change the relationship between fundamental and applied research. A computational model developed for basic physics may later support industrial materials design. A biological database created for fundamental research may later support diagnostics or drug discovery. A language corpus may later support speech recognition, AI assistants, translation tools, or education. A social survey archive may later support policy evaluation. A repository created for open science may later become part of legal, educational, or commercial reuse. The point is that digital infrastructure makes knowledge portable across

contexts. It increases the probability that research performed for one purpose can later be used for another.

This portability, however, creates new responsibilities. Data can be reused well or badly; it can be misunderstood, decontextualised, commercialised without proper recognition, or used in ethically problematic ways. Sensitive data require anonymisation, controlled access, and legal compliance. AI-ready data require attention to bias, provenance, and representativeness. Cultural data require respect for historical context and intellectual property. Biomedical data require privacy, consent, and security. The Academy's digital capacity must therefore include not only servers and software, but governance, ethics, law, and professional data stewardship. Open science is not a naïve doctrine that everything should simply be exposed. It is a disciplined system for making knowledge accessible where possible, protected where necessary, and reusable under clear conditions.

Cybersecurity is therefore part of scientific infrastructure. e-INFRA CZ lists security and network identity among its service areas, and the National Repository Platform includes cybersecurity background, compliance, and operational support as part of its objectives (*e-INFRA CZ, 2026*; *EOSC CZ, 2026*). This is increasingly important because research data are not always harmless. They may include sensitive biomedical information, security-relevant technologies, proprietary industrial data, archaeological locations vulnerable to looting, personal social-science data, or dual-use scientific knowledge. Research security, named among recent strategic priorities of the Academy, must therefore be connected to data infrastructure and digital platforms. Scientific openness and scientific security must be designed together rather than treated as opposing slogans.

The computational turn also affects evaluation and reproducibility. In a data-intensive environment, a research result is not fully verifiable if the underlying data, code, workflows, and metadata are inaccessible or undocumented. The CAS Open Science Principles explicitly recommend making research software necessary for reuse or validation openly available under an open-source licence where possible (*Czech Academy of Sciences, 2024*). This recommendation reflects a broader transformation of scientific accountability. A reader should not be expected merely to trust a published conclusion. The research community increasingly expects the possibility of reanalysis, replication, and methodological inspection. In this sense, digital infrastructure is a moral infrastructure of science: it helps make claims accountable.

The digital transition also has a generational aspect. Older research cultures were often organised around individual expertise, laboratory notebooks, local archives, and discipline-specific habits of storage. Younger researchers now enter a world where data-management plans, repositories, persistent identifiers, versioning, code availability, data licences, and FAIR principles are becoming normal expectations. This does not mean that all researchers are equally prepared for the transition. Many need training, guidance, administrative support, and disciplinary translation. EOSC CZ's focus on data stewards, training, human-resource upskilling, and research-data-management support therefore addresses a real institutional need (*EOSC CZ, 2026*). The future Academy will depend not only on brilliant researchers, but on people who know how to manage the digital life of research.

Digital platforms also affect international integration. Through ELIXIR, LINDAT/CLARIAH-CZ, CESSDA, DARIAH, CLARIN, EOSC, EuroHPC, and e-INFRA CZ, Czech research becomes part of European federations of data, computation, standards, and services. This federation model

is especially important for smaller and medium-sized countries. It allows Czech science to participate in infrastructures larger than any national system, while still preserving domestic nodes, expertise, and governance. The alternative would be either isolation or dependency. Federation offers a third path: integration without disappearance. For AV ČR, this is one of the practical meanings of Europeanisation in the 21st century.

The Academy's digital capacity is also directly connected to public institutions. Ministries and municipalities increasingly need models, maps, datasets, dashboards, policy briefs, risk assessments, and digital evidence. Climate adaptation, public health, transport, social services, energy planning, cultural heritage, and regional development all require data-intensive expertise. If the Academy maintains strong data infrastructures, it can support evidence-informed policymaking more effectively. If its data remain fragmented or inaccessible, its policy advice will be weaker. Thus, the digital infrastructure of AV ČR is part of its science-for-policy role. It enables the Academy to answer not only theoretical questions, but administrative and societal questions that require reliable data.

In industry, the same infrastructures support advanced cooperation. Companies working in materials, biotechnology, photonics, AI, energy, health technologies, and environmental services often need access to data, computing, modelling, and specialised digital workflows. IT4Innovations reports support for both academia and industry, and it identifies more than one hundred industry projects among its activity indicators (*IT4Innovations, 2026*). This shows that computational capacity is not only an academic resource; it can become a bridge to industrial innovation. Yet the Academy and its partners must avoid reducing computation to service work. The highest value emerges when digital platforms support genuinely knowledge-intensive cooperation, where industrial problems stimulate new research and academic methods help companies move towards higher added value.

The digital transformation of research also changes cultural memory. Archives, manuscripts, dictionaries, corpora, archaeological records, historical images, museum collections, and literary materials can now be digitised, annotated, connected, and made searchable. But digitisation alone is insufficient. Cultural data must be interpreted, contextualised, preserved, and protected against decontextualised use. For a national academy with strong humanities institutes, this is a major field of future development. Digital platforms allow Czech cultural memory to be studied with new methods, but they also raise new questions about authority, authenticity, access, and public interpretation. In this respect, data infrastructure becomes part of national culture.

A key risk of digital infrastructures is fragmentation. Different disciplines build different repositories, metadata standards, licences, interfaces, and access regimes. This is natural because disciplines have different needs, but excessive fragmentation prevents reuse and national coordination. EOSC CZ explicitly responds to the need to consolidate the fragmented research-data environment and to interconnect existing thematic and disciplinary repositories within a National Data Infrastructure (*EOSC CZ, 2026*). The Academy's own challenge is similar. Its institutes cover physics, biology, social science, history, language, mathematics, and many other fields. A shared digital strategy must respect disciplinary diversity while preventing institutional isolation.

The economic and political significance of data capacity will only increase. Artificial intelligence, biotechnology, climate science, advanced materials, digital humanities, public administration, cybersecurity, and social modelling all depend on data and computation.

Countries that cannot store, curate, and compute their own research data risk becoming dependent on external platforms and external analytical models. For the Czech Republic, digital research infrastructure is therefore part of scientific sovereignty. It allows Czech society not only to consume global digital tools but to contribute data, standards, methods, and expertise. AV ČR's role in this process is especially important because it combines long-term research, disciplinary breadth, public legitimacy, and institutional memory.

Thus, data infrastructures, digital platforms, and computational capacity form one of the central technological foundations of the contemporary Czech Academy of Sciences. e-INFRA CZ, IT4Innovations, CERIT-SC, EOSC CZ, the National Repository Platform, ASEP, ELIXIR CZ, LINDAT/CLARIAH-CZ, ČSDA, and related European infrastructures show that research today depends on digital systems as much as on laboratories and instruments. These infrastructures make science more reproducible, more collaborative, more interdisciplinary, more open, and more capable of entering public policy and innovation. Yet they also create new obligations: data stewardship, cybersecurity, ethical governance, software transparency, training, and long-term sustainability. For AV ČR, the digital turn is therefore not merely a change in tools. It is a transformation of the very conditions under which Czech science preserves memory, produces knowledge, cooperates with Europe, supports the state, and prepares for future technologies.

3. Infrastructure as a Condition of Scientific Sovereignty

Scientific sovereignty does not mean scientific isolation. For a medium-sized European country such as the Czech Republic, sovereignty in science cannot be built by withdrawal from European and global networks, nor by imagining that every instrument, database, technology, or method must be produced domestically. It means something more subtle and more strategically important: the capacity to participate in international science from a position of competence rather than dependency. A scientifically sovereign country is able to understand advanced knowledge, evaluate imported technologies, produce original research, operate complex infrastructures, train specialists, preserve data, and formulate its own research priorities. In this sense, infrastructure is not a neutral background for science. It is one of the conditions under which a country can think, experiment, measure, compute, and decide for itself. For the Czech Academy of Sciences, infrastructure therefore belongs not only to the technical history of laboratories and instruments, but to the political and institutional history of national intellectual autonomy.

The modern mission of AV ČR already presupposes this connection between autonomy, infrastructure, and public value. The Academy describes its mission as conducting research across a broad spectrum of the sciences and humanities, including highly specialised and interdisciplinary research, with attention to the needs of Czech society and national culture (*Czech Academy of Sciences, n.d.*). Such a mission cannot be fulfilled merely through individual talent or institutional tradition. It requires material, digital, organisational, and human capacities that allow research to be performed at an international level. A country may have excellent scientists, but if they must always travel abroad for decisive experiments, store data on external platforms, rely on imported expertise for interpretation, or depend on foreign partners for strategic technologies, its autonomy remains partial. Scientific sovereignty begins when national institutions can host, maintain, and develop the infrastructures through which knowledge is produced.

The Czech Roadmap of Large Research Infrastructures for 2023–2026 is one of the clearest expressions of this principle. It presents large research infrastructures as a strategic national policy area and links them to European and global research environments (*Ministry of Education, Youth and Sports, 2024*). The current update was acknowledged by the Czech Government on 14 June 2023 and was prepared in connection with public funding of large research infrastructures up to 2026 (*Ministry of Education, Youth and Sports, 2024*). Its structure is important: it includes forty-three infrastructures in six broad fields, from physical sciences and engineering to energy, environmental sciences, health and food, social sciences and humanities, and e-infrastructures or digital research infrastructures. This shows that Czech science policy no longer treats infrastructure as a collection of isolated facilities. It treats infrastructure as a national system of capacities that determines what kinds of questions Czech science can answer.

The very existence of such a roadmap signals a mature understanding of sovereignty. A country that does not plan its infrastructures leaves its scientific future to accident, lobbying, short-term institutional competition, or external availability. A roadmap creates priorities, funding frameworks, evaluation procedures, and links to European structures. ESFRI, the European Strategy Forum on Research Infrastructures, describes its own roadmap as a strategic tool for identifying major European research infrastructures of pan-European interest over a ten-to-twenty-year horizon (*ESFRI, n.d.*). National roadmaps are similarly described as vital blueprints that allow countries to define priorities and earmark funds for national and pan-European infrastructures, while also connecting them to regional smart specialisation strategies (*ESFRI, n.d.*). The Czech roadmap should therefore be seen as both national and European. It is national because it defines Czech capacities; it is European because those capacities make sense inside a wider architecture of shared infrastructures.

This duality is fundamental. Scientific sovereignty today is relational sovereignty. It does not consist in doing everything alone, but in being able to cooperate without losing agency. A Czech institute using a European infrastructure abroad may gain access, but if Czech science contributes no domestic capacity of comparable value, the relationship remains asymmetrical. Conversely, when Czechia hosts or co-hosts infrastructures such as ELI Beamlines, HiLASE, PALS, CzechNanoLab, Czech-BioImaging, ELIXIR CZ, LINDAT/CLARIAH-CZ, ČSDA, or e-INFRA CZ, it becomes part of the European research map as a provider, not only as a user. This distinction changes the status of the national research system. It allows Czech scientists to attract international users, shape standards, train specialists, and participate in governance. Scientific sovereignty is therefore not opposed to Europeanisation. It is achieved through competent Europeanisation.

The historical contrast with the socialist period makes this point sharper. The Czechoslovak Academy of Sciences possessed laboratories, institutes, and specialist schools, and some fields reached high international quality. Yet scientific autonomy was constrained by ideology, limited access to Western networks, bureaucratic planning, and political control. After 1989, the problem was no longer only how to free science from ideological subordination, but how to rebuild the material and institutional basis for autonomous participation in global research. The modern AV ČR inherited scientific traditions, but it had to modernise them through evaluation, international collaboration, new funding systems, technology transfer, European projects, and infrastructure renewal. Infrastructure became part of the post-socialist reconstruction of scientific agency. Without it, formal autonomy would have remained hollow.

Large instruments are one obvious dimension of this agency. ELI Beamlines placed the Czech Republic inside the highest level of European laser research, not as a peripheral observer, but as a host of experiments that attract international users. HiLASE connected advanced laser development with industrial and technological applications. PALS preserved and renewed a Czech tradition in laser-plasma research. COMPASS-U positions the Institute of Plasma Physics of the CAS in European fusion research. CzechNanoLab provides open-access nanofabrication and characterisation capacity. Czech-BioImaging and BIOCEV-linked facilities support biological and medical research at scales and resolutions that ordinary laboratories cannot reach. Each of these facilities changes what Czech science can do. Together, they change what the Czech Republic can be within European science.

The sovereignty value of such infrastructures lies not only in their instruments, but in the human ecosystems around them. A high-power laser, nanofabrication platform, imaging facility, or computing centre is useless without physicists, engineers, technicians, software developers, safety specialists, data managers, procurement experts, facility managers, and trained users. These people form a hidden scientific workforce. They operate machines, interpret measurements, maintain protocols, train new generations, and preserve tacit knowledge. When such expertise exists domestically, a country can react, adapt, innovate, and negotiate. When it does not, even expensive instruments may become dependent on foreign service, external maintenance, or imported interpretation. Scientific sovereignty is therefore as much a matter of people as of equipment.

This is why infrastructure must be understood as an educational system. Doctoral students and postdoctoral researchers trained in Academy-linked facilities learn not only theories, but experimental discipline, instrumental literacy, data practice, safety culture, and interdisciplinary cooperation. They learn how to operate within international user systems, how to write proposals for facility access, how to manage data, and how to collaborate with engineers and technicians. These skills later circulate through universities, companies, ministries, hospitals, start-ups, and international organisations. The Academy's infrastructure therefore produces not only results, but specialists capable of sustaining the Czech knowledge economy. A country that trains such people strengthens its sovereignty even when they later move outside the Academy.

Digital infrastructures extend the sovereignty question into a new domain. In the 21st century, the ability to produce knowledge increasingly depends on the ability to store, process, secure, curate, and reuse data. e-INFRA CZ describes itself as a national research and development e-infrastructure providing capacities for transmitting, storing, and processing scientific and research data (*e-INFRA CZ, 2026*). EOSC CZ is establishing a national node of the European Open Science Cloud in the Czech Republic and aims to build a National Data Infrastructure as a common platform for sharing, managing, and accessing research data and computing resources (*EOSC CZ, 2026*). These initiatives show that scientific sovereignty now includes data sovereignty. If a country cannot manage its research data, it cannot fully control the conditions under which knowledge is verified, reused, protected, or transformed into technology.

Data sovereignty should not be confused with data nationalism. The point is not to lock Czech research data within national borders. The point is to ensure that Czech institutions possess the technical, legal, ethical, and organisational competence to participate in open science without losing control over sensitive, strategic, or culturally important knowledge. The

European Open Science Cloud is based on federation, not centralised absorption. This model suits a country such as Czechia because it allows domestic repositories, disciplinary platforms, and institutional systems to connect to Europe while preserving local responsibility. The National Repository Platform, the National Metadata Directory, data stewards, training centres, and disciplinary repositories are therefore not bureaucratic innovations. They are instruments of scientific self-government.

Computational capacity is equally central. High-performance computing, cloud services, AI infrastructure, and emerging quantum systems determine what kinds of models can be run, what data can be analysed, and what scientific problems can be approached. IT4Innovations, CERIT-SC, and the broader e-INFRA CZ consortium provide Czech research with supercomputing, storage, cloud, network, and data-processing capacity. Without such resources, Czech researchers would depend more heavily on foreign supercomputers, commercial platforms, or limited local clusters. This would not make research impossible, but it would reduce strategic flexibility. In fields such as climate modelling, plasma physics, materials science, bioinformatics, social simulation, and artificial intelligence, computational access shapes research agendas. The power to compute is increasingly the power to ask certain questions.

Scientific sovereignty also requires infrastructures in the humanities and social sciences. This point is often overlooked because sovereignty is too easily associated with defence, industry, energy, or advanced technology. Yet a society that cannot preserve its language, archives, cultural memory, social data, historical evidence, and institutional self-knowledge is also dependent. LINDAT/CLARIAH-CZ supports language technologies, arts, and humanities; the Czech Social Science Data Archive preserves and opens Czech survey data; digital heritage platforms and Academy repositories preserve research outputs and cultural records. These infrastructures allow Czech society to study itself with its own data and concepts. They also ensure that the Czech language and Czech cultural memory remain computationally present in a world increasingly shaped by global digital platforms and English-language data dominance.

The strategic significance of language technologies illustrates this especially clearly. Artificial intelligence systems depend on training data, language corpora, annotation, terminology, and linguistic expertise. If Czech language data are poorly curated, inaccessible, or technologically marginal, Czech speakers may become dependent on systems designed primarily for larger languages. A national academy with strong linguistic, computational, and digital-humanities capacity can help prevent this marginalisation. It can support corpora, tools, standards, and research that make Czech usable in advanced digital environments. Thus, even philology and corpus linguistics become part of technological sovereignty. Language is not only cultural heritage; in the age of AI, it is also infrastructure.

Scientific sovereignty also depends on open access to infrastructures. The Czech large-infrastructure model emphasises open access and user availability, which prevents major facilities from becoming closed institutional possessions (*Ministry of Education, Youth and Sports, 2024*). This is essential because national sovereignty in science cannot mean the monopoly of a few elite groups. It must mean that qualified researchers across institutions can use advanced capacity through transparent procedures. Open access widens the scientific community able to produce high-level research. It also strengthens national resilience by distributing competence beyond a single laboratory or institute. A facility that is open,

evaluated, and internationally connected serves the country more effectively than a facility that merely symbolises national prestige.

At the same time, openness must be combined with security. Research infrastructures increasingly handle sensitive data, dual-use technologies, advanced materials, biomedical information, AI systems, cyber capacities, and technologies with possible defence or geopolitical relevance. The Academy's recent strategic priorities include research security, which reflects a wider European awareness that science now operates in a contested global environment (*Czech Academy of Sciences, 2026*). Scientific sovereignty requires the ability to cooperate internationally while protecting knowledge from misuse, coercion, espionage, or uncontrolled dependence. This does not justify closing science behind walls. It does require more sophisticated governance, including risk assessment, cybersecurity, export-control awareness, data protection, and responsible partnership screening.

Infrastructure is also a condition of policy sovereignty. Ministries, regions, and municipalities need expert knowledge in fields such as climate adaptation, energy, health, transport, heritage, housing, water management, and social policy. Such expertise depends on data, models, monitoring systems, laboratories, archives, and computing platforms. A state that cannot produce or verify expert knowledge becomes dependent on external consultancies, foreign datasets, imported models, or politically convenient interpretations. AV ČR helps prevent this dependence by maintaining research capacities that public administration can draw upon. In this respect, infrastructure supports democratic decision-making. It allows the Czech state to govern with domestic knowledge rather than only with borrowed evidence.

Energy research shows this connection clearly. Fusion research, nuclear expertise, materials testing, hydrogen technologies, storage research, climate modelling, and energy-system analysis all require infrastructures that are expensive, specialised, and long-term. A country without such capacities may still import energy technologies, but it will be weaker in evaluating risks, adapting solutions, and negotiating technological choices. Czech participation in fusion and advanced energy research therefore has a sovereignty dimension beyond any immediate commercial result. It preserves the ability to understand future energy systems scientifically. For a country facing decarbonisation, geopolitical uncertainty, and industrial transformation, this ability is strategically important.

Environmental and climate infrastructures perform a similar function. Climate change is not experienced abstractly; it appears in droughts, heat waves, floods, forests, agriculture, water systems, biodiversity, and urban environments. Long-term monitoring networks and environmental research infrastructures allow Czech society to distinguish trends from impressions, risks from rumours, and adaptation strategies from improvisation. Institutions such as CzechGlobe and CzeCOS, together with related environmental and data infrastructures, contribute to this capacity. They make it possible to produce Czech evidence about Czech landscapes while also contributing to European and global climate knowledge. Scientific sovereignty here means the ability to see one's own territory scientifically.

Biomedical infrastructures are equally tied to sovereignty and resilience. The pandemic era demonstrated that public health depends on laboratories, sequencing, imaging, modelling, epidemiology, data infrastructures, and communication channels prepared before emergency conditions arise. A state cannot improvise these capacities overnight. Academy-linked facilities in molecular biology, imaging, genomics, structural biology, and bioinformatics contribute to a national ability to understand disease mechanisms, support diagnostics,

participate in therapeutic development, and respond to biological risk. In peacetime, such infrastructures support publications and biomedical innovation. In crisis, they become part of national preparedness.

Industrial sovereignty also depends on Academy infrastructures. Czechia has a strong industrial base, but the long-term movement towards higher added value requires domestic capacity in materials, photonics, nanotechnology, automation, AI, biotechnology, energy, and advanced measurement. Companies can perform much R&D, but they often cannot maintain frontier infrastructures alone. Academy facilities provide a bridge between public research and industrial upgrading. When firms use HiLASE, CzechNanoLab, biomedical platforms, or computational resources, they access more than equipment. They access scientific competence that can help them move beyond incremental improvement towards deeper technological capability. Infrastructure therefore supports the transformation of the Czech economy from manufacturing competence towards knowledge intensity.

Regional development is another sovereignty dimension. If advanced infrastructures are concentrated only in one metropolitan centre, the national research system may become spatially unbalanced. Facilities in Dolní Břežany, Vestec, Brno, Ostrava, and other regional nodes create opportunities for territorial innovation ecosystems. They can attract specialists, support local firms, cooperate with universities, and change the regional map of scientific opportunity. ESFRI's discussion of national roadmaps also connects infrastructure planning with regional smart specialisation strategies, indicating that infrastructures are not only scientific but territorial instruments (*ESFRI, n.d.*). For Czechia, this means that scientific sovereignty should be geographically distributed enough to support national cohesion.

Yet infrastructure policy also carries risks. Large facilities can become symbols of prestige that absorb resources without sufficient scientific return. They can be politically attractive because they are visible, but their real value depends on less visible conditions: maintenance, upgrades, staffing, user access, evaluation, training, and integration into research strategy. A poorly used facility weakens sovereignty because it creates dependence on sunk costs and reputational defence. A well-governed facility strengthens sovereignty because it produces knowledge, people, partnerships, and international authority. The Academy must therefore treat infrastructure not as monument-building, but as stewardship. Stewardship means asking continuously whether a facility remains scientifically excellent, strategically relevant, accessible, and sustainable.

Funding is central to this stewardship. The Czech infrastructure strategy emphasises government-approved public funding for large research infrastructures, and the infrastructure-policy framework gives these projects a distinctive position in national R&D funding (*Ministry of Education, Youth and Sports, 2024*). Operations, maintenance, upgrades, and user support cannot rely only on short-term project enthusiasm. They need stable public commitment and periodic evaluation. European structural funds can support investment, but national responsibility remains crucial. Scientific sovereignty cannot be outsourced to temporary grants. It requires the state and research institutions to accept that some capacities must be sustained across political cycles.

Evaluation must therefore be adapted to infrastructure. A large facility cannot be assessed only by publication counts, nor only by industrial income. It must be evaluated by scientific output, user demand, international reputation, training, data quality, technological development, industry cooperation, policy relevance, operational reliability, and strategic necessity. Some

infrastructures may be essential even when their outputs are not spectacular in the short term. Others may lose relevance as technologies change. Sovereignty does not mean preserving every facility indefinitely. It means having the institutional intelligence to renew, merge, upgrade, or close capacities according to evidence and strategy.

Infrastructure sovereignty also depends on procurement and technical autonomy. Advanced scientific facilities require components, software, maintenance contracts, specialised materials, sensors, lasers, detectors, cryogenic systems, electronics, and computing hardware. Global supply chains can be fragile, politically exposed, or technologically restricted. A country does not need to produce every component, but it should understand the supply dependencies of its strategic infrastructures. It should also cultivate domestic engineering and technical communities able to repair, adapt, and sometimes redesign systems. The Academy's engineers and technicians therefore play a strategic role that is often under-recognised. They make infrastructures less dependent by turning imported components into domestically mastered systems.

The digital side of infrastructure makes this even more urgent. Research data stored in poorly governed systems may be lost, exposed, or made unusable. AI tools built on external platforms may impose hidden dependencies. Cloud services may create legal and security vulnerabilities. Software may become obsolete. Metadata standards may determine whether future researchers can understand past data. EOSC CZ's effort to build a National Data Infrastructure responds to these problems by creating a coordinated platform for managing and accessing research data and computing resources (*EOSC CZ, 2026*). Such work is slow and administrative, but it is strategic. A nation's research memory increasingly exists as digital infrastructure.

The Academy's open-science policy also belongs to this sovereignty framework. The Open Science Principles of AV ČR recommend FAIR data management, metadata, persistent identifiers, open formats, and accessible research software where possible (*Czech Academy of Sciences, 2024*). This may appear to be a technical policy, but it has broader meaning. FAIR data allow Czech research to be reused, verified, integrated, and connected internationally. Persistent identifiers make outputs traceable. Open formats reduce dependency on proprietary systems. Open software supports reproducibility and transparency. In this sense, open science is not the opposite of sovereignty. Properly governed, it is one of its conditions.

The connection between infrastructure and sovereignty also reaches into public trust. Citizens may not know the details of CzechNanoLab, e-INFRA CZ, Czech-BioImaging, or ELI Beamlines, but they depend indirectly on the knowledge these infrastructures make possible. Public health decisions, climate adaptation, energy strategy, industrial innovation, heritage protection, and digital policy all require research capacity. When the Academy can demonstrate that it operates serious infrastructures for public benefit, it strengthens the legitimacy of public science. When it fails to communicate this, infrastructure may appear to citizens as expensive and remote. Public communication is therefore part of infrastructure governance. A sovereign scientific institution must be able to explain why its capacities matter.

The international prestige of infrastructures should also be interpreted carefully. Hosting a major facility can bring visibility, visiting researchers, European recognition, and industrial attention. But prestige is valuable only when it corresponds to real scientific use. The Academy's goal should not be to possess famous machines, but to embed them in research programmes, doctoral training, industrial partnerships, policy expertise, and European

consortia. Infrastructures should create intellectual gravity. They should attract people, questions, projects, and technologies. When this happens, prestige becomes a consequence of capacity, not a substitute for it.

The broad disciplinary range of AV ČR makes its infrastructure sovereignty particularly rich. In physics and engineering, infrastructure means lasers, plasma devices, nanofabrication, microscopy, and computational modelling. In life sciences, it means imaging, genomics, bioinformatics, structural biology, animal models, and biobanks. In environmental sciences, it means observatories, sensors, long-term ecological platforms, climate data, and modelling. In social sciences, it means survey archives, longitudinal studies, and policy data. In humanities, it means digital corpora, archives, archaeological databases, and cultural heritage platforms. The Academy's sovereignty is therefore not one-dimensional. It is the combined ability to know nature, society, culture, technology, and the past through national and European infrastructures.

This combined ability will become more important as emerging fields converge. Artificial intelligence needs language resources, social data, ethical analysis, high-performance computing, and domain-specific datasets. Biotechnology needs laboratory platforms, data infrastructures, imaging, bioinformatics, and translational pathways. Climate adaptation needs monitoring, modelling, public-policy analysis, and municipal cooperation. Advanced materials need nanofabrication, microscopy, computation, industrial testing, and environmental assessment. Cultural memory needs digitisation, interpretation, preservation, and public access. No single infrastructure is enough. Scientific sovereignty lies in the capacity to connect infrastructures across fields. AV ČR is well positioned for this because its institute structure preserves disciplinary depth while Strategy AV21 and transfer mechanisms encourage interdisciplinary connection.

Thus, infrastructure is a condition of scientific sovereignty because it gives the Czech Republic the material, digital, organisational, and human capacity to produce advanced knowledge on its own terms while remaining deeply integrated into European and global science. For AV ČR, infrastructures are not merely laboratories, machines, repositories, or computing systems. They are the institutional means by which scientific autonomy becomes real: they allow Czech researchers to experiment, measure, compute, preserve data, train specialists, advise the state, cooperate with industry, protect cultural memory, and respond to crises. The Czech roadmap of large research infrastructures, ESFRI integration, e-INFRA CZ, EOSC CZ, major experimental facilities, digital repositories, and specialised Academy-linked platforms all show that the future of Czech science will depend on sustained infrastructural capacity. Without such capacity, autonomy becomes rhetorical and innovation becomes dependent. With it, the Academy can remain one of the principal institutions through which the Czech Republic participates in the making of future knowledge as an active, competent, and responsible European scientific actor.

The Academy and the Future of Czech Science

1. Emerging Fields and Strategic Research Directions

The future of Czech science will not be determined only by the preservation of existing disciplines, however strong and historically justified they may be. It will also depend on the ability of institutions to recognise emerging fields early enough, to connect them with inherited scientific strengths, and to give them organisational forms capable of surviving beyond short political and funding cycles. For the Czech Academy of Sciences, this is a particularly important task, because the Academy is not simply one actor among many in the research system. It is the largest non-university research institution in the Czech Republic, with more than 7,000 researchers across 54 institutes, and therefore has the scale, disciplinary breadth, and institutional memory required to identify long-term strategic directions (*Czech Academy of Sciences, 2026*). The Academy's future-oriented role is not to chase every fashionable topic, but to distinguish passing technological enthusiasm from research areas that will shape the scientific, economic, cultural, and political conditions of the coming decades. This requires a specific institutional intelligence: the ability to combine curiosity-driven research, public-interest missions, infrastructure planning, international cooperation, and mechanisms of application. Emerging fields are not born in isolation. They appear where old disciplines are recombined under new pressures, where instruments produce new kinds of data, where societal risks create new questions, and where global science opens spaces that national institutions can either enter or miss. For AV ČR, the strategic question is therefore not merely "what topics are new?", but "which fields must Czech science master if it wants to remain intellectually sovereign, socially useful, and internationally visible?"

The Academy's own strategic vocabulary has already moved in this direction. At the 67th session of the Academy Assembly in April 2026, the Academy adopted thirteen strategic priorities for the 2025–2029 period, including legislation and strategic management, economy, public policy and European funding, knowledge and technology transfer, international cooperation, evaluation, excellent research and scientific careers, cooperation with universities, digital transformation and sustainable development, research security, public communication, and implementation of Strategy AV21 (*Czech Academy of Sciences, 2026*). This list is revealing because it does not define the future of science only through research topics. It defines it through institutional conditions: governance, funding, careers, infrastructures, communication, security, and transfer. The emerging fields of Czech science will not flourish merely because researchers are talented or because a government document names them. They require stable institutions able to support risky inquiry, attract young scientists, manage digital transformation, maintain infrastructures, defend research security, and communicate with society. In this sense, strategic research directions are inseparable from strategic institutional development. A field becomes national capacity only when it is embedded in people, laboratories, data systems, funding models, education, and public legitimacy.

Strategy AV21 remains the clearest programme through which the Academy translates emerging topics into an interdisciplinary public-interest format. Its motto, "Top research in the public interest", has become more than a slogan; it is a method for selecting and organising themes that are scientifically demanding and socially consequential. The Academy states that Strategy AV21 has connected CAS institutes, universities, industrial partners, and the state and

public sectors for more than a decade, and in 2026 introduced new programmes on materiality, biodiversity crisis, and infectious diseases (*Czech Academy of Sciences, 2026*). This is important because the future of science is not contained in a single domain. Materiality connects technology, culture, ecology, production, consumption, and memory. Biodiversity connects ecology, agriculture, climate adaptation, legislation, health, and society. Infectious diseases connect molecular biology, medicine, epidemiology, bioinformatics, public health, and global mobility. The Academy's strategic direction is therefore not simply towards "more technology", but towards complex problem-fields in which natural, technical, social, and human sciences meet.

Artificial intelligence is the most obvious emerging field, but it must be understood broadly. AI is not merely a branch of computer science, nor is it only a tool for automation. It is becoming a general-purpose scientific, economic, administrative, cultural, and political technology. The Czech government approved the updated National Artificial Intelligence Strategy of the Czech Republic 2030 in July 2024, defining priorities until 2030 in seven interrelated areas: research, development and innovation; education and professional training; skills and labour-market impacts; ethical and legal aspects; security; industry and business; and public administration and services (*Ministry of Industry and Trade, 2024*). The strategy explicitly states that Czechia should be not only a user but also a creator of advanced AI technologies. For the Academy, this is a decisive challenge. If Czech science becomes only a consumer of foreign AI systems, it will lose part of its intellectual sovereignty. If it can develop methods, datasets, applications, ethical frameworks, language resources, and domain-specific AI research, it can help shape the Czech digital future rather than merely adapt to it.

The Academy's Strategy AV21 programme "AI: Artificial Intelligence for Science and Society" responds to this broader understanding of AI. The programme is designed not only to support research and development in general AI and machine-learning methods, but also to apply AI methods across institutes in all three scientific domains and to investigate the societal aspects of AI (*Czech Academy of Sciences, n.d.*). This institutional framing is highly significant. It recognises that AI will transform physics, chemistry, biology, materials science, medicine, climate research, linguistics, archaeology, history, economics, sociology, and public policy. It also recognises that AI itself must be studied as a social phenomenon: a source of productivity, but also of inequality, bias, surveillance, labour-market disruption, disinformation, and new forms of dependence. AV ČR's advantage lies precisely in this breadth. A narrower technical institution might develop algorithms; the Academy can study algorithms, their scientific uses, their legal and ethical implications, their language foundations, and their effects on society.

AI also forces the Academy to rethink data infrastructures, language resources, and computational capacity as strategic research directions. Czech AI cannot be built only on imported models trained primarily in English or on data ecosystems controlled by global platforms. It needs Czech-language corpora, domain-specific datasets, transparent data governance, high-performance computing, cybersecurity, digital humanities, social-science analysis, and public-sector expertise. LINDAT/CLARIAH-CZ, ELIXIR CZ, e-INFRA CZ, IT4Innovations, the Czech Social Science Data Archive, and the Academy's own repository structures therefore become part of AI strategy even when they are not labelled as AI institutions. This is a good example of how emerging fields grow out of existing infrastructures. The future of AI in Czech science depends not only on new algorithms, but on the long-term curation of data, language, models, ethics, and institutional trust. The Academy's role is to

ensure that AI becomes not merely a commercial technology imported into Czech society, but a scientific and cultural capacity rooted in Czech research.

Biotechnology and the broader life sciences form another strategic direction. The European Commission's 2025 Strategy for European Life Sciences describes life sciences as a field that drives innovation in medicine, food, sustainable production, agriculture, energy, and biotechnology, while also warning that Europe has a strong knowledge base but faces difficulties in translating research into real-world solutions because of fragmented funding, regulatory complexity, and slow market uptake (*European Commission, 2025*). This European diagnosis fits the Czech Academy's position well. AV ČR has strong institutes in molecular biology, genetics, microbiology, physiology, experimental medicine, botany, biochemistry, and bioinformatics, as well as infrastructures such as BIOCEV, Czech-BioImaging, ELIXIR CZ, and related biomedical platforms. The future challenge is not only to produce excellent life-science publications, but to connect discovery with diagnostics, therapeutics, food systems, sustainable agriculture, environmental resilience, and public health. Life sciences increasingly form a continuum from cells to ecosystems, and from laboratory mechanisms to social trust in biotechnology.

Infectious diseases are a particularly strong example of why the life sciences must be treated strategically. The new Strategy AV21 programme "Infectious Diseases: New Targets and Strategies", introduced in 2026, reflects the recognition that infectious disease research can no longer be episodic or crisis-driven (*Czech Academy of Sciences, 2026*). Pandemics, antimicrobial resistance, emerging pathogens, zoonotic spillover, climate-sensitive disease vectors, and global mobility all make infectious diseases a long-term public-interest field. The Academy can contribute through microbiology, immunology, molecular biology, structural biology, bioinformatics, epidemiological modelling, chemical biology, and public communication. It can also connect infectious-disease research with policy, health systems, education, and international collaboration. This is important because public health preparedness cannot be improvised after a crisis begins. It depends on laboratories, datasets, trained people, infrastructures, and interdisciplinary trust accumulated before the emergency.

Climate research and global-change science form a third strategic direction, and perhaps the most unavoidable one. CzechGlobe, the Global Change Research Institute of the Czech Academy of Sciences, describes itself as a public research institution and European centre of excellence dealing with the causes and impacts of global change, including climate change as one of humanity's major current problems (*CzechGlobe, n.d.*). Its research uses state-of-the-art instrumentation and methods to study the atmosphere, ecosystems, and human society, including greenhouse-gas fluxes, ecosystem impacts, climate and nature, and socio-economic consequences. This breadth is crucial. Climate change is not only a meteorological phenomenon, nor only an environmental issue. It is a transformation of the conditions under which agriculture, forestry, cities, health, energy, biodiversity, insurance, public finance, and regional development operate. For AV ČR, climate research is therefore not one institute's speciality, but a cross-Academy strategic field connecting natural sciences, technology, social sciences, economics, public policy, and communication.

The biodiversity crisis reinforces this environmental direction. The 2026 Strategy AV21 programme "Global Biodiversity Crisis: Risks and Opportunities for Human Society" explicitly links Czech research to European environmental legislation, including the Biodiversity Strategy for 2030 and its implementation in Czech policy and public administration (*Czech Academy of*

Sciences, n.d.). This is an important sign of how future research directions are formed: they emerge not only from scientific curiosity, but from the convergence of ecological crisis, European regulation, national policy, and social adaptation. Biodiversity research requires taxonomy, ecology, evolutionary biology, landscape studies, agriculture, forestry, climate modelling, economics, law, and public communication. It also requires long-term monitoring, because biodiversity loss cannot be understood through short-term observations alone. The Academy's role is to provide the empirical depth and interdisciplinary synthesis needed for Czech society to respond to ecological change with more than symbolic measures.

Materials research, nanotechnology, photonics, and advanced manufacturing constitute another emerging strategic cluster. In reality, this field is not entirely new; Czech and Czechoslovak science have long traditions in chemistry, materials, polymers, optics, and engineering. What is new is the convergence of materials with energy, medicine, electronics, environmental sustainability, space technologies, defence, and AI-driven design. Strategy AV21's new programme on materiality is especially interesting because it does not treat materials only as technical substances. It asks how objects, materials, technologies, and knowledge structure the world technically, culturally, and politically (*Czech Academy of Sciences, n.d.*). This wider concept is well suited to the Academy, where materials research can connect physics, chemistry, nanotechnology, archaeology, conservation science, history of technology, environmental studies, and social analysis. Future materials will not matter only because they are stronger, lighter, smarter, or more efficient. They will matter because they shape energy systems, medical devices, infrastructure, cultural heritage, consumption patterns, and ecological footprints.

Energy research is closely connected to materials and climate. The Czech future will depend on decarbonisation, grid transformation, storage, nuclear questions, hydrogen, renewable integration, energy efficiency, and the social acceptance of energy transitions. The Academy's previous Strategy AV21 programmes and institute-level activities have already addressed sustainable energy, nuclear challenges, fusion technologies, new materials for extreme conditions, and seismic hazards relevant to nuclear facilities. Such work cannot be reduced to engineering. Energy research requires physics, chemistry, materials science, economics, environmental modelling, public policy, sociology, and regional analysis. For a country with an industrial base and complex energy politics, the Academy's strategic role is to preserve independent expertise capable of evaluating technological options beyond short-term political slogans. It must help the Czech Republic think about energy not merely as supply, but as a long-term civilisational infrastructure.

Space research is also becoming a strategic field for the Academy. The 2024 Strategy AV21 programme "Space for Humankind" focuses on space research from Earth's surroundings to black holes and distant galaxies, while also seeking to develop technologies for the next generation of scientific instruments and foster synergy between CAS institutes and Czech industry (*Czech Academy of Sciences, 2024*). This combination of fundamental astronomy, instrumentation, industrial opportunity, and international participation is characteristic of modern space science. Space technologies affect navigation, communication, Earth observation, climate monitoring, security, disaster management, and technological innovation. For Czech science, involvement in ESA, ESO, international missions, detectors, optics, data analysis, and instrumentation creates opportunities beyond the traditional scale of national research. The Academy's role is not to build a national space industry alone, but to

provide the scientific and technological depth that allows Czech actors to participate credibly in space projects.

The programme on fungi, also introduced under Strategy AV21 in 2024, illustrates another type of emerging field. “Fungi – New Threats and Opportunities” addresses organisms that are simultaneously ecological actors, disease agents, biotechnological resources, and agricultural or forestry risks (*Czech Academy of Sciences, 2024*). This is a good example of a field that becomes strategic because it sits at the intersection of ecology, climate, food systems, medicine, biotechnology, and landscape change. Fungal pathogens can threaten crops, forests, animals, and humans; at the same time, fungi offer possibilities for biotechnology, decomposition, materials, food, pharmaceuticals, and environmental remediation. Such a field would be difficult to organise through a narrow disciplinary logic. It requires microbiologists, ecologists, botanists, medical researchers, chemists, agronomists, and policy experts. The Academy’s breadth gives it the ability to recognise such “borderline” fields before they become crisis topics.

Social resilience, identity, and cultural memory are also emerging strategic directions, even though they do not always appear in innovation policy as “technology fields”. The 2024 Strategy AV21 programme “Identities in a World of Wars and Crises” reflects the fact that contemporary Europe faces war, migration, polarisation, disinformation, historical revisionism, and changing forms of collective belonging (*Czech Academy of Sciences, 2024*). For AV ČR, this is not secondary to scientific modernisation. A society that cannot understand identity, memory, propaganda, trauma, culture, language, and political legitimacy is vulnerable, even if it possesses advanced laboratories. The Academy’s humanities and social sciences therefore contribute to the future of Czech science by producing knowledge about the symbolic, historical, and institutional conditions of social life. Cultural memory becomes a strategic field because democratic resilience depends on the ability to interpret the past responsibly and to understand how societies mobilise memory in times of crisis.

Public policy research is another future direction that cuts across disciplines. The Strategy AV21 framework includes programmes concerned with public policy and society, and the Academy has also developed Science4Policy activities to support knowledge transfer into public administration. This reflects a broader European movement towards evidence-informed policymaking. In the Czech context, the need is especially strong because ministries, regions, and municipalities often face complex issues that require scientific synthesis rather than isolated technical advice. Future Czech science will therefore need not only laboratories and algorithms, but also policy laboratories: formats in which evidence, scenarios, institutional analysis, and social consultation can be translated into usable public decisions. The Academy is well placed for this because it combines research autonomy with public legitimacy. Its challenge is to make expert knowledge accessible without simplifying it into political convenience.

Research security has become a strategic direction in its own right. The Academy’s 2026 priorities include research security, reflecting a wider recognition that science now operates in a geopolitical environment shaped by cyber threats, dual-use technologies, strategic dependencies, hostile influence, and the securitisation of knowledge (*Czech Academy of Sciences, 2026*). This is especially relevant for AI, biotechnology, quantum technologies, energy, space, advanced materials, and sensitive data infrastructures. Research security does not mean closing Czech science to international cooperation. On the contrary, the Academy’s

future depends on international collaboration. But collaboration must now be governed with greater attention to data protection, intellectual property, export-control risks, cyber resilience, and the integrity of partnerships. The future of Czech science will require openness with intelligence, not openness without safeguards.

Another strategic direction is the future of scientific careers. Emerging fields cannot be sustained if young researchers are trapped in short-term insecurity, if doctoral education is underfunded, or if talented scientists leave because institutional pathways are unclear. The Academy's 2026 priorities include excellent research and support for scientific careers, including the Academy of the Future programme and the ERC Incubator (*Czech Academy of Sciences, 2026*). This is important because strategic fields are not only topics; they are communities. AI, biotechnology, climate science, materials research, digital humanities, and public-policy science require people who can work across disciplines and institutions. The Academy must therefore cultivate researchers who are not only technically competent, but also capable of interdisciplinary communication, international grant competition, public engagement, ethical reflection, and leadership. Without career strategy, research strategy remains abstract.

The relationship between emerging fields and technology transfer is also central. The Academy's 2026 priorities place knowledge and technology transfer alongside excellent research, international cooperation, public policy, and Strategy AV21 (*Czech Academy of Sciences, 2026*). CAS Innovations, PRAK, and CeTTAV represent mechanisms through which strategic research directions can move towards application. Yet the Academy must avoid a narrow understanding of transfer. In AI, transfer may mean tools for public administration, medicine, language technologies, or industry. In climate research, it may mean models for municipalities, adaptation strategies, or early-warning systems. In humanities, it may mean digital archives, educational resources, heritage policy, or public interpretation. In infectious diseases, it may mean diagnostics, therapeutic targets, or preparedness frameworks. The Academy's future depends on recognising that strategic research directions produce many forms of value, not only commercial products.

International cooperation will remain another condition of emerging research fields. AI, climate, infectious diseases, space, biodiversity, energy, and materials are not national problems in a narrow sense. They require European infrastructures, global datasets, international missions, cross-border regulation, and scientific diplomacy. The Academy's strategic priorities include international cooperation, and its institutes participate in European Research Area structures, Horizon Europe projects, research infrastructures, and international scientific bodies (*Czech Academy of Sciences, 2026*). This international dimension is especially important for a medium-sized country. Czech science cannot lead every field alone, but it can identify niches where its institutes have strength, infrastructures, and credibility. Strategic direction therefore means selectivity: choosing fields where Czech science can contribute meaningfully to global agendas while serving national needs.

The future of Czech science will also depend on the ability to connect emerging technological fields with social legitimacy. AI without trust, biotechnology without ethical governance, climate policy without public understanding, energy transition without social acceptance, and cultural-memory work without pluralism can all generate resistance or distortion. AV ČR's advantage is that it contains both the sciences that create technologies and the disciplines that analyse their consequences. This makes the Academy a potential platform for responsible

innovation. It can ask not only how to develop a technology, but how it will be governed, explained, regulated, remembered, and socially absorbed. This is one of the main reasons why the Academy's broad disciplinary structure should be preserved. Narrow technological excellence is insufficient for a society facing complex transitions.

The emerging fields discussed here also require stronger cooperation with universities. The Academy is not a university, but it participates in doctoral training, joint research, shared infrastructures, and scientific career formation. AI, biotechnology, climate science, materials, space research, and digital humanities all require educational pipelines that no single institution can provide alone. The Academy's 2026 priorities explicitly include cooperation with universities (*Czech Academy of Sciences, 2026*). This priority is strategically necessary because the future of Czech science depends on the movement of people between Academy institutes, universities, industry, ministries, regions, and European institutions. Emerging fields need ecosystems, not isolated centres. The Academy can provide depth, but universities provide scale in education and regional embeddedness. Together, they form the human infrastructure of future research.

The relationship between emerging fields and funding is perhaps the most difficult issue. The Academy's 2026 Assembly discussion warned that Czech research funding remains below the European Union average and that the share of GDP allocated to science had fallen to 0.5%, with a projected decline to 0.42% by 2028 under the approved budget outlook (*Czech Academy of Sciences, 2026*). This creates a tension between ambition and capacity. Czech strategic documents may identify AI, biotechnology, climate, materials, space, and digital transformation as priorities, but these fields require sustained investment. Underfunded science cannot easily maintain infrastructures, attract talent, compete internationally, or support risky projects. Emerging fields are expensive not only because of equipment, but because they require long-term teams, data systems, administrative support, and international visibility. Strategic research directions must therefore be matched by strategic financing.

The Academy's role in the future of Czech science is therefore partly corrective. It must resist the tendency of innovation policy to overpromise quick results. Emerging fields are often surrounded by rhetoric: AI will transform everything; biotechnology will solve health and food problems; climate technologies will save the planet; materials will create new industries; space will open new markets. Some of this optimism is justified, but it can become superficial. The Academy's responsibility is to introduce scientific patience, evidence, and institutional realism into these debates. It must show what is genuinely possible, what remains uncertain, what requires infrastructure, what demands regulation, and what risks are being underestimated. This critical role is not anti-innovation. It is the condition of serious innovation.

A further challenge is the integration of basic and applied research. Emerging fields are often presented as application domains, but their future depends on fundamental inquiry. AI needs mathematics, statistics, cognitive science, linguistics, and philosophy. Biotechnology needs molecular mechanisms, evolutionary theory, cell biology, and structural understanding. Climate research needs atmospheric physics, ecology, hydrology, and long-term observation. Materials science needs fundamental chemistry and physics. Cultural memory needs archival scholarship, philology, theory, and historical method. The Academy must therefore defend basic research within strategic fields. It should not allow "strategic direction" to become a

synonym for short-term application. The technologies of the future will come from knowledge that is not yet directly useful.

The future Academy must also develop the ability to coordinate across its own internal boundaries. The institute system has historically been one of AV ČR's strengths because it preserves specialised scientific cultures. Yet emerging fields often cut across institutes and demand coordination that is not natural to older disciplinary structures. Strategy AV21 provides one mechanism for this coordination, but the challenge is broader. AI must enter biological institutes, humanities institutes, physics institutes, and social-science institutes. Climate research must connect ecology, economics, sociology, energy, and public policy. Materials research must connect laboratories with heritage science, industry, and sustainability. Infectious-disease research must connect molecular biology with public health and communication. The Academy's future will depend on whether it can preserve disciplinary depth while increasing cross-institute agility.

In this sense, emerging fields are also a test of institutional culture. Does the Academy reward interdisciplinary work, or does it still evaluate mainly within traditional disciplinary hierarchies? Does it allow researchers to spend time on public-interest programmes, data infrastructures, policy briefs, and transfer, or are these activities treated as secondary to publication metrics? Does it support early-career researchers who work at boundaries between fields, where career evaluation can be more difficult? These questions are not administrative details. They determine whether strategic directions become real scientific communities. AV ČR's 2026 priorities suggest awareness of these issues through their attention to evaluation, careers, digital transformation, transfer, communication, and Strategy AV21 (*Czech Academy of Sciences, 2026*). The implementation will matter more than the wording.

The future of Czech science will finally depend on the Academy's ability to connect national priorities with universal science. This has been a central theme throughout the history of Czech learned institutions. The early scientific societies and national revival institutions linked scholarship with cultural identity. The Czechoslovak Academy tried to organise science for a socialist state, often with serious achievements but under political constraint. The post-1989 Academy redefined itself through autonomy, evaluation, Europeanisation, and public responsibility. In the 21st century, AV ČR must again redefine the relation between national mission and universal knowledge. Emerging fields such as AI, biotechnology, climate research, materials, space, biodiversity, infectious diseases, and cultural memory are global fields, but the Czech Republic must enter them from its own institutional history, capacities, language, landscape, industries, and democratic needs.

Thus, emerging fields and strategic research directions define the next stage in the institutional history of the Czech Academy of Sciences. They show that AV ČR's future will not be secured by preserving inherited excellence alone, but by transforming that excellence into capacities relevant to artificial intelligence, life sciences, infectious diseases, climate change, biodiversity, materials, energy, space, digital humanities, cultural memory, public policy, and research security. The Academy's distinctive strength lies in its ability to connect these fields through long-term fundamental research, large infrastructures, data systems, interdisciplinary programmes, technology transfer, science-for-policy mechanisms, and cooperation with universities, industry, public administration, and European partners. Yet the strategic agenda will succeed only if it is supported by stable funding, serious evaluation, career development, public trust, and protection of scientific autonomy. For the Czech future, AV ČR must be more

than a guardian of past scientific traditions. It must be an institution capable of recognising the questions that Czech society has not yet fully learned to ask, and of building the research capacities needed to answer them.

2. AI, Biotechnology, Climate Research, Materials, and Cultural Memory

Artificial intelligence, biotechnology, climate research, materials science, and cultural memory may appear at first glance to belong to very different intellectual worlds. AI belongs to mathematics, computer science, data infrastructures, and digital transformation; biotechnology to molecular life, medicine, genetics, bioinformatics, and experimental platforms; climate research to atmosphere, ecosystems, energy, agriculture, and social adaptation; materials to physics, chemistry, engineering, nanotechnology, conservation, and industrial application; cultural memory to history, language, archives, identity, heritage, and public interpretation. Yet for the Czech Academy of Sciences these fields form a single strategic constellation. They show how the future of Czech science will be shaped by areas in which fundamental research, technological capacity, social need, and national self-understanding can no longer be separated. The Academy's role is not simply to support each field individually. Its deeper role is to connect them into a public-interest research agenda capable of preparing Czech society for technological, ecological, biomedical, cultural, and political transformations. In this sense, the future of AV ČR lies not in choosing between science and society, or between technology and culture, but in demonstrating that the strongest science is precisely the science that can move between these domains without losing depth. Strategy AV21 has provided one of the most visible frameworks for this movement, because it organises research around socially significant problems and insists on interdisciplinarity, cooperation, and public relevance (*Czech Academy of Sciences, n.d.*). The strategic fields considered here are therefore not isolated thematic priorities. They are laboratories of the Academy's future institutional identity.

Artificial intelligence is perhaps the most obvious field in which the Academy's future role will be tested. AI is no longer merely a technical speciality inside computer science; it is becoming an enabling technology across the entire research system. It changes how scientists model molecules, interpret images, search archives, analyse languages, simulate climate systems, detect patterns in social data, design materials, and communicate knowledge. The Czech government's National Artificial Intelligence Strategy 2030, approved in 2024, identifies AI as a priority for research, development, innovation, education, labour-market transformation, ethical and legal governance, security, industry, public administration, and services (*Ministry of Industry and Trade of the Czech Republic, 2024*). This national strategy explicitly presents Czechia as a country that should not only use advanced AI technologies, but also create them. For AV ČR, this creates a demanding task: to ensure that Czech AI is not only imported from global platforms, but grounded in national research capacity, Czech-language resources, scientific datasets, ethical analysis, and public expertise.

The Strategy AV21 programme "AI: Artificial Intelligence for Science and Society" reflects this broad interpretation. It is designed to support the development of AI methods and their application across institutes in all three scientific areas of the Academy, while also examining the societal dimensions of artificial intelligence (*Czech Academy of Sciences, n.d.*). This formulation is crucial because it prevents AI from being reduced either to software engineering or to fashionable rhetoric. In the Academy's context, AI becomes a transversal research

environment. It can support pattern recognition in experimental physics, accelerate molecular modelling in biology, improve image analysis in medicine, classify archaeological materials, analyse large textual corpora, model social behaviour, and assist in environmental forecasting. At the same time, AI itself becomes an object of social, ethical, legal, linguistic, and political analysis. This double position — AI as tool and AI as object of research — is one of the main reasons why a national academy is needed. A commercial AI company can develop applications; a broad academy can ask what AI does to science, labour, language, trust, memory, public administration, and democratic judgement.

The Czech Academy's AI future depends heavily on data infrastructures. AI systems require more than algorithms; they require curated data, metadata, computational capacity, domain expertise, ethical rules, and reproducible workflows. In life sciences, ELIXIR CZ's 2026–2030 strategy emphasises data management, interoperability, AI readiness, and training as foundations of modern data-driven biology (*ELIXIR CZ, 2026*). In humanities and language technologies, LINDAT/CLARIAH-CZ provides a platform for language resources, digital humanities tools, and computational treatment of Czech and other languages. In social sciences, the Czech Social Science Data Archive preserves survey data that can support longitudinal and comparative research. In high-performance computing, e-INFRA CZ and IT4Innovations provide computational conditions for simulation, modelling, and AI-based analysis. The Academy's contribution to AI therefore cannot be judged only by whether it produces individual algorithms. It must also be judged by whether it helps build the data and computational ecosystem without which Czech AI will remain dependent on external platforms.

AI also raises the question of Czech language and cultural sovereignty. Large language models tend to privilege languages with the largest datasets, strongest commercial markets, and most developed digital corpora. If Czech language resources are weakly curated or technologically marginal, Czech society may become dependent on systems that understand its language, history, law, administrative culture, and public discourse only superficially. This is why linguistic research, corpus building, digital humanities, and AI governance belong together. In earlier periods of Czech history, language was one of the main carriers of national revival and cultural identity. In the 21st century, language is also a computational infrastructure. AV ČR can help ensure that Czech does not become a secondary language in the digital future. It can support research that connects linguistics, machine learning, digital archives, education, translation technologies, public administration, and cultural memory. This is one of the most striking examples of how the Academy's older national-cultural mission can be renewed inside an advanced technological field.

Biotechnology represents a second strategic field in which the Academy's future depends on the connection between fundamental science, infrastructures, and application. The European Commission's 2025 Strategy for European Life Sciences presents life sciences as a driver of innovation in medicine, food, sustainable production, agriculture, energy, and biotechnology, while also noting the difficulty of translating Europe's strong knowledge base into real-world solutions (*European Commission, 2025*). This European diagnosis is directly relevant to AV ČR. The Academy has major strengths in molecular biology, genetics, microbiology, physiology, experimental medicine, structural biology, bioinformatics, botany, ecology, and chemical biology. It also participates in or cooperates with infrastructures such as BIOCEV, Czech-BioImaging, ELIXIR CZ, and the Czech Centre for Phenogenomics. These resources allow the Academy to study life from molecules to organisms and from experimental models to

environmental systems. Biotechnology, in this context, is not simply industrial biology. It is the transformation of deep biological knowledge into diagnostics, therapies, agricultural resilience, environmental remediation, biomaterials, and public-health preparedness.

The strategic importance of biotechnology is especially clear in infectious-disease research. Strategy AV21's programme "Infectious Diseases: New Targets and Strategies" focuses on developing new antiviral drugs, especially against RNA viruses such as influenza, COVID-19, and other serious infections (*Czech Academy of Sciences, n.d.*). The significance of this programme extends far beyond one biomedical subfield. The COVID-19 pandemic showed that public-health resilience depends on research capacities developed before a crisis: virology, immunology, molecular diagnostics, drug discovery, bioinformatics, epidemiological modelling, and public communication. The Academy's role is not to replace hospitals or pharmaceutical companies, but to provide the knowledge base from which preparedness, diagnostics, and therapeutic strategies can emerge. Infectious-disease research also demonstrates why biotechnology must be interdisciplinary. A virus is a biological entity, but a pandemic is also a social, economic, political, communicative, and cultural event. The Academy's breadth allows it to connect biological mechanisms with public policy and social behaviour.

Precision medicine and gene therapy show another side of the Academy's biomedical future. Strategy AV21 has supported programmes oriented towards precision medicine, assisted reproduction, gene therapy, and biomedical innovation, including research in which AI may assist in embryo selection or medical decision-support tools (*Czech Academy of Sciences, n.d.*). Such fields are scientifically promising, but also ethically and socially sensitive. They require genomic data, imaging, animal models, clinical cooperation, regulatory understanding, and public trust. A purely commercial approach may emphasise marketable procedures; a purely academic approach may remain too far from patients. The Academy's task is to mediate between discovery and responsibility. It must help develop biomedical knowledge while also contributing to ethical analysis, public communication, and evidence-based regulation. This is particularly important in a society where new biotechnologies can provoke both hope and anxiety.

The life-science future of the Academy is also connected to data-driven biology. ELIXIR CZ's 2026–2030 strategy aims to strengthen Czechia's position in the European life-science data ecosystem by integrating bioinformatics, data management, interoperability, AI readiness, and training (*ELIXIR CZ, 2026*). This matters because biotechnology increasingly depends on the ability to combine biological samples, genomic sequences, imaging data, computational models, and clinical or environmental metadata. A future therapeutic target may emerge from data integration as much as from a traditional laboratory experiment. A future agricultural innovation may depend on microbial ecology, genomics, climate data, and modelling. A future diagnostic tool may depend on AI analysis of images or molecular signatures. Therefore, biotechnology and AI are not separate strategic fields. They are converging, and AV ČR must prepare for this convergence through data infrastructure, interdisciplinary teams, and careful governance.

Climate research is a third strategic pillar, and perhaps the field most clearly tied to long-term national survival. CzechGlobe, the Global Change Research Institute of the Czech Academy of Sciences, describes its work as multidisciplinary research on global change and its impacts on atmosphere, ecosystems, and human society, using methods from the molecular level to

satellite imagery (*CzechGlobe, n.d.*). This breadth is essential because climate change is not a single physical process affecting a distant planet. It changes water regimes, forests, agriculture, urban heat, energy use, biodiversity, soil, public health, migration, insurance, infrastructure, and political priorities. For the Academy, climate research is therefore not one environmental speciality among others. It is a strategic framework that connects earth sciences, biology, chemistry, modelling, economics, sociology, public policy, and regional planning.

The CzechGlobe concept of global change is especially important because it includes biophysical, ecosystem, and socio-economic changes that alter the functioning of the Earth system (*CzechGlobe, n.d.*). This is a more adequate framework than a narrow discussion of "weather" or "emissions". Climate science must understand greenhouse-gas fluxes, atmospheric chemistry, ecosystem productivity, land use, water cycles, vegetation stress, carbon balance, and human responses. It must also translate knowledge into adaptation measures, early-warning systems, agricultural planning, and municipal strategies. The Academy's role is to produce evidence that can support public decision-making before environmental problems become unmanageable. Climate research thus becomes one of the principal forms of science for policy. It helps the state, regions, municipalities, farmers, foresters, and citizens understand what is changing, why it is changing, and what choices remain possible.

Biodiversity research is closely linked to climate research and should be treated as part of the same strategic horizon. Strategy AV21's programme "Global Biodiversity Crisis: Risks and Opportunities for Human Society" includes analysis of time series on biodiversity changes and research into how the biodiversity crisis is perceived (*Czech Academy of Sciences, n.d.*). This combination of biological and social questions is highly significant. Biodiversity loss is not only a matter of disappearing species; it is a transformation of ecosystem functions, agriculture, forestry, water retention, disease dynamics, and cultural relations with landscape. Czech society cannot respond to biodiversity loss through moral appeals alone. It needs long-term monitoring, taxonomy, ecology, genetics, landscape analysis, public-policy instruments, and social communication. The Academy can provide this combination because it contains both biological sciences and social sciences.

The environmental future of AV ČR also has a local dimension. Climate change and biodiversity loss are global processes, but they are experienced through specific Czech landscapes: forests affected by drought and pests, agricultural regions exposed to heat and soil degradation, cities facing heat islands, rivers and reservoirs facing hydrological stress, and protected areas negotiating between conservation and human use. The Academy's research must therefore operate at multiple scales. It must contribute to global climate knowledge and European environmental policy, but it must also understand the Czech territory as a concrete ecological and social space. This is where long-term observational infrastructures, regional partnerships, and municipal cooperation become indispensable. The Academy's environmental role is not only to model climate futures abstractly, but to help Czech institutions adapt landscapes, infrastructure, and public services to the conditions already emerging.

Materials research forms a fourth strategic field, and it connects the Academy's older strengths in physics, chemistry, engineering, and archaeology with future technologies. New materials are needed for energy storage, photovoltaics, hydrogen technologies, sensors, medical

devices, nanomedicine, electronics, aerospace, conservation, construction, and circular economy. Czech research in materials cannot be separated from large instruments and specialised facilities such as CzechNanoLab, HiLASE, ELI Beamlines, PALS, electron microscopy platforms, and chemical laboratories. Materials science is also increasingly computational, because AI and modelling can help predict properties, accelerate screening, and reduce experimental costs. The future of Czech industry will depend partly on whether the country can move from manufacturing existing components to designing and understanding the materials that make future technologies possible. AV ČR can contribute because it combines fundamental materials research, instrumentation, industrial cooperation, and technology transfer.

Strategy AV21's programme "The Power of Objects: Materiality Between the Past and the Future" widens the meaning of materials beyond the technological sense (*Czech Academy of Sciences, n.d.*). It recognises that objects and materials are not only physical substances, but carriers of history, production, social meaning, environmental impact, and cultural memory. This is a particularly strong example of the Academy's interdisciplinary capacity. A metal alloy may matter to engineering, but metal objects also matter to archaeology, conservation, art history, and industrial heritage. A polymer may matter to medicine or manufacturing, but plastics also raise questions of waste, ecology, consumption, and social behaviour. A building material may matter to construction, but also to urban history and heritage protection. By treating materiality as both technical and cultural, the Academy can connect laboratories with archives, industry with museums, and materials research with social reflection.

This broad concept of materials is especially important for sustainability. The future cannot be built only by inventing new materials; it also requires understanding the life cycles, environmental costs, repairability, recyclability, and cultural meanings of material systems. Energy technologies need rare elements, batteries need supply chains, electronics generate waste, buildings lock in carbon and social forms, and medical materials raise questions of safety and access. AV ČR's natural and technical sciences can contribute to new materials, but its social sciences and humanities can help analyse the systems into which those materials enter. This is the distinctive Academy contribution. It does not treat technology as an isolated object, but as part of a world of institutions, histories, values, and consequences. Materials research therefore becomes one of the fields where Czech science can combine innovation with responsibility.

Cultural memory is the fifth strategic field and the one that most clearly reminds us that the future of Czech science cannot be reduced to technology. A society facing war in Europe, disinformation, migration, polarisation, historical revisionism, and rapid digital change needs strong institutions of memory and interpretation. Strategy AV21's programme "Identities in a World of Wars and Crises", launched among the new five-year programmes from 2024, directly reflects this situation (*Czech Academy of Sciences, 2024*). It asks how identities are formed, transformed, and contested under crisis conditions. This is not an antiquarian concern. Identity and memory shape public trust, political mobilisation, foreign-policy orientation, educational narratives, minority relations, and democratic resilience. The Academy's humanities and social sciences therefore contribute to national security and social stability in a broad intellectual sense.

Cultural memory also has a digital dimension. Archives, manuscripts, maps, oral histories, photographs, museum collections, linguistic corpora, archaeological records, and historical

databases are increasingly preserved, analysed, and made accessible through digital platforms. This creates new possibilities, but also new risks. Digitisation can democratise access, but it can also detach sources from context. AI can help analyse large corpora, but it can also reproduce errors, biases, and invented narratives. Digital heritage can support education and public history, but it can also be manipulated for propaganda or commercial spectacle. The Academy's role is to ensure that cultural memory remains critically curated, historically grounded, and methodologically serious. In this sense, digital humanities are not merely a fashionable supplement to traditional scholarship. They are a necessary response to the transformation of memory in the digital age.

The relationship between cultural memory and materials is particularly important. Objects, buildings, manuscripts, monuments, industrial artefacts, archaeological finds, and artworks are material carriers of memory. They require conservation science, chemical analysis, imaging, dating methods, digital documentation, historical interpretation, and legal protection. Here the Academy's technical and humanistic capacities can converge in a distinctive way. A medieval manuscript may require philology, codicology, chemistry, imaging, and digital preservation. An archaeological site may require fieldwork, environmental analysis, GIS technologies, historical interpretation, and public heritage policy. An industrial object may require materials analysis and social history. Cultural memory therefore becomes a field in which technology serves interpretation rather than replacing it. This is one of the most promising areas for the Academy's interdisciplinary future.

AI and cultural memory will also increasingly intersect. Large-scale text analysis can reveal patterns in historical corpora; machine learning can assist in transcription, translation, image classification, speech recognition, and reconstruction of damaged materials. Yet this intersection must be governed carefully. Historical sources are not ordinary datasets. They are incomplete, biased, situated, multilingual, and often shaped by power relations. A model trained on historical texts may reproduce past prejudices or misunderstand the context of terms. An AI reconstruction of a damaged object or text may appear authoritative while being probabilistic. The Academy's humanities institutes can help prevent technological naïveté in this field. They can insist that AI-assisted memory work remain interpretive, transparent, and accountable to evidence.

The convergence of AI, biotechnology, climate research, materials, and cultural memory also changes the meaning of interdisciplinarity. In older academic language, interdisciplinarity sometimes meant cooperation between neighbouring disciplines. In the Academy's future strategic fields, it means cooperation between domains that once seemed distant. AI and biology converge in bioinformatics and medical imaging. AI and climate research converge in modelling, remote sensing, and early-warning systems. Materials and climate converge in energy technologies, conservation, and circular economy. Cultural memory and AI converge in digital humanities and language technologies. Biotechnology and climate converge in agriculture, ecosystems, pathogens, and environmental health. Materials and cultural memory converge in conservation science. This is why AV ČR's broad institute structure is not an administrative inheritance to be tolerated, but a strategic asset to be used.

These fields also share a common dependence on infrastructure. AI needs data, computing, language resources, and software. Biotechnology needs imaging, genomics, bioinformatics, animal models, clean laboratories, and clinical interfaces. Climate research needs observation networks, sensors, models, satellites, field stations, and long time series.

Materials research needs lasers, nanofabrication, microscopy, spectroscopy, reactors, and testing platforms. Cultural memory needs archives, repositories, digitisation laboratories, conservation facilities, corpora, and metadata systems. The Academy's future will therefore depend on whether it can govern infrastructures as shared platforms rather than as isolated institutional possessions. The preceding section on scientific sovereignty showed that infrastructure gives research autonomy material form. These strategic fields show what that autonomy must be used for.

The strategic fields also share the problem of public trust. AI may provoke fear of surveillance, job loss, bias, or manipulation. Biotechnology may raise ethical concerns about genetics, reproduction, data, and bodily autonomy. Climate research may be attacked by denialism or politicised economic interests. Materials innovation may be associated with environmental damage, waste, or resource extraction. Cultural-memory research may be drawn into political conflicts over history and identity. AV ČR's role is not only to produce expert knowledge, but to communicate it responsibly. Public communication cannot be added after the research is finished. In these fields, communication is part of the research process because society must understand why the work matters, what its risks are, and how uncertainty should be interpreted.

This is especially important because each strategic field can be misused. AI can support disinformation, surveillance, discrimination, and cyberattacks. Biotechnology can create dual-use risks or ethically problematic applications. Climate research can be distorted by political polarisation. Materials technologies can intensify extractive pressure or environmental inequality. Cultural memory can be weaponised in nationalist or authoritarian narratives. The Academy's research-security agenda must therefore be connected to these fields. Openness remains essential for science, but openness without risk awareness is no longer sufficient. The Academy must cultivate a culture of responsible openness: international, collaborative, transparent where possible, protected where necessary, and ethically aware across disciplines.

The future of these fields will also depend on how the Academy cooperates with universities, companies, ministries, regions, and municipalities. AI needs collaboration with technology firms, public administration, schools, and legal authorities. Biotechnology needs hospitals, medical faculties, regulators, pharmaceutical partners, and bioethical bodies. Climate research needs ministries, regions, farmers, foresters, cities, and environmental agencies. Materials research needs industry, testing centres, energy companies, conservation institutions, and European facilities. Cultural memory needs archives, museums, schools, municipalities, minority communities, and public media. AV ČR cannot build the Czech future alone. Its strength lies in being able to provide depth and continuity inside a larger ecosystem. Strategy AV21 is valuable precisely because it has created formats for such cooperation across Academy institutes and external partners (*Czech Academy of Sciences, 2026*).

Funding remains the decisive condition. AI, biotechnology, climate research, materials science, and digital cultural memory all require long-term investment. They require not only projects, but infrastructures, data stewardship, core facilities, technical staff, doctoral training, international mobility, technology transfer, ethical governance, and public communication. Short-term grant cycles can support parts of this work, but they cannot replace stable institutional capacity. The Academy's leadership has repeatedly linked future priorities to the need for better financing of Czech science and for strengthening both basic and

applied research (*Czech Academy of Sciences, 2026*). If Czech society wants these strategic fields to become real national capacities, it must finance the conditions under which they can mature. Otherwise, strategic rhetoric will exceed institutional reality.

These fields also require a new model of scientific careers. A young researcher working at the intersection of AI and climate, or biotechnology and data science, or materials and heritage science, may not fit easily into older disciplinary categories. Evaluation systems must recognise interdisciplinary publications, datasets, software, policy briefs, patents, public communication, and infrastructure work. The Academy must support researchers who move between laboratory, archive, code, fieldwork, policy, and industry. If it does not, emerging fields will remain organisationally fragile. The future of Czech science depends not only on naming priorities, but on forming people capable of living intellectually inside those priorities.

There is also a philosophical dimension to this strategic constellation. AI changes how knowledge is produced; biotechnology changes how life is understood and modified; climate research changes how society sees its dependence on planetary systems; materials research changes the relation between technology and the physical world; cultural memory changes how societies understand time, identity, and responsibility. These fields are not merely "sectors". They are transformations in the relationship between human beings, nature, technology, and history. A national academy should be one of the few institutions capable of thinking at this level. It must preserve disciplinary rigour while also asking larger questions about what kind of future Czech society is building.

Thus, AI, biotechnology, climate research, materials, and cultural memory form the core strategic constellation through which the Czech Academy of Sciences can help shape the future of Czech science and society. AI provides new methods of analysis, modelling, automation, and public-sector transformation, but it also demands ethical, linguistic, and social reflection. Biotechnology opens paths to diagnostics, therapies, food systems, environmental resilience, and public-health preparedness, but it requires data governance, regulation, and trust. Climate research and biodiversity science provide the knowledge base for adaptation, landscape management, energy transition, and ecological survival. Materials research connects fundamental physics and chemistry with industry, energy, conservation, sustainability, and cultural interpretation. Cultural memory ensures that technological modernisation does not detach society from history, language, identity, and democratic self-understanding. Together, these fields show why AV ČR must remain a broad, interdisciplinary, autonomous, and publicly responsible institution. The Czech future will not be secured by technology alone, nor by memory alone, nor by policy alone. It will depend on the Academy's ability to connect all three: knowledge of the future, responsibility to the present, and understanding of the past.

3. AV ČR as a Platform for Long-Term National Development

The Czech Academy of Sciences can be understood not only as a research institution, but as one of the long-term platforms through which the Czech Republic imagines, tests, and organises its future. This platform role is broader than the production of scientific articles, patents, expert reports, or technological prototypes, although all of these remain important. It concerns the Academy's capacity to preserve scientific memory, sustain specialised disciplines, build infrastructures, educate research elites, advise the state, cooperate with

industry, and interpret social and cultural change. In a small or medium-sized European country, such a platform is strategically valuable because no single ministry, company, university, or regional authority can carry the entire burden of long-term knowledge formation. The Academy's institutional strength lies precisely in its ability to work across political cycles, market cycles, and temporary public fashions. It preserves research capacities that may become decisive years or decades later, often before society clearly understands why they matter. This is why AV ČR should not be seen only as a recipient of public funding, but as one of the instruments through which public funding becomes national intellectual capacity. Its role in long-term development is therefore not external to its scientific mission. It is one of the deepest meanings of that mission.

The Academy's current scale gives this platform role concrete institutional weight. At the Academy Assembly in April 2026, AV ČR described itself as the largest non-university research institution in the Czech Republic, bringing together more than 7,000 researchers across 54 institutes (*Czech Academy of Sciences, 2026*). This is not merely a statistic of size. It means that the Academy contains a national concentration of expertise across physics, chemistry, biology, medicine, mathematics, engineering, earth sciences, social sciences, and the humanities. Such breadth allows it to address problems that cannot be solved by one discipline or by one sector of public life. Climate adaptation, artificial intelligence, demographic ageing, biomedical preparedness, energy security, public trust, cultural memory, and industrial transformation all require multi-layered knowledge. The Academy's institute system gives the Czech Republic a structure within which such knowledge can be cultivated over time.

The idea of AV ČR as a platform for national development is rooted in its statutory and historical identity. The modern Academy did not emerge in a vacuum after 1993. It inherited earlier traditions of Czech learned societies, national scientific institutions, the Czechoslovak Academy of Sciences, and the difficult experience of science under socialism and post-socialist transformation. This history matters because the Academy's present role cannot be reduced to a managerial description. It carries the memory of science as a national-cultural project, as a state-organised system, as a field of ideological pressure, and finally as an autonomous public institution in a democratic society. Its contemporary development therefore has two dimensions. On the one hand, it must participate in global science according to international standards. On the other hand, it must serve the long-term needs of Czech society, including culture, language, public administration, industry, environment, and education. The platform role of AV ČR lies in holding these dimensions together rather than sacrificing one to the other.

The national development agenda of the Czech Republic itself increasingly recognises that research, development, and innovation are not narrow sectoral activities. The National Research, Development and Innovation Policy 2021+ presents itself as a strategic framework covering fundamental research, oriented and applied research, experimental development, and innovation, and explicitly links their synergy to the advancement of the knowledge society and to the economic, environmental, cultural, and social development of the Czech Republic (*Research, Development and Innovation Council, 2021*). This formulation is close to the Academy's own public mission. It recognises that long-term national development depends not only on economic growth, but on the production and circulation of knowledge across many domains. AV ČR is one of the few institutions capable of contributing to all of these dimensions at once. It can support economic transformation through technology and innovation,

environmental development through climate and biodiversity research, cultural development through humanities and heritage scholarship, and social development through policy analysis and democratic expertise.

The National RIS3 Strategy gives this developmental logic a more targeted economic and regional form. It is described as a strategic document that ensures resources from European, national, local, and private sources are effectively directed towards oriented and applied research and innovation in prioritised promising areas, while building on the strengths of the Czech Republic and its regions (*Ministry of Industry and Trade of the Czech Republic, 2021*). It also defines a long-term strategic vision focused on knowledge economy and economic transformation, so that Czech competitiveness becomes less dependent on low-cost advantages and more dependent on innovation (*Ministry of Industry and Trade of the Czech Republic, 2021*). AV ČR's role within this landscape is not simply to respond to RIS3 priorities after they are formulated. It can help identify where Czech strengths actually lie, where scientific capacities are emerging, where industrial partners need deeper research, and where regions require knowledge-based transformation. In this sense, the Academy is a platform not only for research performance, but for strategic intelligence.

This strategic-intelligence function is particularly important because national development cannot be governed only through short-term indicators. The NRDIP 2021+ explicitly refers to the need for strategic intelligence capacities, including technology foresight and technology assessment, to monitor the latest science and technology trends and predict possible socio-economic impacts (*Research, Development and Innovation Council, 2021*). AV ČR is naturally positioned to contribute to such foresight because it combines frontier research with disciplinary depth and institutional continuity. A ministry may commission a forecast, and a company may scan markets, but a national academy can interpret technological trends through fundamental science, social analysis, historical memory, ethical reflection, and policy expertise. This is the difference between forecasting as administrative exercise and foresight as a public knowledge practice. The Academy can help the Czech state ask not only what technologies are emerging, but what they mean for society, labour, regions, education, culture, sovereignty, and democracy.

The Innovation Strategy of the Czech Republic 2019–2030 placed this future-oriented ambition in a more explicitly competitive language. It outlined the Czech Republic's vision of becoming one of Europe's most innovative countries by 2030 and organised this ambition around pillars such as research and development, technology, start-ups, digitalisation, and smart infrastructure (*Government of the Czech Republic, 2019*). Such strategic language is important, but it can remain rhetorical unless institutions exist that can translate it into long-term capability. AV ČR is one such institution. Its contribution to innovation is not limited to individual commercial successes. It lies in creating the knowledge depth without which start-ups, advanced industry, digitalisation, and smart infrastructure become dependent on imported technologies and external expertise. National innovation strategies need the Academy because innovation without a public research base tends to become either imitation or assembly.

The Academy's long-term platform role is also visible in its thirteen strategic priorities for 2025–2029. These priorities include legislation and strategic management, economic conditions, public policy and European funding, knowledge and technology transfer, international cooperation, evaluation, excellent research and scientific careers, cooperation with

universities, digital transformation and sustainable development, research security, public communication, and Strategy AV21 (*Czech Academy of Sciences, 2026*). This list shows that AV ČR understands its own future not only through scientific themes, but through the institutional systems needed to support them. A national-development platform must be governed, financed, evaluated, protected, connected, and communicated. It must also be able to renew scientific careers and support younger generations. The Academy's priorities therefore indicate a shift from simple institutional preservation towards strategic self-modernisation. The aim is not merely to maintain existing institutes, but to increase the Academy's capacity to serve Czech society in a more organised and forward-looking way.

Strategy AV21 is central to this platform role because it translates long-term research into public-interest programmes. In 2026, the Academy described Strategy AV21 as a format that had connected CAS institutes, universities, industrial partners, and the state and public sectors for more than a decade (*Czech Academy of Sciences, 2026*). This is significant because national development today depends on cooperation among many actors who normally work in separate languages. Universities educate and research; companies produce and compete; ministries regulate and fund; regions and municipalities implement; citizens experience the consequences; academies preserve depth and continuity. Strategy AV21 creates one of the institutional spaces in which these actors can be connected around shared problems. It does not transform the Academy into a ministry or a development agency. Rather, it allows the Academy to function as a scientific platform through which national challenges are researched before they become unmanageable.

The Academy's platform role is especially important in relation to time. Public policy often operates within electoral cycles, business within investment cycles, and media within news cycles. Science, by contrast, requires longer temporal structures: doctoral training, laboratory building, infrastructure maintenance, long-term datasets, field observations, archives, theoretical schools, and cumulative peer debate. AV ČR can provide such continuity because its institutes are not designed around a single temporary mission. They are capable of maintaining research programmes across decades. This matters for national development because the most difficult Czech challenges are long-term: climate adaptation, demographic change, energy transformation, digital sovereignty, industrial upgrading, public health, educational renewal, and cultural memory. A society that cannot think across decades becomes reactive. The Academy is one of the institutions that enables the Czech Republic to think historically and futuristically at the same time.

This long temporal function does not mean that the Academy should remain detached from current problems. On the contrary, its ability to respond to current problems depends on knowledge accumulated before the problems become urgent. The pandemic made this clear in the biomedical sphere; climate change makes it clear in environmental research; AI makes it clear in digital infrastructures and language technologies; geopolitical instability makes it clear in research security and energy expertise. AV ČR's public value appears precisely when long-term research becomes available for urgent decision-making. In such moments, society discovers that the slow work of science was not a luxury. It was a reserve of national competence. Long-term national development requires such reserves because crises cannot be met with improvisation alone.

The Academy also functions as a platform for scientific sovereignty. Scientific sovereignty, as discussed in the preceding section, is not isolation from Europe or the world. It is the ability to

cooperate internationally from a position of competence. AV ČR contributes to this competence by operating and participating in major infrastructures, maintaining research groups across strategic fields, preserving language and cultural resources, and training specialists who can work at European and global levels. Its role is particularly important because the Czech Republic is deeply integrated into European science, industry, and policy, yet must avoid becoming merely a user of external knowledge. The Academy helps ensure that Czech society remains a producer, interpreter, and evaluator of knowledge. This is one of the most profound meanings of long-term national development in a knowledge economy.

The platform role of AV ČR is also economic, but not in a narrow commercial sense. The Academy supports the Czech economy through technology transfer, spin-offs, contractual research, cooperation with companies, expert services, and participation in innovation ecosystems. The 2026 Academy Assembly identified knowledge and technology transfer as one of the strategic priorities and highlighted the establishment of CAS Innovations as a joint-stock company intended to translate research results into real-world applications and consolidate procedures for creating and managing spin-offs and start-ups (*Czech Academy of Sciences, 2026*). This development gives the Academy a more organised route from research to market. Yet the deeper economic role remains the maintenance of the research base from which such applications emerge. Economic development based on high added value requires not only entrepreneurs and investors, but also a reservoir of advanced knowledge. AV ČR is one of the principal Czech reservoirs of such knowledge.

At the same time, the Academy's contribution to national development cannot be reduced to industrial competitiveness. A mature country needs more than innovative companies. It needs public institutions capable of using evidence, citizens capable of trusting reliable knowledge, regions capable of adapting to change, and cultural institutions capable of preserving memory while remaining open to the future. AV ČR contributes to all of these domains. Its social-science institutes analyse policy, inequality, public opinion, governance, and social transformation. Its humanities institutes preserve and reinterpret language, history, philosophy, literature, archaeology, and cultural heritage. Its natural and technical institutes address materials, energy, climate, biology, physics, mathematics, and computation. The Academy's national-development role is therefore civilisational rather than merely economic. It helps the Czech Republic develop as a knowledge society, not only as an innovation economy.

This distinction is important because the language of innovation can become too narrow. If national development is measured only by patents, start-ups, private investment, and export performance, many forms of public value disappear from view. A reliable climate model, a social-policy diagnosis, a historical corpus, a biodiversity database, an archaeological map, a linguistic resource, a public-health study, or an expert warning about institutional risk may not immediately generate profit. Yet each can shape the future of the country. AV ČR's platform role is to preserve and connect these diverse forms of value. It makes visible the fact that development involves economy, state, environment, culture, society, and knowledge together. In this respect, the Academy's breadth is not administrative complexity; it is a strategic asset.

The Academy is also a platform for national development because it mediates between fundamental and applied research. Czech policy documents rightly emphasise application, commercialisation, and innovation, but long-term development depends on the source from which applications flow. If basic research is weakened, applied research eventually becomes

derivative. If application mechanisms are weak, excellent research may remain socially invisible. AV ČR must therefore hold the continuum together. Its institutes must remain free to pursue fundamental questions, while transfer centres, programmes such as PRAK, Strategy AV21, and CAS Innovations help move results into practice where appropriate. This mediating function is central to the Academy's future. It prevents the Czech research system from splitting into an isolated academic sphere and a shallow application sphere.

The platform role also includes cooperation with universities. The Academy is not a university, yet it is deeply involved in doctoral training, joint research, shared infrastructures, and scientific career formation. Its 2026 strategic priorities include cooperation with universities, which reflects the fact that national development depends on the circulation of people and ideas between research institutes and higher education (*Czech Academy of Sciences, 2026*). Universities provide educational scale, regional presence, and disciplinary reproduction. The Academy provides concentrated research depth, specialised infrastructures, and long-term scientific environments. Together, they form the human infrastructure of Czech science. Without strong Academy-university cooperation, emerging fields such as AI, biotechnology, climate research, materials science, digital humanities, and public-policy research will lack the educational pipelines needed for sustained growth.

Regions and municipalities also belong to this platform logic. National development is not achieved only in Prague, Brno, or a few research centres. It depends on whether knowledge reaches regions facing industrial restructuring, demographic challenges, environmental pressure, infrastructure gaps, and uneven innovation capacity. The National RIS3 Strategy explicitly builds on the strengths of the Czech Republic and its individual regions and seeks targeted use of opportunities offered by economic background and research and innovation capacities (*Ministry of Industry and Trade of the Czech Republic, 2021*). AV ČR can support this regional dimension by providing expertise, cooperating with regional universities, participating in innovation ecosystems, and helping municipalities address climate, social, cultural, and technological problems. The Academy's platform role is therefore territorial as well as national. It can help reduce the gap between advanced research centres and local public needs.

This territorial role is especially visible in climate adaptation, biodiversity, water management, heritage, urban development, and regional social policy. Municipalities need scientific advice but often lack the analytical capacity to generate it internally. Regions need long-term data and strategic interpretation but may be constrained by administrative routines and short-term budgets. Academy institutes can provide models, datasets, historical context, environmental analysis, social surveys, and expert interpretation. The Academy does not make local political decisions; it improves the knowledge conditions under which such decisions are made. This is a democratic form of national development. It strengthens the ability of public authorities to act with evidence rather than improvisation.

AV ČR is also a platform for public policy and evidence-informed governance. The Academy's strategic priorities include public policy and European funding, while its Science4Policy activities show a growing effort to translate research into policy papers, policy briefs, and analyses usable by public administration. This role is vital because modern states face problems that cannot be solved through ideology or administrative habit alone. Energy policy, health policy, AI regulation, environmental protection, social policy, heritage management, research security, and regional development all require evidence. The Academy's advantage lies in the credibility produced by long-term research and institutional independence. It can

advise public authorities without becoming a political instrument. Such independence is essential because expert knowledge loses value when it becomes indistinguishable from lobbying or propaganda.

The platform role also requires public communication. A national academy cannot contribute fully to long-term development if citizens do not understand why science matters, how uncertainty works, or why public investment in research is necessary. The 2026 priorities include communication with the public, showing that AV ČR treats communication as part of its strategic mission rather than as an ornamental activity (*Czech Academy of Sciences, 2026*). Public communication is especially important in fields such as AI, vaccination, climate change, energy, biotechnology, archaeology, identity, and historical memory, where scientific issues can become politically charged. The Academy must explain without simplifying irresponsibly, persuade without becoming propagandistic, and defend evidence without pretending that science alone resolves all value conflicts. In this sense, communication is part of national development because it shapes the public culture in which decisions are made.

Another element of the Academy's platform role is the protection of research security. The inclusion of research security among the 2025–2029 priorities reflects the changing geopolitical environment in which knowledge, data, infrastructures, and international cooperation are no longer politically neutral (*Czech Academy of Sciences, 2026*). The Czech Republic must remain open to international science, but it must also understand risks associated with sensitive technologies, data protection, cyber threats, dual-use research, strategic dependencies, and hostile influence. AV ČR can help develop this awareness because it works across the very fields where such risks appear: AI, biotechnology, materials, energy, space, digital infrastructures, and social research. Research security is not a retreat from openness. It is the condition for responsible openness. A platform for national development must protect the knowledge systems on which development depends.

The Academy's role in long-term development is also ethical. Emerging technologies create opportunities, but they also create risks: surveillance, inequality, ecological damage, genetic discrimination, cultural manipulation, dual-use misuse, and public distrust. A national academy should not simply accelerate technological change. It should help society evaluate that change. AV ČR's disciplinary breadth gives it a rare capacity to combine technological research with philosophy, law, sociology, political science, history, linguistics, and cultural analysis. This allows it to contribute to responsible innovation, not merely innovation as speed. Long-term development requires such responsibility because the future is not only something to be reached; it is something to be shaped with judgement.

The Academy also functions as a platform of cultural continuity. Czech national development has always included the preservation and reinterpretation of language, history, literature, law, archaeology, memory, and identity. The Academy's humanities and social-science institutes ensure that technological modernisation does not sever society from its cultural foundations. This is especially important in an age of digital media, disinformation, war in Europe, and contested historical narratives. Cultural memory is not a nostalgic retreat from the future. It is one of the conditions under which a society can orient itself responsibly. AV ČR contributes to national development by maintaining the scholarly institutions capable of studying Czech culture critically, comparatively, and internationally.

This cultural role connects directly with digital transformation. Archives, corpora, historical databases, archaeological documentation, linguistic resources, and digital humanities

platforms are now part of national infrastructure. The Czech language must remain computationally present; Czech history must remain accessible through reliable digital resources; cultural heritage must be preserved with scientific methods; public memory must be protected from manipulation. In this field, the Academy joins the technological and humanistic dimensions of national development. It can use AI, imaging, databases, and digital platforms not to replace interpretation, but to strengthen it. This is one of the most distinctive contributions AV ČR can make to the Czech future: to show that digital transformation and cultural memory need not be enemies.

Long-term national development also depends on evaluation and excellence. The Academy Assembly reported that the internal evaluation of CAS institutes for 2020–2024 found many institutes and teams among the global elite, with 70% of selected outputs rated "Outstanding" or "Excellent" (*Czech Academy of Sciences, 2026*). This matters because a platform for development must be scientifically credible. Public usefulness without excellence becomes weak consultancy; excellence without public orientation becomes vulnerable isolation. The Academy's challenge is to preserve evaluation standards that recognise both frontier research and diverse forms of impact. It must reward publications, infrastructures, datasets, patents, policy expertise, public communication, cultural work, and training without flattening them into one simplistic metric. High-quality national development requires high-quality knowledge.

Funding remains the most serious condition for the Academy's platform role. Long-term development cannot be built on unstable or insufficient support for research institutions. Laboratories, infrastructures, datasets, libraries, archives, doctoral training, transfer structures, and expert platforms require continuity. The Academy's 2026 Assembly discussed science and research funding alongside strategic priorities, indicating that institutional ambition must be matched by financial reality (*Czech Academy of Sciences, 2026*). If public research funding is weak, the country may still declare ambitious strategies, but it will lack the capacity to implement them. AV ČR's platform role therefore depends on a political understanding that science is not a discretionary expense. It is a long-term investment in national competence, resilience, and sovereignty.

The platform concept also helps define the Academy's relationship with the state. AV ČR is publicly funded and nationally important, but it must not become administratively subordinate to short-term political demand. Its value to the state depends on autonomy. The state needs the Academy precisely because the Academy can produce knowledge that is not written to justify a ministerial position, an electoral programme, or a temporary administrative preference. Autonomy is not a privilege of scholars detached from society. It is a public mechanism for producing trustworthy knowledge. For long-term national development, this mechanism is indispensable because difficult truths are often inconvenient in the short term.

At the same time, autonomy must not become isolation. The Academy should remain open to ministries, companies, universities, regions, municipalities, civil society, and citizens. Its platform role is realised through cooperation, not separation. The challenge is to cooperate without losing independence, to be useful without becoming obedient, and to be strategic without becoming politicised. This balance has been one of the recurring themes in the history of Czech science: the relation between national mission and universal knowledge, between state support and scholarly freedom, between public usefulness and intellectual independence. In the 21st century, the same problem returns in new forms: research security,

technology transfer, evidence-informed policy, AI governance, public communication, and international competition. AV ČR's future will depend on how well it manages this balance.

The Academy's platform role can also be described as a form of national learning. Countries develop not only by building roads, factories, schools, and digital networks, but by learning how to understand themselves and their environment more accurately. AV ČR helps Czech society learn from its landscapes, archives, laboratories, surveys, instruments, datasets, experiments, and historical experiences. It turns dispersed observations into structured knowledge. It turns specialised expertise into public capacity. It turns historical memory into civic orientation. This learning function is slow, cumulative, and often invisible, but it is one of the foundations of a mature state. A society that cannot learn institutionally repeats mistakes and becomes dependent on external interpretations of its own problems.

In this sense, AV ČR is also a platform of continuity through transformation. The Czech Republic has passed through imperial, national, democratic, authoritarian, socialist, post-socialist, European, and globalising phases. Scientific institutions have repeatedly had to redefine their social meaning. The modern Academy now faces another transformation: technological acceleration, climate crisis, geopolitical instability, demographic change, digital platforms, and changing public trust in expertise. Its task is not to preserve the past unchanged, but to transform inherited knowledge into future capacity. This is the same institutional logic that has shaped the Academy throughout the book: continuity and rupture, autonomy and service, national mission and universal science. Chapter 14 shows that this logic now enters the field of innovation, infrastructure, technology transfer, and strategic development.

Thus, AV ČR should be understood as a platform for long-term national development because it connects the Czech Republic's scientific autonomy with its economic transformation, environmental resilience, public governance, cultural memory, technological capacity, and European integration. Its role is not limited to producing excellent research, although excellence remains the foundation of everything else. It also preserves infrastructures, trains scientific elites, supports evidence-informed policy, cooperates with industry and public institutions, sustains Czech cultural and linguistic knowledge, and helps society anticipate future risks and opportunities. The Academy's contemporary instruments — Strategy AV21, CAS Innovations, PRAK, Science4Policy, large research infrastructures, digital platforms, university cooperation, public communication, and research-security priorities — show that AV ČR is increasingly organising itself as a national knowledge platform rather than only as a federation of institutes. For the Czech future, this platform is indispensable. It allows the country to remain not merely a user of imported technologies and external expertise, but an active creator of knowledge, a responsible participant in European science, and a society capable of shaping its own long-term development with intelligence, memory, and scientific seriousness.

References

Antol, M., Marek, J., Capandová, M., Juráček, J., & Matyska, L. (2024). *EOSC CZ: Towards the development of Czech national ecosystem for FAIR research data*.

BIOCEV. (n.d.). *BIOCEV — Biotechnology and Biomedicine Centre of the Academy of Sciences and Charles University*.

Bush, V. (1945). *Science, the endless frontier: A report to the President*. United States Government Printing Office.

CAS Innovations. (2026). *CAS Innovations: Scientific research to market*. CAS Innovations.

CERIT-SC. (2026). *About CERIT-SC*.

Council of the European Union. (2022). *Council Recommendation (EU) 2022/2415 of 2 December 2022 on the guiding principles for knowledge valorisation*. *Official Journal of the European Union*.

Czech Academy of Sciences Transfer Centre. (2025). *A rapid hydrogen electrolyzer could bring a revolution in energy storage*. CAS.

Czech Academy of Sciences Transfer Centre. (2025). *The Czech Academy of Sciences will, for the sixth time, support the commercialisation of selected research results*. CAS.

Czech Academy of Sciences Transfer Centre. (2025). *The Czech Academy of Sciences has supported selected research results in the PRAK programme*. CAS.

Czech Academy of Sciences Transfer Centre. (2026). *Improved ECG technology and superlasers in industry: The Czech Academy of Sciences presents real-world results of research*. CAS.

Czech Academy of Sciences Transfer Centre. (n.d.). *Spin-offs*. CAS.

Czech Academy of Sciences Transfer Centre. (n.d.). *Technology incubation*. CAS.

Czech Academy of Sciences. (1992). *Act No. 283/1992 Coll. on the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2006). *Statutes of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2022). *We want to help scientists apply their research, says head of CeTTAV*. CAS.

Czech Academy of Sciences. (2024). *New Strategy AV21 programmes to explore space, rare fungi, and our identities*. CAS.

Czech Academy of Sciences. (2024). *Open Science Principles of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2025). *LASER-PRO: Linking science and industry to shape Europe's high-tech future*. CAS.

Czech Academy of Sciences. (2025). *The Czech Academy of Sciences has appointed its new leadership for 2025–2029*. CAS.

Czech Academy of Sciences. (2026). *Academy Assembly: Thirteen priorities to boost basic and applied research*. CAS.

Czech Academy of Sciences. (2026). *Czech Academy of Sciences to launch a joint-stock company*. CAS.

Czech Academy of Sciences. (2026). *The CAS launches new research programmes as part of its Strategy AV21*. CAS.

Czech Academy of Sciences. (2026). *Vice-presidents of the CAS set priorities for 2025–2029 term*. CAS.

Czech Academy of Sciences. (2026). *Academy Assembly: Thirteen priorities to boost basic and applied research*. CAS.

Czech Academy of Sciences. (2026). *The CAS launches new research programmes as part of its Strategy AV21*. CAS.
Czech Academy of Sciences. (n.d.). *Advisory committees*. CAS.
Czech Academy of Sciences. (n.d.). *AI: Artificial Intelligence for Science and Society*. CAS.
Czech Academy of Sciences. (n.d.). *Energy*. CAS.
Czech Academy of Sciences. (n.d.). *Future of assisted reproduction*. CAS.
Czech Academy of Sciences. (n.d.). *Global biodiversity crisis: Risks and opportunities for human society*. CAS.
Czech Academy of Sciences. (n.d.). *Global biodiversity crisis: Risks and opportunities for human society*. CAS.
Czech Academy of Sciences. (n.d.). *Infectious diseases: New targets and strategies*. CAS.
Czech Academy of Sciences. (n.d.). *Mission of the CAS*. CAS.
Czech Academy of Sciences. (n.d.). *PhDr. Pavel Baran, CSc.* CAS.
Czech Academy of Sciences. (n.d.). *Society in motion and public policy*. CAS.
Czech Academy of Sciences. (n.d.). *Strategy AV21: Top research in the public interest*.
Czech Academy of Sciences. (n.d.). *The Power of Objects: Materiality Between the Past and the Future*. CAS.
Czech-BioImaging. (n.d.). *National research infrastructure for biological and medical imaging*.
CzechGlobe. (n.d.). *About us: Global Change Research Institute of the Czech Academy of Sciences*.
CzechGlobe. (n.d.). *Global change*.
CzechNanoLab. (n.d.). *CzechNanoLab: Large research infrastructure for nanoscience and nanotechnology*.
CzechNanoLab. (n.d.). *CzechNanoLab: Open access to tools and expertise in nanoscience*.
CzeCOS. (n.d.). *CzeCOS: Open access research infrastructure for global change research*.
Edgerton, D. (2006). *The shock of the old: Technology and global history since 1900*. Profile Books.
e-INFRA CZ. (2026). *e-INFRA CZ: E-infrastructure for research*.
ELI Beamlines. (n.d.). *ELI Beamlines — Dolní Břežany*.
ELI ERIC. (n.d.). *Extreme Light Infrastructure*.
ELIXIR CZ. (2026). *ELIXIR CZ Strategy and Programme 2026–2030*.
ELIXIR CZ. (2026). *ELIXIR: The Czech Republic Node*.
EOSC CZ. (2026). *Initiative EOSC CZ*.
EOSC CZ. (2026). *National Repository Platform for Research Data*.
ESFRI. (n.d.). *ESFRI Roadmap*.
ESFRI. (n.d.). *European Strategy Forum on Research Infrastructures*.
ESFRI. (n.d.). *National roadmaps*.
European Commission. (2025). *European Innovation Scoreboard 2025: Country profile Czechia*. Publications Office of the European Union.
European Commission. (2025). *From fragmentation to synergy and impact: A review of the knowledge transfer system in Czechia*. Publications Office of the European Union.
European Commission. (2025). *Strategy for European life sciences*.
European Commission. (n.d.). *Science for policy*.
Government of the Czech Republic. (2019). *Innovation Strategy of the Czech Republic 2019–2030: The Country for the Future*.
HiLASE Centre. (n.d.). *HiLASE: Superlasers for the real world*.

Institute of Molecular Genetics of the Czech Academy of Sciences. (n.d.). *Czech-BioImaging Hub*.

Institute of Plasma Physics of the Czech Academy of Sciences. (n.d.). *COMPASS Upgrade*.

Institute of Sociology of the Czech Academy of Sciences. (2026). *Czech Social Science Data Archive*.

IT4Innovations. (2025). *VLQ quantum computer*.

IT4Innovations. (2026). *IT4Innovations National Supercomputing Centre*.

IT4Innovations. (2026). *Karolina supercomputer*.

Library of the Czech Academy of Sciences. (2026). *ASEP Data Repository*.

LINDAT/CLARIAH-CZ. (2026). *Digital research infrastructure for language technologies, arts and humanities*.

Ministry of Education, Youth and Sports. (2024). *Roadmap of Large Research Infrastructures of the Czech Republic for the years 2023–2026*. Ministry of Education, Youth and Sports of the Czech Republic.

Ministry of Education, Youth and Sports. (n.d.). *Prague Asterix Laser System*.

Ministry of Education, Youth and Sports. (n.d.). *Reactors LVR-15 and LR-0*.

Ministry of Industry and Trade of the Czech Republic. (2021). *National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027*.

Ministry of Industry and Trade of the Czech Republic. (2024). *Czechia as a technological leader: Government approved the National Strategy for Artificial Intelligence of the Czech Republic 2030*.

Míšková, A., & Franc, M. (2014). *The Academy of Sciences of the Czech Republic: A history in pictures*. Academia.

OECD, & Eurostat. (2018). *Oslo Manual 2018: Guidelines for collecting, reporting and using data on innovation* (4th ed.). OECD Publishing.

OECD. (2015). *Frascati Manual 2015: Guidelines for collecting and reporting data on research and experimental development*. OECD Publishing.

OECD. (2025). *OECD Economic Surveys: Czechia 2025*. OECD Publishing.

OECD. (2025). *SME policy in Czechia*. OECD Publishing.

PALS Research Centre. (n.d.). *PALS laser facility*.

Petr, B., Čech, T., Frühauf, L., Jusić, M., Kreisinger, J., Reznikow, A., Veselý, A., & Witz, P. (2025). *Building capacity for evidence-informed policymaking in governance and public administration in a post-pandemic Europe: Country analysis, policy recommendations and implementation roadmap Czech Republic*. Publications Office of the European Union.

Pokorný, J. (2009). *Věda v českých zemích: Dějiny české vědy a techniky* [Science in the Czech lands: A history of Czech science and technology]. Academia.

Puy, A., González Orta, L., & Linková, M. (2019). *Policy brief series*. Institute of Sociology of the Czech Academy of Sciences.

Research, Development and Innovation Council. (2021). *National Research, Development and Innovation Policy of the Czech Republic 2021+*.

Stokes, D. E. (1997). *Pasteur's quadrant: Basic science and technological innovation*. Brookings Institution Press.

Technology Agency of the Czech Republic. (2026). *Programmes and calls*. TA ČR.

Veselý, A., Nekola, M., & Hejzlarová, E. (2016). *Policy analysis in the Czech Republic*. Policy Press.

Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J. J., Appleton, G., Axton, M., Baak, A., Blomberg, N., Boiten, J.-W., da Silva Santos, L. B., Bourne, P. E., Bouwman, J., Brookes, A. J., Clark, T., Crosas, M., Dillo, I., Dumon, O., Edmunds, S., Evelo, C. T., Finkers, R., ... Mons, B. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data, 3*, Article 160018.

Part Seven.

Academicians, Scientific Schools, and Institutional Memory

Chapter Fifteen

Academicians and Leading Figures in the History of Czech Academic Science

Criteria for Selecting Personalities

1. Scientific Impact and Institutional Significance

Selecting personalities for an institutional history of the Czech Academy of Sciences is not a decorative exercise undertaken after the main narrative has already been completed. It determines how the institution itself will be understood, because every selected life directs attention towards particular forms of knowledge, authority, achievement and historical experience. A list dominated by famous discoverers would present the Academy primarily as a producer of exceptional scientific results. A list centred on presidents and directors would instead describe it as an administrative hierarchy governed from above. A collection of persecuted or exiled scholars would emphasise the vulnerability of knowledge under authoritarian power, while a gallery of internationally honoured researchers would privilege external recognition. None of these perspectives is false, but each becomes distorting when treated as sufficient. The first task is therefore to construct criteria capable of connecting individual achievement with the institutional history developed throughout this book. Scientific impact and institutional significance provide the two principal dimensions of that connection. The first concerns the capacity of a scholar's work to alter knowledge, methods, research agendas or practical possibilities. The second concerns the capacity of a personality to create, transform, defend, represent or transmit the institutional conditions under which knowledge could be produced. Neither dimension can simply be inferred from official rank, public fame or the later prestige of a name. The most meaningful personalities are those whose careers reveal how scientific ideas and academic institutions shaped one another under changing Czech, Czechoslovak and European conditions (*Daston & Sibum, 2003*; *Söderqvist, 2007*).

The history of science was once frequently written as a succession of heroic biographies in which exceptional individuals appeared to overcome ignorance through intellect, courage and perseverance. Such narratives made scientific development accessible, but they often separated discoveries from laboratories, assistants, institutions, funding systems, political regimes and inherited disciplinary cultures. More recent historiography has shown that a scientific personality is never merely a private mind whose achievements can be detached from the social organisation of knowledge. The concept of the scientific persona draws attention to historically changing models of credibility, vocation, behaviour and authority through which scholars became recognisable as legitimate producers of knowledge. These models differed between the Enlightenment savant, the 19th-century national scholar, the socialist academician and the internationally mobile project-based researcher of the contemporary period. They also shaped the opportunities available to people of different social origins, genders, languages, political positions and institutional affiliations. The Czech case makes this contextual approach especially necessary because scholarly careers repeatedly

crossed boundaries between universities, learned societies, ČAVU, state institutes, ČSAV, AV ČR and foreign research centres. A personality may have belonged formally to one institution while exercising decisive influence over another through committees, correspondence, teaching, patronage or the creation of a research school. Selection must therefore follow networks and careers rather than simply reproduce membership registers. Prosopographical research is valuable here because it reveals recurring patterns of recruitment, advancement, mentorship and exclusion that remain invisible in isolated biographies. Individual lives can then be interpreted as points where wider structures became concrete rather than as self-contained stories of genius. Accordingly, Chapter 15 treats biography as a method of institutional analysis and not as an interruption of the institutional narrative (*Shapin & Thackray, 1974*; *Daston & Sibum, 2003*).

Scientific impact is the first criterion because an academy of sciences must ultimately be judged by its contribution to knowledge. Yet impact cannot be restricted to a single spectacular discovery, a celebrated invention or a publication that later entered an international canon. A scientist may exert conceptual impact by changing the questions regarded as legitimate within a discipline. Methodological impact occurs when a new experimental procedure, mathematical technique, classificatory system or critical method alters how research is conducted. Empirical impact may take the form of a dataset, corpus, collection, archive, map, long-term observation series or carefully established body of evidence on which later work depends. Infrastructural impact arises when a researcher creates an instrument, laboratory, field station, dictionary office, database or technical facility that enlarges the possibilities available to an entire community. Educational impact is visible in doctoral supervision, the formation of successors and the establishment of a durable research school. Translational impact connects fundamental knowledge with medicine, industry, agriculture, environmental management, public administration or cultural preservation. Public and cultural impact may be generated by historians, linguists, philosophers or social scientists whose scholarship changes the way a society understands its language, institutions and past. Some contributions become visible immediately, while others acquire significance only when later developments reveal their importance. Scientific impact must consequently be reconstructed as a layered historical relationship between work, reception, use and transmission. The decisive question is not merely whether a person produced an impressive result, but whether Czech, Czechoslovak or international research would have developed differently without that contribution.

Modern research cultures frequently translate impact into numbers, including citation counts, journal indicators, patents, grants and positions in international rankings. These indicators can supply useful evidence for recent decades, particularly when they are interpreted within the practices of a specific field. They are nevertheless unsuitable as a universal mechanism for selecting personalities across almost three centuries of academic history. Citation databases do not cover the world of 18th-century learned correspondence, 19th-century Czech-language monographs or unpublished organisational labour. They also represent books, critical editions, dictionaries and archival publications far less adequately than journal articles in many natural sciences. Even within contemporary research, publication and citation practices differ sharply among mathematics, physics, biomedicine, engineering, history, philosophy and philology. The Leiden Manifesto therefore insists that quantitative assessment should support, rather than replace, qualitative judgement and should respect differences between disciplinary and local research missions. The San Francisco Declaration on Research Assessment similarly

rejects the use of journal-based metrics as substitutes for evaluating the actual quality of individual contributions (*Hicks et al., 2015*; *American Society for Cell Biology, 2012*). These principles are even more important in historical selection, where comparison involves different publication systems, political environments and definitions of scientific achievement. No numerical threshold can meaningfully compare a 19th-century lexicographer, a socialist-period plasma physicist and a contemporary molecular biologist. Metrics may confirm influence where relevant data exist, but they cannot pronounce the final historical verdict. For earlier periods, impact must be reconstructed through reception, correspondence, institutional adoption, replication, translation, technological application and the survival of methods or research programmes. The criterion is therefore evidentially demanding but deliberately plural.

Recognition is also distributed unevenly within science, which means that later fame cannot be treated as a neutral record of earlier contribution. Robert K. Merton's analysis of the Matthew effect demonstrated how already eminent scientists can receive disproportionate credit, especially in collaborative research or cases of simultaneous discovery. Reputation then produces further opportunities, resources and visibility, reinforcing distinctions that may initially have been much smaller. This process is highly relevant to a chapter constructed around personalities, because historical memory tends to reproduce the accumulated advantages of familiar names. Academy presidents, institute directors and recipients of major prizes are more likely to appear in official photographs, commemorative publications and anniversary speeches. Researchers who worked under their authority may survive only in laboratory records, correspondence, acknowledgements or the recollections of colleagues. Political regimes can intensify this asymmetry by controlling appointments, awards, publication opportunities and access to international travel. Margaret Rossiter's concept of the Matilda effect further demonstrates that women's contributions have often been attributed to male colleagues or excluded from conventional accounts of scientific priority (*Merton, 1968*; *Rossiter, 1993*). The selection procedure must therefore distinguish achieved influence from accumulated visibility. Prizes, titles and public recognition remain relevant evidence, but they require contextual interpretation rather than automatic conversion into historical importance. The same applies to the internal honours of ČSAV, some of which reflected political patronage as well as scientific judgement. A responsible history reads systems of recognition critically, asking not only who was honoured but who possessed the authority to confer honour and under what political conditions (*Digital Humanities Czech Academy of Sciences, n.d.*).

Science is a collective practice even when it becomes publicly associated with the name of a single discoverer. Laboratories depend on technicians, instrument makers, assistants, data processors, administrators and generations of researchers whose work is often compressed into the reputation of a group leader. Steven Shapin's study of the "invisible technician" showed how experimental authority has historically been constructed through the concealment or subordination of necessary forms of technical labour (*Shapin, 1989*). The institute-based organisation of ČSAV and AV ČR makes this problem especially important because many major results emerged from teams sustained over long periods. The visible scientist may have formulated the decisive hypothesis, but others prepared materials, maintained instruments, standardised measurements or preserved continuity while leaders travelled or held administrative office. An institute director may deserve recognition for assembling a productive environment even when the most cited publications were written by younger colleagues. Conversely, the prestige of a director should not absorb the achievements

of researchers whose intellectual independence made the institute successful. A chapter devoted to personalities cannot dissolve all achievement into anonymous structures, because individuals made consequential decisions and produced identifiable work. It can, however, select personalities whose careers illuminate the collective systems that surrounded them. Laboratory founders, research coordinators, mentors and builders of technical cultures may therefore be included alongside discoverers. Their profiles must name collaboration, acknowledge dependence and avoid presenting collective results as solitary triumphs. Biographical prominence should serve as a doorway into the history of scientific communities rather than as a device for closing that history around one celebrated name.

Institutional significance can be defined as the capacity of an individual to alter the durable organisation of research. It includes the founding of learned societies, academies, institutes, departments, laboratories, editorial offices and research infrastructures. It also includes the design of statutes, membership systems, grant mechanisms, evaluation procedures and forms of academic self-government. Some personalities become institutionally significant by recruiting an effective group and giving it an intellectually coherent programme. Others secure buildings, instruments, archives, collections or financial resources without which scientific ambition would remain fragile. A leader may connect previously isolated disciplines, establish cooperation with universities or bring a Czech institute into an international network. Institutional importance may also appear during crisis, when an individual preserves records, protects colleagues, maintains a research programme or negotiates sufficient autonomy for an institute to survive. These contributions are not secondary to science, because they shape who can conduct research, which questions can be pursued and how knowledge is transmitted between generations. Their effects may persist long after the founder's own publications have ceased to be read. Institutional significance therefore does not necessarily correlate with citation counts or disciplinary renown. A scholar of modest international visibility may have created an institute that later produced globally influential research. This criterion places the makers and custodians of scientific conditions alongside the authors of discoveries while retaining a clear requirement of demonstrable historical consequence.

The breadth of the Czech Academy's mission confirms why institutional significance must be interpreted expansively. The contemporary Academy is a complex of public research institutions covering natural, technical and social sciences as well as the humanities. Its declared mission combines the advancement of international knowledge with attention to the needs of Czech society and national culture. It also includes doctoral education, university cooperation, international exchange and collaboration with applied research and industry (*Czech Academy of Sciences, n.d.*). A historically meaningful selection of personalities must reflect the gradual construction of these functions. Some individuals contributed to the authority of learned society membership, while others created permanent research workplaces. Some linked scholarship with national language and culture, whereas others organised expensive experimental science or opened routes towards industrial application. The transition from the Royal Czech Society of Sciences and ČAVU to ČSAV and AV ČR changed the institutional mechanisms through which such influence could be exercised. The meaning of leadership under a selective learned society was not identical to leadership within a centralised state research system. Nor was either identical to presidency within the self-governing, competitively evaluated Academy established after the dissolution of Czechoslovakia. Institutional significance must therefore be assessed relative to the

possibilities and constraints of each organisational form. It cannot be inferred from the possession of the same title across historically different academies.

Josef Hlávka offers a clear example of why scientific impact and institutional significance must be related without being conflated. He was not selected for the history of the Academy because he produced a scientific theory that transformed an established discipline. His significance arose from patronage, institutional imagination, architecture, public authority and the conversion of private wealth into a durable foundation for Czech scholarship. As the first chairman of the Emperor Franz Joseph Czech Academy for Sciences, Literature and Arts, he helped give organisational form to an ambition that had developed through the national revival and the growth of Czech intellectual life. The Academy commenced its activities in 1891 and was divided into departments representing philosophy, social sciences and history, natural sciences, philology, and the arts. Its structure embodied a conception of national culture in which scientific and artistic achievement belonged to a common project of intellectual maturity (*Czech Academy of Sciences, n.d.*; *Mádlová, 2024*). Under a criterion limited to original research, Hlávka might appear peripheral to the history of science. Under an institutional criterion, he becomes indispensable because his actions created a framework within which other forms of achievement could be recognised, financed and transmitted. His inclusion does not require that patronage be reclassified as scientific discovery. It requires recognition that the history of an academy involves the creation of conditions for science as well as science's intellectual products. The same reasoning may apply to organisers, benefactors and administrators whose contribution can be traced to durable institutional change. Founders should nevertheless be evaluated through what their institutions made possible, not merely through ceremonial status or patriotic reputation.

The early learned societies and ČAVU also depended on secretaries, editors, committee chairs, collectors and correspondents whose labour cannot be captured by a list of presidents. Learned communication required minutes, publication programmes, exchanges with foreign academies, election procedures and the administration of prizes or grants. Collections had to be classified, manuscripts prepared for publication and relations with public authorities maintained. Some of this work appears routine when viewed from the perspective of celebrated intellectual achievements. Yet regularity was itself a historical accomplishment in an environment where scholarly activity depended on patronage, voluntary association and politically negotiated cultural space. The names of such organisers are less familiar precisely because successful administration often disappears into the apparent stability of the institution it created. Their possible inclusion must be based on evidence that their interventions changed the Academy's scope, continuity or capacity. Holding office for a long period is not enough if no distinctive institutional consequence can be demonstrated. Conversely, a short intervention may be decisive when it resolves a financial crisis, launches a major publication or creates a specialised research unit. The criterion therefore separates institutional significance from the formal possession of institutional rank. An office-holder merits sustained treatment when the office became historically different through that person's decisions. This distinction prevents the chapter from becoming either a directory of dignitaries or a retrospective celebration of administrative longevity (*Franc & Mádlová, 2014*; *Mádlová, 2024*).

The foundation of ČSAV in 1952 introduced a different scale and political meaning of academic leadership. The new Academy was not merely a learned society but a centralised system of institutes, planning bodies, disciplinary sections and state-supported research workplaces. Its

leaders possessed greater material and organisational power than the presidents of ČAVU, but they operated within the ideological authority of the Communist Party. Scientific achievement and institutional significance could consequently diverge in particularly complex ways. A distinguished scientist could use political legitimacy to obtain instruments, buildings and personnel for an ambitious research programme. The same person might also participate in appointments, exclusions or public declarations shaped by the political demands of the regime. František Šorm's presidency, for example, cannot be understood only through his standing as a chemist or only through the authority of his office. It must be examined through the development of ČSAV, the internationalisation of research, reformist possibilities and the boundaries imposed by socialist governance. Zdeněk Nejedlý presents a different configuration in which cultural authority, political power and academic reorganisation became inseparable. Such figures belong in the history not necessarily because they should be commemorated, but because the institution cannot be explained without them. Scientific impact and institutional significance are analytical criteria, not a moral honour roll. They permit the inclusion of personalities whose consequences were productive, coercive or deeply ambivalent (*Franc & Dvořáčková, 2019*; *Franc & Dvořáčková, 2024*).

Institutional significance must therefore be normatively qualified rather than treated as a synonym for effective power. A leader may enlarge an institute while narrowing its intellectual freedom. Another may defend disciplinary standards while accepting political discrimination against particular colleagues. The same presidency can contain episodes of genuine scientific modernisation, administrative centralisation and ideological compromise. Selection must not flatten such contradictions into either admiration or condemnation. It should examine decisions concerning appointments, research priorities, international travel, publication, institute reorganisation and responses to political intervention. Particular attention should be paid to the amount of autonomous space a leader created or destroyed for other researchers. Official speeches and institutional self-presentations must be compared with personnel files, correspondence, memoirs and the later testimony of those who experienced the consequences. Titles such as president, academician or director identify a position of authority, but they do not by themselves explain how that authority was exercised. A personality may be historically significant precisely because the effects of his or her leadership reveal the tensions inside a political and scientific order. Including controversial leaders is therefore compatible with critical institutional history, provided that consequence is not confused with virtue. This approach makes it possible to analyse the Academy's achievements without insulating them from the structures of power in which they were produced.

The creation of a research school represents one of the strongest points at which scientific impact and institutional significance converge. A research school is more than a group working temporarily on a similar problem. It possesses methods, standards, intellectual questions, pedagogical practices and mechanisms for reproducing expertise across generations. Its founder or leading organiser may influence science through students and institutional descendants far beyond the reach of his or her personal publications. Czech scientific traditions in chemistry, physics, linguistics, archaeology, historiography, mathematics and the life sciences were often transmitted in this way. The relationship between teacher and pupil also shaped access to employment, research topics, international contacts and eventual leadership. Research on the habitus of Czech scientists has shown that careers were formed through educational trajectories, personal networks, generational experience and historically changing models of scholarly conduct (*Franc et al., 2021*). The creation of schools must

therefore be examined through both intellectual genealogy and the institutional distribution of opportunity. A founder deserves selection when successors can be shown to have extended a recognisable programme, not merely because later commemorations attached a personal name to a broad field. Evidence may include doctoral lineages, collaborative publications, methodological continuity, institute organisation and the movement of students into new centres. The analysis must also identify pupils who transformed or rejected the founder's programme rather than presenting transmission as passive inheritance. In this sense, the builder of a research school links original knowledge with the long-term institutional reproduction of scientific capacity (*Gecko & Pavlíček, 2021*).

The construction of infrastructure provides another form of institutional significance that is easily underestimated by personality-centred narratives. Scientific infrastructures include not only large experimental instruments but also archives, libraries, collections, observatories, dictionaries, bibliographies, field stations and data platforms. They stabilise work that no single project or generation could sustain alone. The scholar who conceives such an infrastructure may contribute to hundreds of later studies without appearing as the author of their conclusions. Directors and project leaders may also have to negotiate with ministries, municipalities, universities, foreign partners and industrial enterprises before a scientific facility becomes possible. Their achievement lies partly in translating intellectual need into administrative, financial and technical form. This work can be especially important in a smaller research system, where the failure to establish one laboratory or corpus may exclude an entire field from international development. Selection should therefore recognise personalities whose infrastructural decisions demonstrably changed the scale, durability or accessibility of research. It should not, however, treat every building programme or directorship as historically important. The essential question is whether the infrastructure generated a continuing scientific capability and whether the individual exercised a distinctive role in its creation. Such evidence connects institutional leadership with the substantive development of knowledge. It also prevents the history of research from being reduced to the final publications that infrastructures made possible.

Historical time complicates the evaluation of both scientific impact and institutional significance. Some discoveries produce an immediate change in research, while others remain marginal until new methods or theoretical problems make them relevant. A lexicographical project may require decades before its cultural importance becomes fully visible. A collection assembled for one purpose may later support questions that its creators could not have anticipated. Political rupture can temporarily erase the influence of a person whose work is recovered only after archives reopen or prohibited texts return to publication. Conversely, an officially celebrated doctrine may disappear quickly once the political power supporting it collapses. Selection must therefore avoid presentism, which judges all earlier work by the questions, values and technical capabilities of the current period. It should ask what a contribution meant within its original field and what subsequent uses or reinterpretations it generated. A theory that is no longer accepted may still have reorganised a discipline or created an influential institute. A method once regarded as minor may become foundational after migration into another field. Institutional significance can also persist through routines, organisational cultures and research facilities even when the founder's name has faded. The relevant unit of analysis is consequently the historical trajectory of influence rather than the reputation attached to one moment.

Disciplinary variation creates an equally important methodological challenge. A physicist may establish impact through experimental results reproduced internationally, while a historian may reshape interpretation through a monograph and a major edition of sources. A linguist may spend decades constructing a dictionary whose influence is distributed across education, public language and later scholarship. A mathematician may produce work of profound theoretical importance whose practical consequences emerge much later. An inventor may be remembered through a product, even though the deeper achievement lay in a material, process or experimental technique. A social scientist may influence public policy without achieving the citation profile of a laboratory discipline. Applying one measure to all these careers would reproduce the hierarchy of fields most compatible with international journal metrics. The Academy's own mission recognises a broad spectrum of natural, technical and social sciences and the humanities, each contributing differently to international knowledge and Czech society (*Czech Academy of Sciences, n.d.*). Scientific impact must therefore be defined within a discipline's historical forms of communication, evidence and use. Comparison remains possible, but it should concern the magnitude and durability of contribution rather than identical kinds of output. This contextual approach protects the chapter from treating disciplinary difference as inequality of intellectual value. It also prepares the ground for the explicit representational criteria considered in "Representation of Disciplines, Periods, and Research Schools".

The selection of personalities is also an exercise in source criticism because the surviving archive is uneven. The Masaryk Institute and Archives of the Czech Academy of Sciences preserves institutional records, personal fonds, photographs, correspondence and oral testimonies relating to the Academy and its predecessors. These materials make it possible to connect published achievement with daily scientific work, career development and institutional decision-making. Yet the existence of a rich personal fonds can itself reflect prestige, family decisions, archival acquisition policies and the perceived importance of a scholar at the time of collection. Marie Bahenská's research on women scientists found that only a small number of female personal fonds formed a clearly identifiable part of the archive, while evidence about women was also dispersed through institutional and family collections (*Bahenská, 2021*). Archival absence cannot therefore be interpreted as proof of historical insignificance. ČSAV personnel records may document formal careers while revealing little about intellectual collaboration or unofficial exclusion. Memoirs can illuminate motives and relationships, but they are shaped by retrospective self-presentation and later political knowledge. Published commemorations tend to emphasise institutional harmony, successful projects and recognised leaders. A credible selection must triangulate these genres rather than allowing one archive or commemorative tradition to dictate the hierarchy of names. Where evidence is limited, the text should distinguish documented influence from plausible inference. Evidentiary transparency is especially important when recovering personalities whose careers were interrupted or whose contributions were absorbed into collective results.

Gender provides one of the clearest tests of whether the criteria are genuinely historical or merely reproduce inherited visibility. ČAVU did not open full membership to women until 1923, and the writer Eliška Krásnohorská became its first elected woman in the following year (*Czech Academy of Sciences, n.d.*). Women had nevertheless participated in scholarship, education, archives, museums, laboratories and intellectual networks long before formal equality of membership. Structural restrictions affected access to university posts, professional titles, travel, laboratories and positions of academic authority. If selection relies exclusively on

professorships, academy membership or institute directorships, it will convert historical exclusion into apparent absence of achievement. The Matilda effect explains how recognition may be shifted away from women even when their intellectual or technical contribution was substantial (*Rossiter, 1993*). Correcting this distortion does not require lowering the standard of evidence or constructing symbolic inclusions unrelated to the Academy's history. It requires evaluating contribution under the actual constraints that shaped the possibilities of a career. Women who developed methods, maintained collections, organised research or created scholarly networks should be assessed through the same categories of consequence and durability applied to men. Their institutional significance may also lie in crossing barriers that changed the opportunities available to later generations. At the same time, gender should not become the only interpretative category attached to a female scientist's work. A balanced selection restores intellectual agency while showing how institutions distributed recognition and authority unequally (*Bahenská, 2021*).

Political exclusion produces a related challenge because formal careers often record the decisions of regimes as though they were judgements of scientific merit. The closure of Czech universities under Nazi occupation disrupted education, employment and the reproduction of research communities. The Communist seizure of power after 1948 altered appointments, institutional structures and permissible research orientations. The purges following the defeat of the Prague Spring removed, demoted or marginalised scholars whose work no longer satisfied political requirements. Emigration separated researchers from Czech institutions while sometimes allowing their scientific careers to continue abroad. In such cases, institutional significance may be revealed paradoxically through absence. The removal of a scholar can expose the dependence of an institute on expertise that political authorities were willing to sacrifice. Selection should therefore include personalities whose interrupted careers demonstrate capabilities that the Academy lost, dispersed or later attempted to recover. Work undertaken in exile may belong simultaneously to international science and to the history of a Czech or Czechoslovak research tradition. Post-1989 rehabilitation can restore a name to institutional memory, but it cannot retrospectively reconstruct missed collaborations, destroyed schools or unrealised projects. The relevant criterion is not suffering alone, since repression does not automatically establish intellectual importance. It is the combination of documented scientific contribution, institutional connection and the historical consequences of exclusion (*Franc et al., 2021*).

Some personalities acquire institutional significance by defending scientific autonomy when formal structures fail to protect it. Autonomy is not an abstract possession held permanently by an academy through statutes or declarations. It is enacted through decisions about appointments, publication, research priorities, professional solidarity and relations with political authority. A director may refuse an ideologically motivated dismissal, preserve a prohibited archive or maintain contact with an excluded colleague. A research leader may use international prestige to secure room for methods or questions considered politically inconvenient. After a political rupture, another personality may reopen an institute, rehabilitate staff and restore standards that had been displaced by loyalty tests. Otto Wichterle became symbolically important because his career connected globally recognised invention, conflict with political administration and leadership during the democratic transformation. The Academy's own historical account identifies both the worldwide recognition of his contact-lens invention and his role as the first president after the restoration of democracy in Czechoslovakia (*Czech Academy of Sciences, n.d.*). His institutional significance cannot be

reduced to the moral prestige generated by earlier persecution, just as his scientific achievement cannot alone explain his later authority. A rigorous profile must examine what he actually changed, which reforms he enabled and where the possibilities of his leadership remained constrained. The criterion of autonomy thus integrates ethical responsibility into institutional history without turning the chapter into a collection of secular saints. It recognises that scientific institutions are shaped by people who make consequential choices under conditions they did not choose.

Scientific impact also includes consequences for society, language and national culture. The compiler of a dictionary may influence education and public communication more broadly than a highly specialised article. A historian can alter the evidentiary foundations through which citizens understand war, dictatorship, statehood or democratic transformation. A philosopher may reconnect a suppressed intellectual tradition with international debate and public ethics. An economist or sociologist can provide concepts and data that improve the diagnosis of inequality, institutional trust or policy reform. An inventor may affect everyday life while simultaneously creating industrial and scientific opportunities. These effects accord with the Academy's dual orientation towards international knowledge and the specific needs of Czech society. A personality should nevertheless not be selected merely because he or she became a familiar public intellectual. Public fame may arise from political visibility, media skill or symbolic representation without a correspondingly durable contribution to research. Conversely, a scholar with little public recognition may have created a corpus, archive or methodological standard of profound cultural importance. The selection must therefore trace the relationship between scholarly work and social consequence rather than treating publicity as impact. Public relevance becomes historically meaningful when it is grounded in demonstrable expertise and changes the resources available to institutions, communities or later researchers. This criterion allows national cultural importance to enter the analysis without subordinating science to patriotic commemoration.

International recognition provides important evidence of scientific impact, but it also requires contextual interpretation. Nobel Prizes, major disciplinary awards, foreign academy memberships and invited leadership in international organisations can demonstrate that a contribution crossed national boundaries. International publications and collaborations may reveal influence even when no singular prize was awarded. The ability to attract foreign researchers, establish a multinational facility or represent Czechoslovak science in global organisations can itself be institutionally significant. Yet international visibility varies across disciplines, languages and political periods. A Nobel Prize constitutes exceptionally powerful evidence of recognition, but the absence of such an award says little about the importance of most fields. Awards also reflect nomination networks, geopolitical access, disciplinary fashion and the cumulative advantages of already prestigious institutions. ČSAV's own plaques demonstrate that systems of honour could mix scientific judgement with political loyalty, including awards to political figures who were not scientists (*Digital Humanities Czech Academy of Sciences, n.d.*). Contemporary Academy prizes use differentiated categories for research, young scientists, public communication, disciplinary achievement and service to the institution. This plurality indicates that prestige itself contains several kinds of recognised contribution (*Czech Academy of Sciences, 2024*). Selection must therefore ask who conferred recognition, according to which standards and with what later confirmation. International relevance is strongest when external honour corresponds to durable intellectual influence rather than replacing the need to demonstrate it.

A transparent selection method should bring these considerations together without pretending that they can be reduced to an arithmetic score. The first dimension is originality: whether the person introduced a discovery, interpretation, method, technology or organisational idea that was not merely routine. The second is durability: whether the contribution continued to shape research, institutions or public knowledge beyond an immediate project. The third is institutional formation: whether the person created, transformed, defended or connected structures capable of supporting further work. The fourth is transmission: whether methods, standards and expertise passed to students, collaborators or successor institutions. The fifth is autonomy and responsibility: how the person used authority under political or administrative pressure. The sixth is reach: whether influence remained local, became nationally important or entered international science. The seventh is corrective significance: whether inclusion restores contributions obscured by political repression, unequal recognition or archival invisibility. These dimensions should guide reasoned judgement rather than generate a league table. A candidate may be exceptionally strong in one dimension and modest in another. Inclusion becomes most convincing when several dimensions converge or when one contribution proved indispensable to a decisive institutional transformation. Each profile should make this reasoning visible instead of assuming that the reader already accepts the fame of its subject.

These criteria also determine the narrative form of the remaining sections of Chapter 15. Each selected personality should be placed at a historical hinge where an individual career illuminates a wider transformation. A founder can reveal the passage from national aspiration to durable academic organisation. A ČSAV leader can show how scientific ambition interacted with central planning, ideological authority and international competition. A discoverer or inventor can connect laboratory practice with research schools, infrastructure and technological use. A humanist can demonstrate how institutions preserve language, archives and critical memory. An exiled or rehabilitated scholar can reveal the losses produced by political rupture and the difficulty of restoring continuity. The chapter is therefore not intended to become a comprehensive biographical dictionary of everyone associated with the Academy. Its selection is exemplary rather than exhaustive, and omission should not be interpreted automatically as a judgement of insignificance. The chosen group functions as a historical cross-section of the Academy's changing forms of scholarly agency. Earlier chapters established the institutional, disciplinary and political structures within which these lives unfolded. Scientific impact and institutional significance now prevent the personalities from becoming a detached gallery appended to that history. They allow the reader to see the Academy simultaneously as an organisation built by people and as a scientific community that made particular kinds of achievement possible.

Thus, scientific impact and institutional significance provide complementary rather than competing foundations for selecting personalities in the history of the Czech Academy of Sciences. Scientific impact identifies those who changed knowledge, methods, evidence, technology, cultural interpretation or the practical possibilities of research. Institutional significance identifies those who created organisations, research schools, infrastructures, standards, resources and spaces of autonomy through which such change could become durable. Neither fame nor office is sufficient on its own, because recognition is shaped by disciplinary hierarchies, cumulative advantage, gender inequality and political power. Discoverers must be situated within teams, while organisers must be judged through the scientific consequences of the structures they created. Leaders of authoritarian institutions

require critical analysis that distinguishes effective organisation from ideological control. Exiled, repressed and insufficiently recognised scholars must be assessed through evidence of contribution rather than through formal careers distorted by exclusion. Metrics, prizes and international honours remain useful, but only as contextual evidence within a broader historical judgement. Different disciplines require different indicators of influence, from experiments and patents to dictionaries, editions, archives and concepts. Institutional memory must therefore be tested against publications, personal fonds, correspondence, collective careers and the later development of research programmes. The resulting selection should neither reproduce an official pantheon nor replace it with a counter-pantheon determined by present-day preferences. It should identify lives through which the evolving relationship between scientific achievement, academic authority and public responsibility becomes historically intelligible. On this basis, the following discussion can address how disciplines, periods and research schools should be represented without sacrificing analytical significance to mechanical proportionality.

2. Representation of Disciplines, Periods, and Research Schools

The second criterion concerns the representativeness of the selected personalities across disciplines, historical periods and research schools. Representation is not a neutral technical procedure, because every distribution of names creates an implicit interpretation of the Academy's history. A concentration on chemists and physicists would emphasise internationally visible discoveries, laboratories and technological applications. A predominance of historians, linguists and philosophers would instead foreground national culture, memory and the intellectual consequences of political change. Selection only from the socialist and post-socialist periods would make ČSAV appear to be the true beginning of academy-based research. Excessive attention to early learned societies, by contrast, could obscure the organisational transformation produced by the establishment of permanent research institutes. A representative chapter must therefore cover the Academy's disciplinary breadth without pretending that every field possessed the same institutional weight in every period. It must acknowledge the unequal duration, size, resources and public visibility of different branches of research. It must also distinguish a genuine research school from a temporary group gathered around one project or administrator. Mechanical equality would be as misleading as unexamined concentration on the most famous disciplines. The aim is proportional historical representation based on explanatory significance rather than a quota derived from present-day organisational charts. This criterion should make the selected personalities appear as a coherent but plural cross-section of Czech academic science rather than as a random collection of distinguished names.

The apparent stability of disciplinary labels can conceal extensive historical change. Mathematics, chemistry, linguistics, biology and history retained recognisable names, but their questions, methods, professional boundaries and institutional locations changed profoundly. New disciplines emerged through specialisation, while older ones were reorganised through methodological and technological convergence. Richard Whitley's analysis of the intellectual and social organisation of the sciences demonstrates that fields differ in their dependence on shared standards, reputational control, technical coordination and concentrated resources (*Whitley, 2000*). A discipline is therefore not merely a subject listed in an Academy statute. It is a community organised around problems, methods, forms of

authority and mechanisms for reproducing expertise. Thomas Gieryn's concept of boundary-work further shows that the limits of science and its component fields are actively negotiated rather than simply discovered (*Gieryn, 1983*). Philology in the 19th century combined linguistic analysis, literary scholarship, textual criticism and national cultural work in ways that no contemporary administrative category fully reproduces. Cybernetics crossed mathematics, engineering, physiology and philosophy while carrying sharply changing political meanings under socialism. Molecular biology developed through the convergence of genetics, biochemistry, microbiology, immunology and increasingly sophisticated instrumentation. Historical representation cannot retroactively force all such careers into the disciplinary divisions of the contemporary Academy. It must locate personalities within the intellectual boundaries that existed during their own work and then explain how those boundaries changed.

The early learned society period requires a particularly broad understanding of disciplinary representation. Enlightenment scholars often combined interests that would later be distributed among several specialised professions. Natural history depended on collecting, classification, travel, correspondence and the description of regional environments. Historical scholarship could include antiquarian research, philology, genealogy, numismatics, archaeology and the editing of documents. Mathematical and physical inquiry was connected with astronomy, cartography, surveying, technical education and the practical service of the state. Language scholarship participated in the construction of grammars, dictionaries and literary standards while also serving the cultural ambitions of the Czech national movement. The Royal Czech Society of Sciences united natural sciences and the humanities within a learned institutional space rather than a system of permanent disciplinary institutes. Personalities from this period should therefore be selected partly for their ability to show how fields were being constituted. Hybrid scholarly careers are not evidence of insufficient specialisation but characteristic expressions of the learned culture of their time. The scientific meaning of correspondence, collections and publication programmes must be assessed within this context. Applying the categories of contemporary laboratory science would underestimate both the intellectual ambition and the institutional novelty of these activities. Early representation should accordingly be organised around emerging scholarly practices as well as later-recognised disciplines. The selected personalities should show the passage from polymathic learned culture to increasingly differentiated professional science (*Czech Academy of Sciences, n.d.*; *Franc & Mádlová, 2014*).

The foundation of the Emperor Franz Joseph Czech Academy for Sciences, Literature and Arts introduced a more explicit classification of intellectual activity. Its four departments represented philosophy, social sciences and history; natural sciences; philology; and the fine arts, music and literature. This structure expressed a national conception of the academy broader than the later model of a non-university research organisation. Scientific and artistic creation belonged to a common institutional claim that Czech culture had reached intellectual maturity. Representation of ČAVU must therefore include natural scientists, philologists, historians and cultural figures capable of explaining this original institutional breadth. Equal numbers from all four departments would nevertheless be artificial, because the departments differed in membership, activity, research infrastructure and relation to universities. Many members conducted their primary research elsewhere and used the Academy chiefly for publication, recognition, grants or scholarly representation. The importance of a personality must therefore be connected with what he or she did through ČAVU rather than inferred from

membership alone. The division of the natural sciences department into five sections in 1928 reflected the continuing movement towards disciplinary specialisation. Mathematics and physics, chemistry and earth sciences, biology, medicine and technical fields acquired more differentiated forms of representation within the Academy (*Czech Academy of Sciences, n.d.*). Personalities selected from this period should make that transition visible instead of presenting ČAVU as institutionally unchanged between 1891 and 1952. The resulting account must preserve the Academy's relationship with the arts and national culture without transforming Chapter 15 into a general pantheon of Czech artistic fame (*Mádlová, 2024*).

The establishment of Czechoslovakia in 1918 created another distinctive disciplinary environment. New statehood expanded the demand for expertise in law, economics, statistics, public health, agriculture, archaeology, geography, Oriental studies and Slavonic studies. Universities, state institutes, learned societies and professional associations formed an increasingly dense national research system. The Academy remained important, but it was no longer the only institution capable of representing Czech or Czechoslovak scholarship. Some of the most consequential research schools developed primarily at universities while maintaining connections with ČAVU through membership, prizes, publications and committees. Others grew within newly established state institutes that later entered ČSAV. A selection limited to personalities permanently employed by direct Academy predecessors would therefore miss important institutional genealogies. The relevant question is whether a scholar's work contributed to research traditions, bodies or networks that became part of the later Academy. Cross-institutional careers deserve particular attention because they reveal how university teaching, state expertise and non-university research reinforced one another. The interwar period should not be treated merely as a preparatory interval between national revival and the socialist academy. It possessed its own culture of professionalisation, international representation and disciplinary ambition. Its personalities must be selected as actors within that institutional ecology rather than as imperfect predecessors of structures created after 1952 (*Franc & Mádlová, 2014*; *Franc et al., 2021*).

Historical periods should not be defined only by evenly spaced calendar divisions. Political and institutional ruptures can transform scientific careers more rapidly than the passage of several ordinary decades. The Nazi occupation closed Czech universities, restricted scholarly life and placed institutions and individuals under conditions of repression, adaptation and survival. The post-war years reopened scientific institutions but also generated competing proposals for their reorganisation. Existing committees and research units began to acquire more permanent institutional forms before the legal establishment of ČSAV. Personalities who connected ČAVU, state institutes and the new socialist Academy are therefore essential for understanding continuity across formal rupture. A short transitional period may require substantial representation when it changed the rules governing appointments, property, authority and disciplinary organisation. Conversely, a longer period of relative stability does not automatically require a proportionally larger number of profiles. Transitional density matters as much as chronological duration. The occupation should not be represented solely through victimhood, because scholars also preserved collections, continued research where possible and prepared for post-war renewal. The years from 1945 to 1952 should likewise not be narrated as an inevitable march towards the Soviet academy model. Selection must reveal the alternatives, negotiations and individual decisions through which one institutional future prevailed over others. Period representation is therefore interpretative: it identifies moments when careers illuminate fundamental changes in the conditions of knowledge.

The creation of ČSAV in 1952 transformed disciplinary representation from the structure of a learned society into the architecture of a large state research organisation. Existing research units were incorporated, new institutes were established and scientific work became subject to central planning. Natural and technical sciences received considerable material and political attention because they were associated with industrialisation, defence, medicine and socialist modernisation. Humanities and social sciences remained institutionally present, but their research agendas and leadership were more directly exposed to ideological supervision. A selection based simply on the number or size of institutes would reproduce the priorities established by the socialist state as though they constituted a neutral hierarchy of knowledge. Yet ignoring the expansion of laboratory science would be equally misleading, because ČSAV created capacities that profoundly shaped post-war Czech and Slovak research. Representation must distinguish the scale of state investment from the lasting intellectual value of its outcomes. Founders of new institutes, laboratories and technical programmes deserve attention when they transformed the national ability to conduct research. Smaller fields may require fewer personalities, but they should not disappear merely because they employed fewer people or lacked expensive instruments. Disciplines subjected to ideological restriction may be historically important precisely because their autonomy was unusually difficult to preserve. The final selection should consequently include dominant, marginalised and newly emerging fields. Through their personalities, readers should be able to see how planned science redistributed resources, authority and disciplinary prestige (*Franc & Dvořáčková, 2019*).

The 1960s require particularly careful representation because disciplinary growth, methodological renewal and political reform converged during a relatively short period. Czechoslovak chemistry, physics, mathematics, biology and parts of the humanities gained stronger international visibility. Cybernetics, molecular biology, sociology and modern economic thought challenged some of the intellectual restrictions inherited from the Stalinist period. Research institutes developed more ambitious programmes, while international travel and scholarly exchange became increasingly possible. New or renewed research schools emerged around leaders capable of joining local expertise with global developments. The presidency of František Šorm symbolised the close relationship between disciplinary authority, institute-building and reform within ČSAV. His chemistry background and organisational methods influenced both the prestige of his own field and the wider management of the Academy. The Prague Spring also demonstrated that disciplinary reform could not be separated from demands for academic autonomy and political liberalisation. Research schools were embedded in these wider struggles even when their immediate subject matter appeared politically neutral. Because the achievements and conflicts of the 1960s shaped both the later normalisation purges and post-1989 rehabilitation, the period carries influence beyond its duration. Personalities associated with it should therefore be followed across 1968 rather than confined to a closed decade. Representation should be weighted by the density of transformation and not merely by the number of years covered (*Franc & Dvořáčková, 2024*; *Franc, 2024*).

The normalisation period from 1969 to 1989 creates a different danger of imbalance. If represented only through ideological stagnation, it would appear as an empty interval between the creative 1960s and democratic transformation. In reality, political repression coexisted with continuing research, generational renewal and the maintenance of complex institutes. Some natural and technical fields retained international standards even while mobility and

communication were constrained. Humanities and social sciences faced more direct ideological intervention, but they also preserved important forms of expertise, source work and disciplinary memory. The personalities selected for this period should therefore include more than dissidents and purged reformers. Compliant institutional leaders, researchers pursuing internationally relevant work within official structures and scholars preserving competence in less visible positions all formed part of the Academy's history. Their inclusion does not imply moral equivalence, because the political consequences of their choices remained very different. It does, however, prevent the period from being reduced to a simple opposition between heroic resistance and intellectual failure. Research schools could survive through altered terminology, careful topic selection, technical concentration or the informal transmission of methods. Younger researchers trained during normalisation later became important participants in post-1989 reconstruction. Since the period lasted two decades, its personalities must be selected to demonstrate change within normalisation as well as continuity across it. Disciplinary and generational variety can reveal the mixed institutional legacy of political control, professional adaptation and preserved scientific capacity.

The democratic transformation after 1989 also requires restraint in the distribution of personalities. It produced reformers who restructured institutes, rehabilitated excluded scholars, rebuilt international links and established new mechanisms of evaluation and self-government. Some inherited disciplines survived through adaptation, while other departments and institutes were closed, merged or substantially reorganised. The Institute of Contemporary History and renewed forms of sociology, economics, law and philosophy responded directly to democratic and post-socialist questions. After 1993, European programmes, international mobility, competitive funding and large research infrastructures reshaped careers across the Academy. The relative abundance of documentation, interviews and living witnesses makes this period easier to describe biographically than earlier centuries. That evidentiary advantage can create an unintended inflation of contemporary representation. The careers of living researchers may also remain unfinished, making long-term scientific influence difficult to judge. Selection should therefore require already demonstrable institutional or intellectual consequences rather than relying on present visibility. Presidents and reformers merit inclusion when their actions changed the Academy's structure, legitimacy or relationship with the Czech research system. Scientists from recent decades should be chosen when their achievements have received sustained recognition or produced durable schools, technologies and infrastructures. Period balance demands that contemporary familiarity should not displace historically less documented but foundational personalities.

The current organisation of AV ČR provides a useful check on disciplinary breadth, although it cannot serve as a template for every earlier period. The Academy groups its institutes into three major research areas and nine sections. Mathematics, physics and earth sciences include mathematical, computational, experimental, technical and environmental fields. Life and chemical sciences encompass chemistry, biomedicine, molecular research, organismal biology and ecological sciences. Humanities and social sciences include economics, sociology, law, psychology, history, archaeology, philosophy, language and cultural research. The official descriptions show that even individual sections contain a wide range of theoretical, experimental and applied practices (*Czech Academy of Sciences, n.d.*). This structure can be used to test whether the selected personalities leave a major component of the modern Academy entirely unexplained. It does not require one profile from every institute or an equal number from each scientific area. A smaller institute may represent a historically distinctive

Czech contribution, while a large area may require several personalities to explain separate schools and transformations. Chemistry alone contains electrochemistry, physical chemistry, macromolecular science, organic chemistry, biochemistry and chemical engineering traditions. The historical sciences similarly include source editing, medieval studies, contemporary history, archaeology, historical geography and art history. The present structure is consequently a benchmark for breadth rather than a retrospective classification imposed on all previous centuries.

Proportionality should therefore be understood qualitatively rather than statistically. Academy institutes differ greatly in personnel, cost, publication volume and dependence on specialised infrastructure. A physics or biomedical institute may require hundreds of employees and substantial technical facilities. A philosophical or mathematical research group can produce significant work with far fewer material resources. These differences do not establish a direct scale of intellectual importance. Nor does the number of present institutes reveal the historical prominence of a discipline in earlier academy structures. Strict equality among scientific areas could create an artificial balance that obscures genuine concentrations of achievement. Representation should instead correspond to the role a discipline played in explaining institutional change and nationally or internationally important research. Every major domain nevertheless requires a reasonable minimum presence, since complete omission would imply that its work was peripheral to the Academy's identity. A preliminary selection matrix can reveal where prestige has produced excessive concentration in a few celebrated fields. Overrepresentation may be justified when a discipline generated several distinct schools or discoveries, but the reason should be made explicit. Proportionality is therefore achieved through informed comparison of historical consequence rather than numerical symmetry.

Interdisciplinary careers further complicate the allocation of personalities to disciplinary categories. Many of the Academy's strongest traditions developed at boundaries between established fields. Physical chemistry joined experimental physics, chemical analysis and theories of matter. Biochemistry and molecular genetics transformed questions previously divided among chemistry, biology and medicine. Cybernetics, computer science and information theory crossed mathematics, engineering, physiology and social thought. Environmental research brought together atmospheric physics, ecology, hydrology, geology, remote sensing and public policy. Digital humanities now connect philological and historical expertise with databases, computational analysis and research infrastructures. A personality working across such boundaries should not be forced into one disciplinary box as though the remaining dimensions of the career were secondary. Primary placement may be necessary for narrative organisation, but cross-disciplinary influence should be made visible in the profile. Some selected figures can represent the productive interaction of several fields and thereby reduce unnecessary duplication. Interdisciplinarity should not, however, become an excuse for leaving a major domain without a recognisable personality of its own. The reader must still be able to see the distinct historical development of the Academy's principal intellectual cultures. Representation should therefore resemble a connected map rather than a collection of sealed disciplinary compartments.

The research school offers a scale of analysis between the individual personality and the formal institution. It is not identical to an institute, since one institute may contain several competing schools and one school may operate across multiple institutions. Ludwik Fleck's concept of the thought collective emphasised that knowledge develops through communities sharing practices, concepts and a characteristic thought style (*Fleck, 1979*). Such

communities shape what their members can observe, formulate and accept as a scientific problem. Whitley similarly demonstrated that disciplines differ in the organisation of intellectual dependence and reputational control (*Whitley, 2000*). A research school normally combines an influential leader or founding group with shared problems, methods, training practices and standards of judgement. It may possess a distinctive instrument, collection, seminar, publication series or laboratory culture. Some schools are explicitly named after a founder, while others are recognised through a city, institution, method or research object. A school can outlive its original organisational location when students migrate or create new centres. It may also decline despite institutional continuity if its intellectual programme ceases to generate productive questions. Political authorities and anniversary narratives can retrospectively invent a "school" where only administrative unity existed. Representation must therefore rest on evidence of intellectual and social continuity rather than ceremonial vocabulary.

Identifying a vocabulary research school requires attention to several kinds of evidence. Teacher–student relations are important, but formal supervision alone does not prove the transmission of a distinctive programme. Co-authorship demonstrates collaboration, yet a short publication partnership may not create a durable collective identity. Stronger evidence appears when successive researchers share methods, research questions, instruments and standards of proof. The movement of pupils into new institutes can reveal the geographical or institutional expansion of a school. Seminar records, correspondence, doctoral trajectories, collective publications and internal evaluations help reconstruct these relationships. External recognition by other specialists may confirm that contemporaries perceived a distinctive Czech or Czechoslovak contribution. Institutional commemorations remain useful sources, but they often concentrate achievement around a founder and suppress internal disagreement. A representative selection may therefore include both the founder and a successor who substantially transformed the inherited programme. It need not provide individual biographies of every participant, because carefully constructed group portraits can preserve collective agency. Rivalries, defections and methodological disputes should be included when they changed the school's direction. Research on Czech scientific careers and teacher–pupil relations provides a valuable basis for distinguishing durable schools from temporary teams (*Franc et al., 2021*; *Gecko & Pavlíček, 2021*).

The development of Czechoslovak chemistry illustrates how a research-school perspective changes the representation of personalities. František Šorm did not merely direct a successful institute or publish influential chemical research. He helped establish a form of large-team investigation oriented towards coordinated problems, practical possibilities and sustained institutional development. The Institute of Organic Chemistry and Biochemistry became a major centre from which several specialised institutes and programmes emerged. Its history connected organic chemistry, biochemistry, pharmacology, chemical technology, molecular genetics and macromolecular science. Otto Wichterle created an important institutional and intellectual branch through macromolecular chemistry. Antonín Holý later developed antiviral chemistry within a continuing institute culture that combined fundamental work with medically transformative applications. Martin Franc has shown that aspects of Šorm's managerial and research model remained visible at IOCB even after the political and organisational order in which it originated had disappeared (*Franc, 2024*). Representation should therefore avoid presenting Šorm, Wichterle and Holý as three isolated geniuses accidentally associated with the same Academy. Their distinct achievements belong to a branching institutional genealogy

containing cooperation, conflict, separation and adaptation. This rich tradition may justify several chemical personalities, but its abundance of famous names should not allow chemistry to dominate the chapter automatically. The research-school approach explains why multiple profiles may be necessary while also making the concentration methodologically accountable.

The Czechoslovak immunogenetic school provides an even clearer example of the intersection among discipline, period and collective identity. Its roots lay in the Department of Experimental Biology and Genetics headed by Milan Hašek from the early years of ČSAV. The Institute of Experimental Biology and Genetics was established in 1962, with Hašek serving as its first director. During the 1960s, a community including Pavol and Juraj Iványi, Jan Klein, Tomáš Hraba, Ivan Hilgert, Věra Hašková and Alena Lengerová developed internationally important work in immunogenetics. Its achievements were connected with immunological tolerance, transplantation biology, cellular recognition and emerging molecular approaches. Several members contributed to research of Nobel-level significance even when the final prizes went to scientists working elsewhere. The suppression of the Prague Spring disrupted the school through the removal of Hašek, restricted international contacts and the emigration of promising researchers. Some emigrants subsequently achieved exceptional careers abroad, turning a Czech institutional rupture into the international dispersal of a research tradition. A selection centred only on Hašek would capture the symbolic founder but conceal the collective and transnational dimensions of the school. Including one or more representatives of its dispersed generation may therefore be necessary to show the full historical consequence of the Academy environment. The school links disciplinary innovation, the political atmosphere of the 1960s, normalisation and exile within a single analytical configuration. Its history demonstrates why research schools can provide a more meaningful basis of representation than formal institute leadership alone (*Institute of Molecular Genetics of the Czech Academy of Sciences, n.d.*).

Research schools in the humanities require criteria adapted to different forms of collaboration and transmission. They may develop around source criticism, editorial practice, theoretical vocabulary, linguistic description or a shared interpretation of cultural history. Their material foundations can include archives, dictionaries, bibliographies, text corpora, journals and long-running editions rather than experimental instruments. Intellectual leadership may be exercised through seminars, editorial boards and critical debate rather than laboratory direction. The effects of a school may become visible slowly as concepts enter university teaching or reshape national historiography. Czech linguistic traditions, historical scholarship, philosophy and literary studies all produced such patterns of collective work. The Institute of History demonstrates how source publication, specialised research and scholarly infrastructure survived institutional and political transformations. After 1968, leading historians were removed or marginalised, and the institute's research profile was politically restructured. Following 1989, the leadership of František Šmahel helped restore international cooperation, methodological plurality and institutional legitimacy. His successors developed editions, bibliographies, dictionaries, journals and new research directions within the renewed institute (*Institute of History of the Czech Academy of Sciences, n.d.*). Representation may therefore connect expelled scholars, post-1989 reformers and the infrastructures through which historical expertise was reconstructed. Humanities schools should be identified through intellectual programmes and durable scholarly practices rather than through imitation of a laboratory model.

Generational representation adds another dimension that cannot be reduced to institutional periodisation. Karl Mannheim argued that generations are shaped not simply by biological age but by shared location within major historical experiences (*Mannheim, 1952*). Scientists who entered professional life before the First World War did not encounter Czechoslovak statehood in the same way as those educated after 1918. The closure of Czech universities in 1939 affected established professors, junior assistants and students differently. Scholars already secure in their careers before 1948 possessed other institutional resources than researchers whose advancement depended entirely on the socialist system. The generation formed during the relative openness of the 1960s experienced normalisation as a rupture in expectations, while younger colleagues might have known no other professional order. In 1989, senior excluded scholars, established ČSAV researchers and early-career scientists approached reform from distinct positions. Selecting only the leaders who held office at each turning point would conceal these generational differences. A representative chapter should include bridge generations as well as figures identified strongly with one institutional era. It should show how teachers transmitted practices to students whose political and technological environments differed radically from their own. Generational comparison also helps explain why the same reform, institution or international opportunity could carry different meanings for contemporaries. Representation across periods thus requires attention to lived historical formation and not merely dates of employment (*Franc et al., 2021*).

Personalities whose careers crossed institutional ruptures are especially valuable for this purpose. A scholar might begin in a university or ČAVU committee, enter a state institute and later participate in the founding of ČSAV. Another might be trained within a privileged socialist institute, removed after 1968 and continue the same research tradition abroad. A younger member of that school might return after 1989 or help reconnect an Academy institute with former émigré colleagues. Such careers expose continuities that formal institutional histories can easily conceal. They also show that knowledge does not disappear or reappear at the exact moment when laws change an organisation’s name. Long careers are not automatically significant, since duration alone may produce little intellectual or institutional consequence. The relevant question is whether the person’s role changed in a way that illuminates adaptation, resistance, transfer or reconstruction. Biographical treatment should therefore divide careers into analytically meaningful phases rather than present them as uniform stories of progress. The same personality may represent different disciplines or institutional cultures at successive moments. This temporal mobility makes some figures more explanatory than individuals whose achievement, however distinguished, remains confined to one stable environment. Transitional personalities help prevent ČAVU, ČSAV and AV ČR from appearing as sealed historical containers. Their selection strengthens the book’s central concern with continuity and institutional rupture.

Representation must also include research schools and disciplinary possibilities that were damaged, dispersed or left unrealised. A history written only through successful lineages will make institutional development appear more orderly than it was. Political purges interrupted mentorship, separated teams and prevented promising researchers from establishing independent programmes. Administrative mergers sometimes preserved resources but dissolved a distinctive intellectual culture. The closure or radical reorientation of an institute could eliminate a field from the Academy even when individual researchers continued elsewhere. Selecting a personality associated with such a failed or interrupted school can reveal the cost of institutional decisions. The significance lies not in constructing speculative

achievements that never occurred, but in documenting capabilities and connections that were demonstrably present before disruption. The dispersal of the immunogenetic school after 1968 is one example of how national loss could coexist with international scientific success. The removal of historians and social scientists during normalisation similarly affected the methodological development of their disciplines. These negative cases prevent survivorship bias from determining the historical sample. They also make rehabilitation after 1989 intelligible as more than the restoration of names to ceremonial memory. A critical representation of research schools must account for losses, abandoned trajectories and delayed renewal alongside celebrated continuity.

Disciplinary schools also possessed a territorial dimension, although geography should not be converted into another rigid quota. Prague concentrated the central Academy leadership, major universities and many of the largest institutes. This concentration gave Prague-based scholars greater access to decision-makers, archives, learned networks and public visibility. Brno nevertheless developed important centres in physics, scientific instrumentation, materials research, linguistics, archaeology, biology and the earth sciences. Other Academy workplaces, observatories, field stations and specialised facilities linked scientific practice with particular landscapes and regional environments. Location could shape research questions, access to collections and forms of cooperation with universities or industry. A regional school should therefore not be included merely to produce symbolic territorial diversity. It merits representation when its locality contributed to a distinctive intellectual or institutional configuration. The present organisation of the Academy continues to distribute institutes and research facilities beyond the capital, even though Prague remains dominant (*Czech Academy of Sciences, n.d.*). Selection should be checked for unintentional metropolitan bias, especially where equivalent achievements are documented elsewhere. Movement between Prague, Brno, Bratislava and foreign centres can itself reveal the networked geography of Czechoslovak science. Territorial attention thus supports disciplinary and school-based representation without replacing scientific significance as the primary standard.

A research school should not be represented solely through its most authoritative leader. Founders often define the initial programme, but successors determine whether that programme becomes a durable tradition. Junior researchers may introduce methods that the founder did not understand or initially resisted. Women, technicians and collaborators can perform essential work while remaining marginal in later commemorative narratives. Emigrants may carry a school into international science, whereas those who remain preserve its local institutional base. Rival groups can sharpen methods and produce innovation through disagreement. A balanced profile should therefore describe the internal distribution of authority within the school. It may select one founder, one transformative successor or one displaced member when their combined careers explain the school more effectively than a single heroic biography. Not every participant requires a separate full profile, because collective passages can preserve the visibility of associated researchers. The identity of a school should also not erase the originality of individuals who departed from its prevailing style. Intellectual inheritance includes revision, competition and rejection as well as loyalty. Representing schools through several strategic nodes allows personalities to remain individual agents while revealing the collective conditions of their work (*Fleck, 1979*; *Gecko & Pavlíček, 2021*).

The practical selection process should therefore begin with a broad candidate pool organised simultaneously by period, discipline and institutional affiliation. Each candidate should then be connected with any identifiable research school, mentorship lineage or major collaborative programme. Scientific impact and institutional significance, as defined in the preceding discussion, remain the threshold criteria. The resulting distribution can be reviewed for major chronological and disciplinary absences. A gap should prompt additional research rather than the automatic inclusion of the most convenient available name. Where several candidates perform a similar representative function, preference should be given to the career that explains more of the Academy's institutional development. No published numerical score is required, but the reasoning should remain recoverable from the evidence and the structure of the chapter. Personalities selected mainly for disciplinary representation must still possess demonstrable significance. Famous personalities should not be retained when their relation to the Academy is too weak to support the institutional narrative. Research schools should be mapped through founders, successors, collaborators, sites and moments of rupture before individual profiles are assigned. Cross-checking the candidate pool against the historical forms of the Academy helps prevent the modern organisation from dominating earlier periods. The final selection becomes representative through explicit comparative judgement rather than through accumulation of names.

Thus, the representation of disciplines, periods and research schools must combine breadth with historical differentiation. Disciplines should be understood as changing communities of methods, problems and authority rather than timeless administrative categories. Early learned culture, ČAVU, interwar Czechoslovakia, ČSAV, normalisation and the post-1993 Academy each organised intellectual work in distinct ways. Short moments of political and institutional rupture may require greater attention than longer periods of relative stability. Present-day scientific areas provide a valuable test of breadth but cannot be imposed retrospectively upon earlier scholarly worlds. Numerical equality among fields would conceal differences in scale, resources, output and historical consequence. Every major intellectual domain must nevertheless remain visible if the selected personalities are to represent the Academy as a whole. Research schools make collective continuity legible by connecting founders, pupils, methods, infrastructures and successor institutions. They also reveal how political intervention, emigration and institutional reorganisation dispersed or interrupted scientific capacity. Generational and territorial perspectives prevent disciplinary history from being reduced to presidents, metropolitan centres and already canonised leaders. Transitional personalities help connect the Academy's successive forms without erasing the ruptures between them. The resulting chapter should therefore present a structured constellation of personalities whose combined careers reveal both the diversity and the historical coherence of Czech academic science.

3. Balance between National, Czechoslovak, and International Relevance

The balance between national, Czechoslovak, and international relevance is best understood not as a hierarchy of prestige but as a relationship among overlapping historical scales. None of these scales was ever self-contained. National science depended on institutions, languages, patronage, and publics situated within particular political communities. Czechoslovak science added the ambitions and contradictions of a composite state that joined Czech and Slovak lands while retaining marked regional asymmetries. International

science emerged through the movement of people, concepts, instruments, publications, and institutional models across borders. A single scholar could therefore be nationally formative, institutionally Czechoslovak, and internationally recognised at the same time. Another might have worked on a subject of global significance while remaining almost invisible outside a specialised foreign network. A third could possess limited international fame yet exercise decisive influence over the scientific culture of Czech society. The selection of personalities must allow all three patterns to appear. It must also relate every form of relevance to the opportunities, restrictions, and expectations of the corresponding period. Equal numerical quotas would disguise these historical differences rather than correct them. The purpose of balance is therefore explanatory proportion: each scale should be represented sufficiently to reveal how scientific achievement acquired meaning within changing communities.

The three descriptors themselves changed meaning over the course of the Academy's long institutional prehistory and existence. Before 1918, there was no Czechoslovak state to which a scientific career could belong. The word Czech might then denote language, political identification, cultural activity, territorial origin, or membership in a particular intellectual community. Bohemian could refer more broadly to the lands of the Bohemian Crown and did not automatically indicate Czech ethnicity or Czech-language scholarship. Moravian and Silesian affiliations introduced further territorial distinctions that cannot be reduced to a single national label. The creation of Czechoslovakia transformed these categories by providing a new state framework for scientific organisation, funding, and representation. The destruction of that state in 1938–1939, its post-war restoration, its socialist reorganisation, and its federalisation in 1968 repeatedly altered the institutional content of Czechoslovak relevance. The dissolution of the federation at the end of 1992 changed it once again from a current affiliation into a historical layer of institutional memory. Biographical classification must consequently begin with the political and institutional map known to the person under consideration. Retrospective national labels should not be allowed to appropriate careers that unfolded in multilingual, imperial, federal, or diasporic settings. Nor should nationality be inferred mechanically from a name, birthplace, language of publication, or later commemoration. National, Czechoslovak, and international relevance are thus analytical tools rather than timeless identities (*Ash & Surman, 2012*; *Surman, 2019*).

For scholars active in the Habsburg period, the territorial scale should generally precede the later national one. Scientific work in Prague, Brno, Olomouc, and other centres developed within imperial systems of education, administration, scholarly mobility, and professional certification. Researchers moved among universities and institutions without necessarily treating later national borders as decisive boundaries. Their correspondence, training, and publication strategies could connect them simultaneously with Vienna, German-speaking universities, other Slavic lands, and wider European networks. Some became important to Czech intellectual culture through deliberate linguistic or organisational choices. Others were subsequently incorporated into Czech scientific memory even though their own affiliations were more complex. A historically responsible selection must distinguish these patterns. It should ask whether a person helped construct Czech-language scholarship, worked within the institutional geography of the Czech lands, or was later claimed as part of a Czech disciplinary tradition. These questions may produce different answers. The geographical location of research alone is not sufficient evidence of national significance. Yet it remains important because laboratories, collections, learned societies, and universities formed local environments in which knowledge was produced. The resulting picture should present the

Czech lands as an active scientific contact zone rather than as an isolated national container (*Ash & Surman, 2012*; *Surman, 2019*).

Language constitutes one of the clearest links between scientific work and national relevance, but it must also be interpreted with care. The creation of Czech technical vocabularies, dictionaries, terminological systems, textbooks, and scholarly journals expanded the capacity to conduct advanced research in Czech. Such work had consequences far beyond philology because it made specialised knowledge accessible to teachers, students, officials, professionals, and educated readers. It also strengthened the infrastructure of a national scientific public. Nevertheless, publication in German, French, Latin, Russian, or English did not make a scholar less relevant to Czech institutional history. Foreign languages frequently provided access to wider communities and could be necessary for professional survival or international recognition. Many scholars moved between linguistic domains according to subject, audience, and political circumstance. Their multilingualism was not a peripheral biographical detail but a scientific resource. The selection should therefore value both the construction of Czech scholarly language and the capacity to translate knowledge across linguistic boundaries. It should avoid presenting nationalisation and internationalisation as mutually exclusive processes. In the late Habsburg world, they often advanced together as scholars built national institutions while competing for recognition beyond them. Personalities who made such dual movement possible are especially revealing because their careers connect cultural emancipation with intellectual circulation (*Ash & Surman, 2012*).

The early learned societies of the Czech lands provide a particularly instructive test of this approach. They were territorially rooted, socially selective, and connected with political and cultural elites. At the same time, they depended upon correspondence, publications, and standards that circulated through European scholarly networks. Their members frequently sought recognition from outside the country because external judgement could strengthen their authority at home. Foreign contacts also supplied books, instruments, methods, and comparative examples that local communities could not generate alone. The national importance of these figures therefore did not arise from intellectual seclusion. It arose from their ability to establish durable places for scholarship within the Czech lands while keeping those places connected to broader worlds of learning. Organisers, patrons, editors, and secretaries could be as significant in this respect as celebrated discoverers. They turned personal relationships into institutional channels. They also determined which foreign ideas would be translated, discussed, supported, or resisted. A balanced selection should identify those mediating roles rather than concentrating exclusively on works later canonised as national achievements. It should show that the institutionalisation of Czech science was itself a process of negotiating between local needs and external models. The biographies chosen from this period must consequently illuminate the construction of both a scientific community and its horizons.

The establishment of the Emperor Franz Joseph Czech Academy for Sciences, Literature and Arts gave the national dimension a more explicit institutional form. Its foundation expressed the desire to provide Czech scholarship and culture with an academy comparable to those possessed by established European nations. The adjective Czech marked a linguistic and cultural programme, while imperial approval embedded that programme in the constitutional order of Austria-Hungary. Josef Hlávka's patronage connected private wealth, national commitment, and institutional design. The Academy's divisions joined the sciences, humanities, literature, and arts within a broad conception of national culture. Its publications

and grants strengthened the capacity of Czech scholars to produce work on a sustained basis. Yet European recognition remained an important measure of the institution's success. Members who communicated abroad or represented Czech scholarship internationally helped transform national aspiration into durable academic authority. Their relevance cannot be assessed by asking whether they were primarily national or international. The more productive question is how they converted one form of recognition into the other. Some used foreign reputations to legitimise Czech institutions, whereas others used newly created Czech institutions to enter international networks. The selection should include both routes because together they explain how a national academy sought universal scientific credibility (*Czech Academy of Sciences, n.d.*).

The creation of Czechoslovakia in 1918 introduced a second national framework without simply erasing the first. Czech scientific institutions acquired new responsibilities as components of an independent state. Their leaders were asked to represent not only Czech culture but also Czechoslovak science. This shift expanded access to state resources, diplomatic channels, and international organisations. It also created an expectation that scientific institutions would contribute to the legitimacy, modernisation, and unity of the republic. The Czech Academy of Sciences and Arts retained its Czech designation after being renamed in November 1918, yet it assumed functions connected with the representation of Czechoslovak scholarship at home and abroad. Other bodies, including the Masaryk Academy of Labour and the Czechoslovak National Research Council, addressed state-wide technical and international tasks. A personality's Czechoslovak relevance may therefore lie in service to institutions whose names, membership, and practices were not uniformly Czechoslovak. It may also lie in participation in scientific surveys, terminological projects, public-health programmes, or economic initiatives designed for the state as a whole. Such service should not be confused with uncritical support for the political doctrine of Czechoslovak unity. Scholars could contribute substantially to common institutions while disagreeing over the relationship between Czech and Slovak national development. The selection must preserve that tension because it was constitutive of Czechoslovak academic life (*Czech Academy of Sciences, n.d.*).

Czechoslovak relevance must not become a courteous synonym for Czech predominance. Prague possessed greater institutional density, more established universities, larger research collections, and stronger administrative resources than scientific centres in Slovakia. These inequalities shaped recruitment, funding, representation, and the location of laboratories. They also affected which personalities entered official histories. A narrative built mainly from central institutions could easily present Czech decisions as universally Czechoslovak and Slovak responses as regional variations. Such an arrangement would reproduce the hierarchy it ought to analyse. The selection should instead ask how particular figures understood the state-wide distribution of scientific authority. Some worked to extend research infrastructure beyond Prague. Others defended central coordination as a condition of scientific quality or economic efficiency. Still others criticised centralisation and sought stronger Slovak autonomy within common structures. Their positions reveal that Czechoslovak science was continuously negotiated rather than administratively complete. Institutional significance should therefore include the ability to articulate, manage, or contest relations between the two national scientific environments. This criterion gives Czechoslovak relevance a concrete historical content instead of treating it as a ceremonial label (*Hudek, 2022*).

The Slovak dimension requires both inclusion and analytical independence. Scientific institution-building in Slovakia developed under conditions different from those prevailing in the Czech lands. The establishment of the Slovak Academy of Sciences and Arts in 1942 occurred within the authoritarian wartime Slovak state, but its later reorganisation and succession cannot be reduced to that founding context. The post-war political order, the Communist seizure of power, rapid industrialisation, and the demand for specialised research all transformed its mission. The Slovak Academy of Sciences, established in 1953, became a major instrument of scientific modernisation. Its representatives simultaneously collaborated with and resisted the centralising tendencies of ČSAV. Their careers therefore belong to the history of Czechoslovak academic governance even when their primary institutional base was in Bratislava. Inclusion should not depend on whether such figures held offices in Prague. It should depend on whether their work shaped the distribution of scientific competence, authority, and resources within the common state. Researchers who created Slovak schools, institutes, terminologies, collections, and professional communities deserve attention as agents of Czechoslovak science, not merely as representatives of a regional supplement. At the same time, their Slovak national significance must remain visible. Only this double recognition can prevent the shared history from becoming either Prague-centred or artificially symmetrical (*Hudek, 2022*; *Slovak Academy of Sciences, n.d.*).

The relationship between ČSAV and the Slovak Academy demonstrates why institutional scale matters more than formal nomenclature alone. Their mutual position changed during the founding years, the centralising initiatives of the early 1960s, the Prague Spring, federalisation, and normalisation. Each reorganisation expressed wider constitutional and political struggles. Scientific administration became a field in which questions of national equality, economic planning, disciplinary development, and party control met. Personalities who negotiated these arrangements should be judged by the alternatives available to them at the time. A Slovak academic demanding greater autonomy might also support common Czechoslovak research programmes. A Prague-based leader favouring central coordination might nonetheless promote substantial institutional growth in Slovakia. Conversely, formal support for federal principles did not necessarily produce an equitable distribution of authority. The selection should therefore resist moral classifications based solely on centralism or decentralisation. It should reconstruct what each proposal meant for institutes, careers, investment, and access to decision-making. Such analysis turns administrators into historically intelligible actors rather than embodiments of abstract national positions. It also reveals how the political architecture of Czechoslovakia entered the daily organisation of science (*Hudek, 2022*; *Franc & Dvořáčková, 2019*; *Franc & Dvořáčková, 2024*).

A practical rule is consequently required for including Slovak personalities in a history centred on the Czech Academy and its predecessors. Automatic inclusion of every major Slovak scientist would dissolve the institutional focus of the chapter. Automatic exclusion would falsify the history of ČSAV as a Czechoslovak organisation. A Slovak figure should be considered when his or her career directly affected ČSAV governance, joint institutes, state-wide research planning, disciplinary coordination, or Czech–Slovak scientific relations. Inclusion is also justified when research produced in Slovakia became essential to a school or programme represented within ČSAV. Shared projects, committees, expeditions, journals, infrastructures, and training networks provide evidence of such connections. The same principle applies to scientists who moved between Czech and Slovak institutions. Their mobility may reveal how the common scientific space functioned in practice. The account

should state clearly whether each person is included as a representative of Slovak science, Czechoslovak administration, a shared research school, or a cross-border career. These categories can overlap, but they should not remain implicit. Transparent reasoning prevents inclusion from appearing arbitrary or politically ornamental. It also prepares the ground for comparison with Czech scientists whose relevance was similarly distributed across several institutional spaces.

Ethnic origin should never serve as the sole criterion of national attribution. The Czech lands were inhabited and intellectually shaped by Czech-speaking, German-speaking, Jewish, and other communities whose boundaries were neither fixed nor mutually exclusive. Scholars could change their declared nationality, preferred language, citizenship, or institutional allegiance across a lifetime. Political regimes also imposed classifications that individuals did not choose. Nazi racial policy demonstrated with murderous force that state attribution could override personal identification. Post-war expulsions and property transfers then transformed the human and institutional geography of research in the Czech lands. A history of personalities must acknowledge these ruptures without converting every complex biography into a contest over national ownership. Place of work, language, citizenship, self-identification, professional networks, and later reception should be examined separately. A scholar may be relevant to Czech science because of institutional activity in Prague or Brno even if that person did not identify as Czech. Another may be central to Czech national culture despite spending a substantial career abroad. The selection should explain these configurations rather than compress them into a single ethnic label. Such precision is especially important when later commemorative traditions have simplified or selectively nationalised the past (*Ash & Surman, 2012*; *Surman, 2019*).

International relevance likewise requires a broader definition than fame, prizes, or citation counts. Awards are important evidence because they indicate recognition by communities beyond the scientist's immediate institution. They are nevertheless distributed unevenly among disciplines, countries, generations, and genders. Some fields produce conspicuous discoveries associated with individuals, whereas others advance through collective editions, surveys, databases, classifications, or long experimental programmes. International relevance may therefore appear in the adoption of a method, the circulation of an instrument, the translation of a concept, or participation in a durable research network. It can also be expressed through service on international bodies, editorial boards, expert missions, and standard-setting committees. Scholars who attracted foreign students or visiting researchers to Czech or Czechoslovak institutes created another form of international influence. So did those who made local collections, archives, observatories, field sites, or technical facilities indispensable to foreign colleagues. The relevant question is not merely whether the world applauded a personality. It is whether scientific work associated with that person entered consequential relationships beyond the country. Evidence should be sought in correspondence, collaborative publications, translations, memberships, invitations, institutional agreements, and the later movement of techniques or ideas. This approach recognises international relevance as a historical process rather than as a decorative accolade.

Scientific knowledge does not simply leave one country in a finished form and arrive unchanged in another. It is modified through translation, replication, criticism, adaptation, and new institutional uses. Researchers who mediate these transformations may be more historically important than a simple centre-to-periphery model suggests. Czech and Czechoslovak

scientists were not merely recipients of theories produced in larger scientific nations. They selected foreign models, combined intellectual traditions, developed local applications, and returned altered knowledge to wider networks. Conversely, an internationally celebrated result often depended on skills, materials, or observations rooted in a particular national environment. The selection of personalities should make this circulation visible. It should identify who travelled, who translated, who maintained correspondence, who organised access, and who created the trust necessary for cooperation. It should also recognise that movement could be unequal. Wealthier institutions controlled prestigious journals, instruments, languages, and opportunities for prolonged foreign residence. International visibility may consequently reflect structural advantage as well as scientific quality. A balanced narrative must examine both achievement and the channels through which achievement became visible (*Raj, 2007*; *Turchetti, Herran, & Boudia, 2012*).

Interwar Czechoslovakia made international scientific representation an explicit institutional task. The Czech Academy of Sciences and Arts presented Czechoslovak scholarship at home and abroad despite retaining a title that referred specifically to Czech culture. The Czechoslovak National Research Council was founded in 1924 to represent the state in international scientific institutions. Membership in international organisations offered access to information, standards, conferences, and professional legitimacy. It also enabled a relatively small state to demonstrate cultural maturity through science. Personalities active in these bodies should therefore be evaluated as scientific diplomats as well as researchers. Their work may have involved patient committee service rather than a celebrated discovery. They decided which disciplines and individuals would speak for Czechoslovakia. They also translated domestic scientific priorities into forms legible to foreign organisations. The authority gained abroad could strengthen their position within national institutions, while domestic political backing could determine their access to international forums. These reciprocal effects make international representation a significant form of institutional power. The selected biographies should reveal both the opportunities it created and the exclusions it reproduced (*Czech Academy of Sciences, n.d.*).

Occupation, war, and dictatorship show that international relevance could persist when official international exchange collapsed. The closure or subordination of institutions deprived scholars of laboratories, teaching positions, archives, and public voices. Persecution forced some into hiding, imprisonment, or exile. Others retained discreet contacts that helped preserve scientific information and personal solidarity. Exiled scholars could continue research abroad, but their new work was often detached from the institutions that had trained them. Their international success might later be celebrated nationally without adequate attention to the coercion that produced their migration. Conversely, those who remained could be judged unfairly against colleagues working under safer or better-equipped conditions. The selection should therefore treat interrupted careers as historical evidence rather than as deficient records. It should examine how war redistributed scientific opportunity and recognition. A personality's importance may lie in preserving a research tradition, protecting colleagues, maintaining documentary materials, or rebuilding an institute after devastation. Such actions connected national survival with the possibility of future international participation. They also remind us that the apparent geography of scientific achievement was repeatedly shaped by political violence.

During the Cold War, the international dimension became more extensive and more politically structured at the same time. ČSAV participated in a socialist system of academies, bilateral

agreements, planned exchanges, and coordinated research. These relations offered genuine opportunities for collaboration, training, access to facilities, and large disciplinary projects. They also operated within an ideological and geopolitical order dominated by the Soviet Union. Contacts with Western institutions continued in many fields but were vulnerable to security restrictions, currency limitations, travel permissions, and political suspicion. Internationalisation therefore cannot be measured simply by counting foreign journeys or institutional agreements. The destination, freedom, duration, and scientific consequences of an exchange all matter. Some scholars used officially approved cooperation to build productive networks across the socialist world. Others exploited narrow openings to sustain contacts across the Iron Curtain. A few occupied privileged positions from which foreign access reinforced their domestic authority. Still others were excluded from international life because of political evaluations rather than scientific competence. The selected personalities should represent these unequal experiences, thereby showing international science as both a space of cooperation and an instrument of state power (*Doel, 2020*; *Franc & Dvořáčková, 2019*).

The relative liberalisation of the 1960s makes especially visible the interaction between scientific reform and international connection. ČSAV leaders and research teams sought greater contact with contemporary developments abroad. Travel, visiting appointments, conferences, imported equipment, and foreign literature could expose the limitations of rigid planning. They also provided reformers with comparative arguments for changes in governance, evaluation, and disciplinary organisation. International standing strengthened the bargaining position of some institutes within Czechoslovakia. At the same time, external recognition did not automatically produce a commitment to institutional democracy. Prominent researchers could combine cosmopolitan scientific ambitions with hierarchical management or political compromise. The period should therefore not be narrated as a simple contest between internationally oriented reformers and nationally confined conservatives. Scientific opening contained competing projects. Some participants wished to reform socialism through expert knowledge. Others sought greater professional autonomy without challenging the political system as a whole. The invasion of 1968 and the subsequent consolidation of normalisation abruptly changed the meaning and risks of these positions. Personalities selected from this decade should illuminate the unstable alliance between international integration, institutional reform, and political liberalisation (*Franc & Dvořáčková, 2024*).

The post-1968 diaspora extended Czech and Czechoslovak science beyond the institutions controlled by the normalisation regime. Scientists who emigrated entered universities, laboratories, hospitals, archives, and technology firms across Europe, North America, and other regions. Some achieved reputations that would have been difficult or impossible under the restrictions imposed at home. Their work belonged to the science of their host countries, but it also carried training, problems, methods, and professional relationships formed in Czechoslovakia. Continued correspondence, assistance to younger colleagues, the transfer of literature, and later collaboration created transnational continuities. These activities should not be romanticised as an undivided national community abroad. Emigration often produced new loyalties, languages, research agendas, and identities. Political disagreements could also divide exile networks. Nevertheless, the diaspora remained part of the institutional history because its existence influenced domestic opportunities, reputations, and memories. The departure of a leading researcher could weaken an institute while strengthening a foreign

school. A later return visit or collaboration could reintroduce knowledge that had developed outside the country for decades. Selection should therefore follow careers across borders rather than ending a biography at the moment of emigration (*Dvořáčková & Franc, 2018*; *Turchetti, Herran, & Boudia, 2012*).

After 1989, international reintegration became both a scientific necessity and a language of institutional reform. ČSAV and its successor institutions had to restore relations weakened by normalisation, evaluate research according to transformed standards, and compete for new sources of support. Foreign peer review offered expertise and credibility during the difficult process of restructuring institutes. International contacts helped introduce new research agendas, technologies, publication practices, and models of governance. They also exposed inequalities created by differences in salaries, infrastructure, language competence, and access to established networks. The desire to return to Europe could encourage productive openness, but it could also produce uncritical imitation of Western institutional models. Personalities who guided the transformation should therefore be assessed by how they negotiated adaptation rather than by how quickly they embraced every external standard. Some defended valuable long-term programmes against indiscriminate closure. Others dismantled politically compromised or scientifically exhausted structures. Many attempted to combine international evaluation with responsibility for the domestic research community. Their relevance lies in these choices, which shaped what could survive the transition. Internationalisation after 1989 was not the restoration of a naturally borderless science but the construction of new institutional connections under conditions of profound uncertainty (*Šebková, 1994*; *Czech Academy of Sciences, n.d.*).

The dissolution of Czechoslovakia requires particular clarity in assigning institutional succession. The final meeting of ČSAV occurred in December 1992. From January 1993, the Czech Academy of Sciences and the Slovak Academy of Sciences operated within separate states and institutional systems. The division followed a territorial principle, but scientific communities, archives, collaborations, and personal relationships could not be divided so neatly. AV ČR became the Czech successor to ČSAV under Act No. 283/1992, while the Slovak Academy continued its own historical and legal development. Personalities active across the transition may consequently belong to more than one institutional narrative. Their classification should depend on the functions they performed before and after the division. A scientist who served ČSAV and subsequently led AV ČR represents both Czechoslovak inheritance and Czech transformation. A Slovak colleague involved in the same pre-1993 structures belongs to the shared history even if later work proceeded entirely within Slovakia. Joint projects after separation may demonstrate continuity that survived constitutional rupture. The chapter should not treat 1993 as either a complete beginning or a minor administrative change. It was a decisive redefinition of national responsibility within a scientific landscape that remained interconnected (*Czech Academy of Sciences, n.d.*; *Slovak Academy of Sciences, n.d.*).

The contemporary mission of AV ČR formally combines national responsibility with international ambition. Its institutes are expected to advance knowledge at the international level while responding to the needs of Czech society and national culture. These goals are complementary but not automatically harmonious. International competition may reward rapidly moving fields, English-language publication, and participation in large consortia. National responsibility may require long-term dictionaries, editions, archives, environmental observations, public expertise, and research on subjects with limited foreign audiences. Some

projects satisfy both demands, while others must justify their importance primarily on one scale. The Academy's statutes also connect its activity with Czech and European research policy, foreign cooperation, and internationally recognised standards. Contemporary personalities should therefore be assessed through more than international bibliometric visibility. Their contribution may consist in creating research teams capable of global excellence, protecting essential national infrastructures, or connecting the two. Leadership in European projects can be as relevant as sustained expertise offered to Czech public institutions. Conversely, national prominence without credible scholarly standards cannot by itself justify inclusion. Balance requires evidence that the individual's work changed knowledge, institutions, or public capacity at the scale claimed for it (*Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, n.d.*).

European integration adds a further layer that cannot be fitted entirely into either the national or international category. The European Research Area seeks to facilitate cross-border cooperation and the movement of researchers and knowledge. AV ČR participates in this environment through projects, infrastructures, evaluation practices, policy debates, and institutional partnerships. European programmes can strengthen international quality while directing research towards collectively defined social and technological challenges. They can also intensify competition for mobile researchers and external funding. Personalities who build European consortia or research infrastructures should be evaluated for the institutional capacity they leave behind, not simply for the volume of grants they obtain. Their activities may alter recruitment, technical standards, data management, and the long-term research agenda of an institute. European relevance is therefore best treated as a historically specific form of international engagement. It operates through supranational rules while remaining dependent on national budgets and institutions. The most consequential figures are often those who can translate among these levels. They make Czech priorities understandable abroad and bring international possibilities into durable domestic structures. This mediating achievement deserves recognition alongside discovery and formal leadership (*Czech Academy of Sciences, 2022*; *European Commission, n.d.*).

The relative weight of the three scales should vary by discipline. Mathematics, physics, chemistry, and molecular biology generally possess strongly internationalised systems of publication, replication, and priority. International reception is consequently indispensable when assessing leading figures in these fields. Yet national institutions still determine access to laboratories, instruments, teams, and sustained funding. The humanities often address languages, archives, literatures, legal traditions, archaeological sites, and forms of memory concentrated within a particular society. Their national relevance may therefore be exceptionally high even when their international audience is smaller. This does not make their scholarship less rigorous or inherently parochial. International significance may appear through methodological innovation, comparative interpretation, critical editions, or the provision of unique sources. Social sciences occupy another position because they interpret national transformations while participating in theories and methods that circulate internationally. Technical research may acquire relevance through domestic industry, state infrastructure, patents, or standards before gaining wider recognition. A uniform balance would consequently favour some disciplines and distort others. Selection must use discipline-sensitive evidence while retaining a common demand for demonstrable intellectual or institutional consequence.

The balance should also vary by historical period because access to each scale was politically conditioned. A 19th-century organiser who created a Czech scholarly vocabulary should not be judged by the international publication expectations of the 21st century. A scientist isolated during occupation or normalisation should not be compared mechanically with a colleague free to travel and publish abroad. Nor should official foreign membership under a dictatorship be treated as straightforward proof of independent international authority. Opportunities must be reconstructed before achievements are compared. This does not require lowering standards for politically constrained periods. It requires identifying what significant scientific action looked like under different conditions. Maintaining a laboratory, preserving a collection, training successors, or circulating prohibited literature could have immense long-term consequences. In another period, the same activities might be routine. Historical weighting therefore protects the selection from presentism. It also reveals how regimes redistributed access to national institutions, Czechoslovak authority, and international networks. The biographies become records of changing scientific possibility rather than entries in a timeless ranking.

A transparent selection matrix can make these judgements consistent without reducing them to arithmetic. For every candidate, the account should first identify the relevant political territory and institutional affiliation during each major career phase. It should then assess national contribution through institution-building, cultural significance, public expertise, language, education, infrastructure, or service to society. Czechoslovak contribution should be demonstrated through state-wide programmes, shared institutions, Czech–Slovak relations, federal governance, or work whose institutional meaning depended on the common state. International contribution should be supported by reception, collaboration, circulation, awards, foreign appointments, standards, infrastructures, or influence on research beyond the country. A fourth field should record the movement connecting these scales. This field might show how foreign authority strengthened domestic reform, how national resources enabled international discovery, or how Czechoslovak structures distributed knowledge between regions. A fifth should identify restrictions and inequalities affecting visibility. The resulting profile would not produce a numerical rank. Instead, it would make explicit why a person is included and which aspect of Academy history that person clarifies. Candidates strong on only one scale would remain eligible if their contribution was exceptional and historically consequential. The final group should contain varied profiles whose relationships collectively explain the Academy's changing place in Czech society, Czechoslovakia, Europe, and global science.

Thus, balancing national, Czechoslovak, and international relevance means reconstructing the routes through which scientific authority moved rather than assigning personalities to three separate containers. National importance reveals how scholars built languages, institutions, infrastructures, expertise, and cultural memory within the Czech lands and later the Czech Republic. Czechoslovak relevance exposes the promises and asymmetries of a common state, including the negotiated relationship between Czech and Slovak scientific institutions. International relevance shows how knowledge, people, instruments, and recognition crossed political and linguistic boundaries. No one scale should be treated as inherently superior. Global fame cannot replace evidence of institutional consequence, just as national commemoration cannot substitute for scientific achievement. The balance must remain sensitive to discipline, period, political freedom, and access to resources. It must include mediators, organisers, exiles, and builders of networks alongside discoverers honoured by

prestigious awards. It must also distinguish self-identification from later national appropriation and formal representation from effective influence. Applied consistently, these principles prevent the chapter from becoming either a national pantheon or a list of internationally famous names. They instead create a historically representative community of personalities whose careers illuminate the Academy's successive territorial and intellectual worlds. In that community, Czech, Czechoslovak, and international science appear not as rival narratives but as interdependent dimensions of a single institutional history.

Founders, Organisers, and Institutional Leaders

1. Figures Connected with Early Learned Societies and ČAVU

The founders and organisers considered here should not be approached as a ceremonial procession of eminent men whose biographies merely decorate an institutional chronology. A biographical history of the Czech academic tradition must instead examine how particular individuals converted intellectual ambitions, social connections, money, administrative knowledge, and political access into durable scholarly structures. Early learned institutions rarely emerged from a single founding act or the will of one universally recognised creator. In these settings, authorship was distributed among patrons, scholars, officials, editors, secretaries, and mediators between the learned community and the state. One actor might formulate a programme, while another secured permission for its implementation. Another could provide the financial resources without which statutes remained little more than declarations. Still others created journals, managed correspondence, arranged meetings, distributed grants, and preserved institutional records. Their influence therefore consisted not only in the ideas they advanced but also in the organisational possibilities they opened for subsequent generations. Scientific distinction remains an important criterion for inclusion, because intellectual authority often enabled a scholar to speak convincingly on behalf of a wider community. Yet discovery alone did not make an institutional founder, just as administrative office did not automatically confer lasting historical importance. The selection that follows concentrates on personalities whose actions altered the conditions under which knowledge could be produced, validated, supported, and transmitted. It treats the lineage from Enlightenment learned sociability to the Czech Academy of Sciences and Arts as a history of inherited practices and decisive transformations rather than a simple chain of legal succession (*Míšková, Franc, & Kostlán, 2018*; *Czech Academy of Sciences, n.d.*).

One of the earliest useful starting points is Joseph Freiherr von Petrasch, whose name is associated with the Societas eruditorum incognitorum in Olomouc. The society was established in 1746 and represented an unusually ambitious attempt to organise learned exchange within the Habsburg lands. Petrasch belonged to the world of educated provincial nobility, military service, courtly contacts, and cosmopolitan literary culture. His institutional significance did not rest upon a scientific discovery comparable with those later associated with specialised academicians. It arose from his ability to gather scholars around a common programme and to give their cooperation a recognisable organisational form. The society

possessed statutes, regular intellectual objectives, and a periodical through which its members could communicate beyond Moravia. Its *Monatliche Auszüge alter und neuer gelehrten Sachen* offered extracts, reviews, and reports designed to connect local readers with wider European scholarship. Petrasch therefore acted simultaneously as patron, convener, editor, and cultural intermediary. His Olomouc initiative also demonstrates that the institutional history of Czech science cannot be confined retrospectively to Prague or to ethnically defined Czech organisations. The society belonged to a multilingual Habsburg intellectual world in which Latin and German frequently served as vehicles of learned communication. Although it survived only for a limited period, its brief existence revealed that organised scholarship required infrastructure as well as individual erudition. Petrasch deserves inclusion because he helped transform learned sociability from an informal personal network into a publicly visible corporate experiment (*Palacký University Olomouc, n.d.*; *Míšková et al., 2018*).

Petrasch's example is especially instructive because it exposes the fragility of learned institutions before stable systems of public scientific funding existed. A society could depend heavily upon the reputation, resources, and persistence of a single patron. When that patron's circumstances changed, the institution's continuity could quickly be endangered. The organisational environment also lacked a settled division between research, literary criticism, education, and the circulation of useful information. Learned activity consequently developed through a mixture of correspondence, collecting, publishing, conversation, and personal recommendation. Petrasch attempted to coordinate these practices without possessing the permanent staff or guaranteed budget of a later academy. His achievement was therefore less the establishment of an uninterrupted institutional lineage than the demonstration of a workable cultural form. That form combined selective membership, regulated cooperation, editorial production, and participation in a transregional republic of letters. It also implied that scholarship could acquire an authority distinct from the private status of its individual practitioners. This principle would reappear in later Bohemian societies, although under different political and linguistic conditions. The experiment's failure to secure permanence is as historically meaningful as its momentary success. It reveals how strongly early scientific institutions depended upon the personal capacities of organisers before academic authority became embedded in enduring offices, budgets, buildings, and archives (*Míšková et al., 2018*).

A later and more consequential phase of learned organisation in Prague was connected with the mineralogist Ignaz von Born. Born combined expertise in mining and mineralogy with a talent for intellectual networking, publishing, and institutional promotion. His scientific interests were closely related to the administrative and economic concerns of the Habsburg state, particularly the exploitation and improvement of natural resources. At the same time, he cultivated contacts that reached well beyond the monarchy and placed Bohemian scholarship within European correspondence networks. In 1770, the circle associated with him helped establish a private society devoted to mathematics, patriotic history, and natural history. The breadth of this programme reflected an Enlightenment conviction that knowledge of nature and knowledge of the country could reinforce one another. Born's role illustrates how an organiser could bring together fields that later became institutionally separate. Mineralogical expertise gave him standing among naturalists, while editorial and social abilities enabled him to mobilise historians and mathematicians. His departure for Vienna weakened his direct involvement, but the Prague initiative did not simply disappear with him. Other scholars preserved the associational framework and gradually transformed it into a more formally

recognised learned corporation. Born should consequently be regarded as a catalytic organiser rather than the sole founder of the Royal Bohemian Society of Sciences. His career exemplifies the circulation of scientific elites across imperial centres and warns against interpreting the institutional development of Bohemian science as an isolated national process (*Ash & Surman, 2012*; *Míšková et al., 2018*).

The organisation that eventually became the Royal Bohemian Society of Sciences emerged through several stages rather than at one unambiguous moment. The private scholarly circle of the 1770s gradually acquired statutes, membership procedures, publications, and a more stable public identity. Imperial recognition in 1784 strengthened its corporate position and brought it into a closer relationship with the monarchy. The designation “Royal” followed later, confirming an institutional status that combined scholarly initiative with dynastic sanction. This process mattered because legitimacy in the Habsburg system could not be produced by intellectual reputation alone. Organisers had to negotiate with officials, patrons, and noble protectors who could translate scholarly aspirations into legally recognised privileges. At the same time, the society could not survive merely as a courtly ornament if it wished to retain the participation of serious scholars. Its durability rested upon a balance between external protection and internally generated intellectual authority. The founders were therefore not a single group assembled at a ceremonial beginning but successive generations that consolidated different aspects of the institution. Some established its scientific programme, while others cultivated its patrons, publications, finances, collections, and international contacts. The resulting Royal Bohemian Society was a multilingual territorial institution rather than an academy representing one modern nation in a fully developed sense. Its importance lies in creating a recognised community of scholarship from which later, more explicitly Czech academic projects could inherit practices without simply reproducing its identity (*Czech Academy of Sciences, n.d.*; *Pokorná, n.d.*).

Joseph Stepling occupies a distinctive place among the personalities retrospectively connected with this formative community. A Jesuit mathematician, physicist, and astronomer, he contributed to the renewal of exact scientific inquiry in 18th-century Prague. His work at the Clementinum observatory linked teaching with disciplined observation and the use of increasingly refined instruments. Stepling’s importance was therefore simultaneously intellectual, pedagogical, and organisational. He encouraged mathematical reasoning at a time when university curricula remained strongly shaped by older scholastic conventions. His observational practice connected Prague with wider European developments in astronomy and geodesy. Students and colleagues encountered through him a model of science founded upon calculation, verification, and communication across political borders. Stepling died before the Royal Bohemian Society received its mature institutional form, so it would be misleading to describe him as its administrator in the later sense. Nevertheless, his scholarly authority helped make a society devoted partly to mathematics and natural knowledge intellectually credible. He represented the type of respected practitioner around whom a learned network could coalesce. His presence also reminds us that the genealogy of an institution often begins before its statutes, because habits of cooperation and standards of judgement must already exist before they can be formalised. Stepling should consequently be understood as an intellectual founder whose teaching and scientific discipline supplied part of the human infrastructure upon which organised Bohemian scholarship was built (*Czech Academy of Sciences, n.d.*; *Míšková et al., 2018*).

Gelasius Dobner contributed a different but equally important form of scholarly authority to the emerging learned community. As a Piarist historian, he devoted himself to the critical examination of sources concerning the Bohemian past. His work challenged inherited narratives by comparing chronicles, documents, and competing accounts rather than merely repeating patriotic or dynastic legends. This methodological discipline gave historical scholarship a stronger evidential foundation. Dobner's criticism could appear inconvenient because it disturbed stories that had acquired moral or political importance. Yet precisely this willingness to test tradition made him indispensable to the institutional culture of a learned society. He demonstrated that patriotic history need not be uncritical history. The country could become an object of rigorous investigation rather than only emotional celebration. Dobner's participation also helped establish the humanities as a domain of scholarly expertise comparable in seriousness with mathematical and natural inquiry. The later Czech academic tradition would repeatedly return to this combination of historical self-knowledge and critical method. His example shows why guardianship of national memory cannot be separated from the procedures through which claims about the past are authenticated. Dobner therefore belongs among the founders not because he designed the whole institution but because he supplied one of the epistemic standards that justified its existence (*Czech Academy of Sciences, n.d.*; *Míšková et al., 2018*).

Josef Dobrovský carried the critical study of language and history into a period increasingly shaped by the Czech national revival. His reputation rested upon philology, Slavic studies, grammatical analysis, and a formidable capacity to distinguish documentary evidence from romantic conjecture. Although later generations celebrated him as a patriarch of Czech scholarship, his actual intellectual world was multilingual and transnational. He wrote much of his scholarly work in German or Latin because these languages connected him with established learned audiences. This practice did not diminish his contribution to Czech culture. On the contrary, his analysis helped provide the Czech language with a historically grounded description and a stronger scholarly status. Dobrovský's relationship with the Royal Bohemian Society demonstrates how an institution formed under Enlightenment territorial assumptions could become relevant to a national cultural movement. He brought to that transformation an insistence upon evidence that sometimes placed him at odds with more enthusiastic patriotic interpretations. His scepticism was institutionally valuable because it protected scholarship from becoming indistinguishable from cultural advocacy. At the same time, his prestige showed that rigorous philology could serve a society seeking intellectual recognition for a language and culture long excluded from many elite settings. Dobrovský thus joined national relevance with standards that were legible within international scholarship. His career embodies the productive tension between Czech cultural commitment and cosmopolitan learned practice that would remain central to later academic institutions (*Czech Academy of Sciences, n.d.*; *Ash & Surman, 2012*).

Stepling, Dobner, and Dobrovský should not be reduced to symbolic representatives of science, history, and language. Their collective significance lies in the coexistence of different methods within one institutional project. Mathematical observation, documentary criticism, and comparative philology each required distinctive evidence, training, and forms of communication. A learned society had to recognise these differences while maintaining a common standard of scholarly credibility. This capacity to contain disciplinary plurality became one of the most important inheritances transmitted to later academies. It also made institutional leadership more complex than the direction of a single research school.

Organisers had to distribute attention among fields whose practitioners possessed unequal social standing, financial requirements, and access to publication. Natural inquiry might require instruments and collections, whereas historical and philological research depended heavily upon archives, libraries, and editorial labour. The society's success therefore rested upon a negotiated internal ecology rather than a uniform definition of knowledge. Its prominent personalities acquired institutional importance partly because they persuaded colleagues that different disciplines could share a corporate home. Their reputations also attracted patrons who might otherwise have regarded a learned association as an impractical undertaking. The early Bohemian experience consequently established a lasting pattern in which intellectual diversity strengthened an academy while simultaneously creating recurring problems of representation and resource allocation (*Pokorná, n.d.*; *Míšková et al., 2018*).

The Royal Bohemian Society's leadership structure further complicates the search for individual founders. Noble presidents and protectors could provide political access, ceremonial dignity, and social legitimacy. Scholarly chairmen and active members, by contrast, determined much of the society's intellectual work. Secretaries maintained correspondence, prepared meetings, supervised publications, and ensured that decisions survived beyond the enthusiasm of a single session. These offices embodied different kinds of authority that were mutually dependent but not identical. Aristocratic patronage could shield scholarship, yet it could also remind members that their autonomy remained conditional. Scholarly prestige could shape the programme, yet it rarely supplied all the material resources necessary for institutional survival. Administrative continuity connected these two worlds by turning patronage and intellectual ambition into routines. The society's leading personalities must therefore be assessed according to the functions they performed rather than the splendour of their titles. A protector who opened access to the court might be as consequential at a critical moment as a scholar who produced a celebrated volume. Conversely, a little-remembered secretary could exert lasting influence through membership procedures, finances, editing, and the preservation of institutional memory. This distributed pattern of governance anticipated the later interaction among presidents, classes, committees, secretariats, patrons, and public authorities within ČAVU (*Pokorná, n.d.*; *Czech Academy of Sciences, n.d.*).

František Palacký marked a new stage in the relationship between scholarship, institutional leadership, and national politics. As a historian, editor, public intellectual, and politician, he possessed several kinds of authority at once. His historical writing offered Czech society an expansive interpretation of its past and a language for understanding its political existence. His organisational activities connected scholarship with the National Museum, publishing projects, cultural associations, and the developing infrastructure of the national movement. Within the Royal Bohemian Society, Palacký represented the increasing weight of Czech historical and philological scholarship. He did not create the society, but his leadership helped alter the cultural meaning attached to it. The institution could no longer be viewed solely as an Enlightenment association concerned with the territories of the Bohemian Crown. It was increasingly judged according to its contribution to the intellectual emancipation of Czech society. Palacký's standing enabled him to mediate between learned expertise and a broader educated public. His political commitments also showed that academic authority could become a resource in debates over constitutional rights, historical statehood, and national representation. This proximity to politics enhanced the public significance of scholarship while exposing it to ideological appropriation. Palacký's institutional role consequently illustrates

both the creative power and the potential risks involved when a major scholar becomes an interpreter of national destiny (*Czech Academy of Sciences, n.d.*; *Míšková et al., 2018*).

Palacký's career must nevertheless be protected from a retrospective narrative in which every earlier learned initiative appears to have been moving inevitably towards a Czech national academy. The Royal Bohemian Society remained embedded in a multilingual province and included scholars whose identities cannot be fitted neatly into later national categories. German, Latin, and Czech functioned in different institutional and intellectual contexts. The gradual nationalisation of scholarship was a historical process involving competition, negotiation, cultural mobilisation, and the creation of parallel organisations. Palacký accelerated this process, but he did not erase the society's older territorial inheritance. His own scholarship depended upon European intellectual traditions and extensive contacts outside the Czech-speaking community. He therefore combined national political purpose with participation in a broader scholarly world. This combination would later become one of the principal ideals of ČAVU. The academy was expected to prove the maturity of Czech culture without retreating into intellectual provincialism. Palacký's example also reveals why nationalisation should not automatically be equated with the rejection of internationalism. In 19th-century Central Europe, international recognition could validate national claims, while national institutions could provide the resources required for participation abroad. His institutional legacy lies partly in making this dual ambition appear both intellectually respectable and politically necessary (*Ash & Surman, 2012*; *Míšková et al., 2018*).

Jan Evangelista Purkyně carried the discussion from leadership within existing societies towards the deliberate design of a new academic system. His international scientific reputation gave unusual weight to his institutional proposals. Experience in Breslau had shown him the importance of laboratories, specialised teaching, research collaboration, and sustained material support. After returning to Prague, he sought not merely to continue his own investigations but to improve the conditions of Czech scientific work more generally. Purkyně became a full member of the Royal Bohemian Society in 1850 and later served in a leading capacity within it. He encouraged the organisation of natural-scientific activity and participated in editorial and associational initiatives. His journal *Živa* helped bring scientific knowledge to Czech readers and strengthened the language's capacity to express specialised concepts. These activities demonstrate that popularisation, terminology, and institutional construction were connected parts of his programme. Purkyně understood that an intellectual community could not flourish if its language lacked publications, audiences, laboratories, and professional opportunities. He also recognised the limitations of relying solely upon universities whose primary duties and political constraints did not always favour sustained research. His importance as an organiser therefore derived from the integration of scientific excellence with a systematic vision of infrastructure. Unlike a patron who enabled other people's work, Purkyně approached institutional design from the practical experience of a researcher who knew what discovery required (*Míšková et al., 2018*; *Czech Academy of Sciences, n.d.*).

Between 1861 and 1863, Purkyně published a series of reflections under the title *Academia* in *Živa*. He proposed an autonomous scholarly institution that would complement rather than merely duplicate the universities. Its organisation would include research units devoted to major fields of knowledge. Scholars would cooperate within a corporate framework capable of supporting long-term investigation, publications, collections, and specialised facilities. Purkyně placed particular value upon self-government by qualified researchers. This principle

distinguished his design from an office controlled directly through ordinary state administration. The proposed academy was nevertheless not imagined as socially detached or politically indifferent. It would cultivate Czech scientific life, educate wider audiences, and connect domestic research with international scholarship. Purkyně's model brought together the national aspirations of the revival and the organisational lessons of European research institutions. It also anticipated the later distinction between an academy as a fellowship of distinguished members and an academy responsible for permanent research institutes. Not every feature of his programme was realised in ČAVU, which initially operated mainly through membership, publications, grants, prizes, and cultural representation. Even so, *Academia* supplied later reformers with a powerful vocabulary for discussing autonomy, disciplinary coordination, and the institutional responsibilities of science (*Czech Academy of Sciences, n.d.*; *Míšková et al., 2018*).

The interval between Purkyně's proposal and the creation of ČAVU is as important as the apparent continuity between them. A persuasive institutional idea did not automatically produce the financial, political, and legal conditions required for implementation. The Czech scholarly community still had to expand its professional base and secure a stronger position within public life. Universities, museums, journals, associations, and specialised societies gradually created a larger population of researchers capable of sustaining an academy. The division of Charles-Ferdinand University into Czech and German institutions in 1882 altered this environment substantially. It strengthened Czech higher education while also formalising national parallelism within the academic landscape. By the late 19th century, Czech elites could argue that their literature, arts, humanities, and sciences required an institution of the highest representative rank. That argument combined practical needs with symbolic competition. An academy would support publications and research, but it would also demonstrate that Czech culture possessed the completeness traditionally associated with a modern nation. Purkyně had articulated much of the scientific logic, yet the final project depended upon patrons and political negotiators capable of securing recognition. The transition from programme to institution therefore required a different type of founder. Josef Hlávka became decisive because he joined civic ambition, material resources, organisational persistence, and access to public authority (*Ash & Surman, 2012*; *Mádlová, 2024*).

Josef Hlávka's path to academic leadership differed sharply from that of Purkyně or Dobrovský. He was trained as an architect and achieved considerable success as a builder and entrepreneur within the Habsburg monarchy. His professional experience taught him how ambitious projects depended upon planning, contracts, finance, technical expertise, and negotiation with authorities. Ill health eventually limited his architectural practice, but it did not end his public activity. Hlávka redirected a substantial part of his wealth and energy towards educational, scientific, and cultural patronage. His philanthropy was not simply a series of generous personal gifts offered to admired individuals. It increasingly took institutional forms designed to survive their benefactor and to distribute support according to defined procedures. This approach distinguished him from patrons whose influence disappeared when personal favour or family fortune changed. Hlávka understood endowment, property, governance, and organisational continuity as components of cultural policy. He also moved comfortably among artists, scholars, politicians, civil servants, and members of the imperial elite. Such connections enabled him to translate the aspirations of Czech intellectuals into proposals intelligible to the state. His importance to ČAVU consequently arose from a rare combination

of symbolic commitment and practical institution-building expertise (*Franc & Mádlová, 2014*; *Mádlová, 2024*).

Hlávka's role in establishing the academy extended far beyond attaching his name to a completed plan. He committed a founding capital of 200,000 florins, giving the project a material credibility that declarations alone could not provide. Financial commitment strengthened the case presented to imperial and provincial authorities. It also allowed the academy to be framed as a civic initiative rather than merely another demand upon the state budget. The project received approval in 1888, while the statutes were confirmed in 1890 and regular activity began in 1891. Its original official designation honoured Emperor Franz Joseph, reflecting the political language required for recognition within the monarchy. At the same time, its programme explicitly promoted Czech sciences, literature, and arts. The name therefore embodied a calculated coexistence of imperial loyalty and national cultural ambition. Hlávka's achievement lay partly in making these purposes politically compatible enough for the institution to be authorised. He did not obtain complete independence from the state, because legal recognition inevitably created obligations and avenues of supervision. Nevertheless, the private foundation capital and corporate statutes gave the academy a sphere of initiative that distinguished it from an ordinary governmental department. Founding ČAVU was consequently an exercise in negotiated autonomy, achieved through resources, legal design, and political language rather than through institutional separation from public power (*Czech Academy of Sciences, n.d.*; *Mádlová, 2024*).

The internal architecture of ČAVU expressed the breadth of Hlávka's cultural conception. Sciences, humanities, language, literature, music, and the visual arts were brought within one representative institution. This arrangement distinguished the academy from associations devoted to a single discipline or professional interest. It also reflected the national purpose assigned to the new body. Czech culture was to appear not as a collection of isolated achievements but as a complete intellectual and artistic world. Membership conferred prestige, yet the academy's work could not be reduced to the election of distinguished personalities. It supported research, publications, prizes, grants, and projects whose costs exceeded the capacities of many individual scholars. Its classes and committees created arenas in which disciplinary communities negotiated priorities. Those negotiations were not always harmonious, because natural scientists, humanists, writers, and artists possessed different standards and material needs. The academy nevertheless made their coexistence institutionally visible. Its later reorganisation, including the differentiation of natural-scientific sections in 1928, demonstrated that the original structure could be adapted as specialisation advanced. Hlávka's founding design was therefore durable not because it fixed disciplinary relations permanently but because it created procedures through which those relations could be revised (*Czech Academy of Sciences, n.d.*; *Mádlová, 2024*).

As the academy's first president from 1890 until his death in 1908, Hlávka helped convert the founding settlement into institutional practice. His presidency gave the new organisation continuity during its vulnerable first decades. He used personal authority to attract respected members and to defend the academy's standing among competing cultural bodies. His architectural sensibility may also be recognised in the attention he paid to the relationship between institutional purpose and material foundation. Buildings, property, endowments, publications, and ceremonial representation were parts of one cultural structure. Hlávka did not seek to determine the conclusions of scientific research, but his patronage inevitably influenced which forms of work could receive support. This tension is inherent in philanthropy.

Private resources can enlarge scholarly autonomy from government while simultaneously concentrating influence in the hands of donors. Hlávka addressed the problem by favouring institutional rules and long-term endowment rather than arbitrary personal distribution. The establishment of the Josef, Marie, and Zdeňka Hlávka Foundation in 1904 extended this principle beyond the academy itself. The foundation's connection with ČAVU created a durable relationship between civic wealth and organised intellectual life. Hlávka's greatest contribution was consequently not a single donation but a model of patronage that sought to transform private success into permanent public cultural capacity (*Czech Academy of Sciences, n.d.*; *Franc & Mádlová, 2014*).

Hlávka's succession by the jurist Antonín Randa revealed that the academy required organisational consolidation as much as founding charisma. Randa served as president from 1908 until 1914. His legal scholarship and experience in public affairs equipped him to interpret the academy's statutes within a changing political environment. A jurist at the head of an institution encompassing science and art might initially appear an unusual choice. Yet legal expertise was highly relevant to questions of property, corporate competence, membership, endowment, and relations with government. Randa represented a professional academic elite that combined university authority with civic and political engagement. Under such leadership, the presidency became less dependent upon the extraordinary personal position of the founder. This transition was essential if ČAVU was to demonstrate that it could survive Hlávka. Randa's tenure also coincided with intensifying national conflict in the late Habsburg monarchy. The academy had to defend Czech cultural interests without allowing political confrontation to exhaust its scholarly purpose. His institutional significance therefore rested upon stabilisation, procedural authority, and the normalisation of succession. Randa helped turn the presidency from an extension of Hlávka's patronage into a repeatable office within a self-governing corporation (*Czech Academy of Sciences, n.d.*; *Mádlová, 2024*).

The mineralogist Karel Vrba demonstrated another route through which a scholar could acquire institutional authority. Before becoming president, he served as the academy's general secretary from 1910 to 1914. This sequence gave him detailed knowledge of daily administration before he assumed the highest representative office. Vrba's presidency, lasting from 1914 to 1922, encompassed the First World War, the collapse of the Habsburg monarchy, and the formation of Czechoslovakia. Few institutional leaders faced a more dramatic transformation of the political framework surrounding their academy. Wartime shortages affected publication, communication, finance, and the ordinary movement of scholars. The end of the monarchy also removed the dynastic context expressed in the academy's original name. ČAVU had to redefine itself as an institution of the new republic without abandoning the accumulated authority of its previous decades. Vrba's scientific background reinforced the place of the natural sciences within an academy often publicly associated with national literature and art. His administrative experience helped preserve routines while political symbols and external relationships changed. Continuity under his leadership did not mean the passive survival of an unchanged organisation. It meant retaining useful procedures and scholarly communities while adapting legitimacy, terminology, and public purpose to a new state (*Czech Academy of Sciences, n.d.*; *Mádlová, 2024*).

The presidencies of Josef Zubatý and Josef Bohuslav Foerster further demonstrate the breadth of authority recognised within ČAVU. Zubatý, a philologist and Indologist, led the academy between 1923 and 1931. His election confirmed the continuing prestige of linguistic and humanistic scholarship within the republican academic elite. His work connected detailed

textual expertise with international fields that extended far beyond Czech national culture. Foerster, who served from 1931 until 1939, was a composer, writer, and teacher rather than a natural scientist or conventional academic administrator. His presidency reflected the academy's founding commitment to place artistic creation beside scholarship. Neither leader should be treated merely as a representative ornament chosen from a prestigious discipline. Their authority depended upon the academy's claim that intellectual and cultural distinction could assume responsibility for a common institution. At the same time, their presidencies reveal the limits of interpreting leadership solely through disciplinary background. Effective governance depended upon cooperation with secretaries, classes, commissions, officials, and financial administrators. The public prominence of a president could enhance the academy's standing, but institutional capacity remained collectively produced. Zubatý and Foerster consequently personified the cultural range of ČAVU while presiding over an organisation whose complexity exceeded the expertise of any individual member (*Czech Academy of Sciences, n.d.*; *Mádlová, 2024*).

The history of ČAVU's general secretaries makes the collective character of institutional leadership especially visible. František Josef Studnička occupied the office during the academy's initial organisation, followed by Josef Šolín and Bohuslav Raýman. Karel Vrba's later movement from the secretariat to the presidency illustrates how administrative service could become preparation for broader leadership. Rudolf Dvořák, Karel Kadlec, and Jan Bedřich Novák continued the secretariat's work through war, independence, and republican consolidation. Karel Weigner, Oldřich Hujer, and Viktor Trkal served during the increasingly dangerous years that led through occupation and into the post-war transformation. These figures came from different disciplines, but the office required competences that transcended disciplinary identity. Secretaries translated decisions by classes and presidents into correspondence, budgets, minutes, publishing arrangements, and relations with external authorities. They also controlled the flow of institutional information and thereby influenced which matters reached collective deliberation. Their labour gave temporal continuity to an academy whose elected officers, members, and political environment repeatedly changed. The relative invisibility of such administration in public memory creates a distorted picture in which presidents appear to have acted alone. Including secretaries restores the institutional reality that academic autonomy depends upon professional routines as well as declarations of principle. Their careers demonstrate that organisation is itself a form of scholarly service, even when it produces no celebrated theory, artwork, or experimental result (*Czech Academy of Sciences, n.d.*).

Josef Šusta's presidency confronted ČAVU with the most severe crisis in its existence before the communist reorganisation. A distinguished historian, Šusta assumed office in January 1939, shortly before the occupation of the Czech lands. The Protectorate destroyed the sovereign political framework within which the republican academy had operated. Czech universities were closed, scholars were persecuted, and the intellectual community faced censorship, material deprivation, imprisonment, and death. Under these conditions, institutional preservation could not be separated from morally difficult accommodation with coercive power. Šusta sought to maintain the academy's activities, publications, and support for Czech scholarship as far as circumstances permitted. Such efforts preserved intellectual resources that might otherwise have been lost. Yet every official negotiation under occupation carried the danger of appearing to legitimise or accommodate the regime. His presidency therefore resists simple classification as either heroic resistance or compliant administration.

It reveals the tragic limits placed upon academic leaders when the survival of an institution and the public demonstration of opposition cannot easily be reconciled. Zdeněk Nejedlý's accession to the presidency in 1945 introduced a radically different fusion of scholarly authority and political power. The transition from Šusta to Nejedlý foreshadowed the questions examined in "Leaders of ČSAV and the Politics of Academic Authority", where organisational leadership became increasingly inseparable from the revolutionary ambitions of the socialist state (*Czech Academy of Sciences, n.d.*; *Mádlová, 2024*).

A history centred on founders and presidents must also acknowledge those whom institutional rules prevented from occupying such positions. The early learned societies were constructed within a social world in which scholarly authority was overwhelmingly defined as male. Women participated in intellectual and cultural life as writers, translators, collectors, patrons, teachers, assistants, correspondents, and hosts of learned networks. Their contributions rarely produced eligibility for full membership or senior office. ČAVU inherited much of this unequal structure despite its claim to represent the completeness of Czech culture. Formal membership was opened to women only in 1923. The writer Eliška Krásnohorská became the first woman elected as a full member in 1924. Her admission possessed genuine symbolic importance, but it did not immediately transform the gender composition of institutional authority. The absence of women from early lists of presidents and general secretaries should therefore be interpreted as evidence of exclusion rather than lack of intellectual capacity. A responsible selection of personalities cannot manufacture female founders where the archive records none in formal office. It can, however, refuse to confuse institutional recognition with the total field of scholarly and cultural labour. The biographies of recognised organisers must consequently be read alongside the social boundaries that determined who was allowed to become institutionally visible (*Czech Academy of Sciences, n.d.*; *Mádlová, 2024*).

Thus, the personalities connected with the early learned societies and ČAVU reveal that institutional foundation was a cumulative process rather than a succession of isolated heroic acts. Petrasch demonstrated how patronage, editorial work, and regulated association could give scholarship a corporate presence. Born mobilised a network in which natural knowledge, territorial inquiry, and Enlightenment sociability reinforced one another. Stepling, Dobner, and Dobrovský supplied scientific and humanistic standards that made organised scholarship intellectually credible. Palacký transformed the relationship between learned authority and national public life without severing Czech scholarship from European intellectual exchange. Purkyně formulated an especially far-reaching vision of autonomous, self-governing, and research-oriented academic organisation. Hlávka then provided the money, political mediation, legal framework, and persistent leadership required to convert national academic ambition into ČAVU. Randa, Vrba, Zubatý, Foerster, Šusta, and their secretaries showed that an academy could survive only through repeated acts of adaptation after the founder had disappeared. Their careers encompassed the late monarchy, world war, national independence, republican development, occupation, liberation, and the approach of socialist reconstruction. Across these transformations, leadership combined intellectual reputation with administration, representation, negotiation, and control over material resources. The same history also exposes the exclusions hidden behind official lists of eminent office-holders, most clearly in the delayed admission of women. Taken together, these figures established the institutional repertoire—corporate membership, disciplinary plurality, patronage, publication, self-government, public representation, and negotiated relations with the state—from which later forms of the Czech and Czechoslovak Academy would both inherit and depart.

2. Leaders of ČSAV and the Politics of Academic Authority

Writing about the leaders of the Czechoslovak Academy of Sciences requires more than arranging its presidents in chronological order. The office changed its meaning as the political system, scientific community, and institutional structure of Czechoslovakia changed around it. Unlike the presidency of ČAVU, leadership of ČSAV involved responsibility for a large network of permanent research institutes. The president stood at the summit of an organisation employing thousands of researchers, technicians, librarians, administrators, and support workers. Leadership therefore combined ceremonial representation with influence over budgets, personnel, research planning, institute organisation, international cooperation, and relations with government. Scientific reputation remained important because the Academy could not claim authority without recognised scholars at its head. Political confidence was equally important because the communist state regarded science as a strategic sphere of socialist construction. Managerial ability became indispensable as laboratories, interdisciplinary programmes, large facilities, and central planning multiplied. International reputation could strengthen a president's position, but foreign connections were themselves politically regulated. The balance among these sources of authority varied considerably between Zdeněk Nejedlý, František Šorm, Jaroslav Kožešník, Bohumil Kvasil, Josef Říman, and Otto Wichterle. Reading their presidencies together reveals successive models of academic power rather than a uniform office occupied by different individuals. It also shows how the Academy moved from appointed party-state legitimacy towards elected professional representation without ever escaping the practical demands of institutional government (*Czech Academy of Sciences, n.d.*).

ČSAV was founded in 1952 as an academy of the Soviet institutional type. It combined the representative functions of a learned society with direct control over an expanding system of research workplaces. This hybrid form gave its leadership powers that earlier Czech academic presidents had never possessed. Learned membership conferred status upon academicians and corresponding members, while the institute system concentrated laboratories, collections, staff, and state resources under the Academy's jurisdiction. The state did not treat this concentration as politically neutral. Science was expected to contribute to industrialisation, ideological education, national defence, public welfare, and the international competition between political systems. The Academy's president consequently acted as a mediator between specialised scientific communities and the commanding structures of the socialist state. Decisions could be discussed within sections, collegia, institutes, and the Presidium, but their political acceptability remained constrained by the Communist Party. Formal corporate procedures coexisted with appointments, cadre assessments, ministerial intervention, and party supervision. The presidency therefore stood inside two hierarchies at once. It occupied the highest position in the formal scientific hierarchy while remaining subordinate to the governing political hierarchy. This structural duality shaped every ČSAV leader, including those who attempted to enlarge the sphere of professional autonomy (*Act No. 52/1952 Coll., 1952*; *Franc & Dvořáčková, 2019*).

The founding legislation expressed this political conception of academic authority with unusual clarity. Act No. 52/1952 declared that the Academy should serve the development of science and technology, the building of socialism, and the welfare of the people. It assigned ČSAV a leading coordinating role in fundamental research and made it an adviser to the

government on major scientific questions. The first academicians and members of the Presidium were appointed by the president of the republic on the government's proposal. Selection of the founding membership was prepared by a governmental commission rather than by an already autonomous body of scholars. Later elections and corporate procedures therefore developed inside a membership structure initially constituted through state power. Scientific distinction remained necessary because the Academy required credible representatives of mathematics, physics, chemistry, medicine, biology, engineering, humanities, and social sciences. Yet distinction was filtered through judgements about political reliability, usefulness, disciplinary priority, and compatibility with socialist construction. This arrangement produced an elite that was simultaneously scholarly and governmental. Its members could speak publicly in the name of science, but the state had participated decisively in determining who was authorised to do so. Academic leadership was consequently neither an empty political appointment nor an independent expression of peer recognition. It was a controlled fusion of expertise and political approval whose contradictions would repeatedly surface during later reforms (*Beran, 2005*; *Act No. 52/1952 Coll., 1952*).

Zdeněk Nejedlý was exceptionally well suited to personify this founding fusion. He had been president of the Czech Academy of Sciences and Arts from 1945 until its incorporation into the new order in 1952. He then became the first president of ČSAV and remained in office until his death on 9 March 1962. The succession created a visible personal bridge between ČAVU and its socialist institutional replacement. Nejedlý could therefore present the new Academy as an elevation of older Czech scholarly traditions rather than their political destruction. His background as a historian, musicologist, university professor, cultural polemicist, and public intellectual gave him recognisable academic credentials. His communist commitments and ministerial career gave him access to the political centre. Few other candidates could have linked 19th-century national culture, First Republic scholarship, wartime Soviet orientation, and post-1948 state authority so densely within one biography. This combination was particularly useful when the regime sought to describe ČSAV as the culmination of the progressive traditions of Czech and Slovak science. Nejedlý's presence made institutional rupture appear biographically continuous. It also allowed a Soviet-inspired reorganisation to be presented in a vocabulary of national historical fulfilment. His authority was therefore founded less upon daily scientific management than upon his capacity to make the new Academy historically and politically intelligible (*Czech Academy of Sciences, n.d.*; *Franc & Dvořáčková, 2019*).

Nejedlý's conception of authority had been formed through cultural struggle long before he assumed the ČSAV presidency. His interpretations of Czech history and music divided the past into progressive and reactionary traditions. Bedřich Smetana, Hussitism, the national revival, popular democracy, and communism could consequently be placed within one ascending narrative. Such historical ordering gave the socialist state a usable national genealogy. It also encouraged the treatment of intellectual disagreement as a conflict between historically legitimate and illegitimate positions. Within the humanities, this style of authority could narrow the boundaries of permissible interpretation. Historical, philosophical, literary, pedagogical, and artistic questions became especially vulnerable to ideological classification. Nejedlý did not invent every restriction imposed upon these disciplines, but his public authority helped legitimise the intellectual language through which restrictions were justified. The Academy under his presidency could honour selected national traditions while excluding approaches described as bourgeois, cosmopolitan, formalist, clerical, or reactionary. His leadership

therefore preserved culture through a process of political selection. This was one reason why ČSAV could become both a guardian of national scholarly resources and an instrument for reshaping their meaning. Nejedlý's academic authority was genuine, but it operated through a strongly hierarchical understanding of historical truth (*Franc & Dvořáčková, 2019*; *Czech Academy of Sciences, n.d.*).

The symbolic prominence of Nejedlý should not obscure the distribution of operational power within the early Academy. He could not personally direct the specialised work of nuclear physics, organic chemistry, physiology, mathematics, geology, linguistics, archaeology, or engineering. Daily coordination depended upon vice-presidents, scientific secretaries, section leaders, institute directors, planning offices, and administrative departments. These actors translated ideological programmes into research plans, staffing decisions, budgets, and institutional routines. They also mediated in the opposite direction by explaining disciplinary needs to political authorities. The resulting system left limited space for professional negotiation even within a fundamentally controlled structure. A politically trusted institute director could protect a research group by presenting its work in terms acceptable to the state. The same director could also reinforce ideological conformity by excluding politically vulnerable colleagues. Academic authority therefore travelled through several organisational levels rather than descending only from the president. Nejedlý remained the public face of the Academy, but younger scientific organisers increasingly shaped its research capacity. This distinction between symbolic presidency and executive scientific management is essential for understanding the rise of František Šorm. It also demonstrates that personal leadership in ČSAV was always exercised through an apparatus whose officials could amplify, reinterpret, or obstruct presidential priorities (*Franc & Dvořáčková, 2019*).

The composition of the first leadership illustrates this deliberately hybrid arrangement. Nejedlý supplied historical and political symbolism at the summit. The physiologist Vilém Laufberger served as first deputy and brought recognised biomedical authority into the executive structure. The archaeologist Jaroslav Böhm represented historical scholarship and the Academy's responsibility for national cultural research. František Šorm, appointed chief scientific secretary, contributed chemical expertise, organisational ambition, and experience in team-based research. Together these figures linked culture, medicine, archaeology, chemistry, administration, and party-state legitimacy. Their cooperation did not eliminate rivalries or unequal access to decision-making. It did, however, prevent the early Academy from being governed solely as an ideological ministry without scientific expertise. The state required researchers capable of constructing institutes and producing credible results. Scientists, in turn, required access to budgets, buildings, equipment, appointments, and international agreements controlled through the state. The Presidium became one of the principal arenas in which these reciprocal dependencies were negotiated. Its authority derived from the combination of political delegation and disciplinary representation rather than from either source alone (*Czech Academy of Sciences, n.d.*; *Franc & Dvořáčková, 2019*).

František Šorm emerged from this structure as the most influential scientific organiser of the Academy's first two decades. He had participated in preparations for ČSAV and was only thirty-nine when appointed among its first academicians. From 1952 to 1957, he served as chief scientific secretary and assumed substantial responsibility for the Academy's daily operation. Between 1957 and 1962, he worked as a deputy president and participated in preparing national research plans. He simultaneously directed the institution that became the Institute of Organic Chemistry and Biochemistry. This accumulation of positions gave him authority over

a major discipline, a leading institute, and central scientific administration. His influence consequently preceded his formal election as president on 30 March 1962. Šorm's standing rested upon a combination of serious research, organisational energy, political loyalty, and an ability to secure resources. He maintained valuable contacts with Soviet scientific leaders while also understanding the importance of wider international scientific communication. Unlike Nejedlý, he represented the generation that had built its authority through laboratory science and institute management. His rise marked a transition from cultural-symbolic founding leadership towards technocratic scientific government (*Franc, 2018*; *Franc & Dvořáčková, 2019*).

Šorm's model of leadership was rooted in the organisation of collective research. Wartime and post-war experience had taught his chemical circle to work through teams organised around defined problems and possible applications. This approach corresponded well with the socialist preference for planned, socially useful, and institutionally concentrated science. It also reflected genuine transformations occurring internationally in laboratory research. Modern chemistry increasingly depended upon specialised equipment, coordinated groups, technical staff, extensive documentation, and sustained financial investment. Šorm used the Academy system to provide these conditions on a scale difficult to achieve within the universities. He recruited talented researchers, supported emerging specialisations, and helped make organic chemistry and biochemistry particularly prominent within ČSAV. The resulting authority was scientific because it produced respected work, but it was also infrastructural because it controlled the environment in which work became possible. Researchers depended upon institutional leaders for positions, laboratories, foreign travel, publication, and access to scarce instruments. Šorm's scientific credibility allowed him to make persuasive claims upon the state, while his political reliability reassured officials that resources would serve approved priorities. He consequently became a powerful intermediary who could convert political support into scientific capacity and scientific success into further institutional influence (*Franc, 2018*; *Nisonen-Trnka, 2012*).

This concentration of authority gave Šorm's presidency a distinctly ambiguous character. He was more professionally oriented than Nejedlý and generally valued scientific ability in recruiting collaborators. His leadership helped create space for internationally competitive research and for younger scientific schools. Nevertheless, his organisational style could be forceful, centralising, and personally dominant. Contemporary criticism accused him of arrogance and of favouring chemistry, especially organic chemistry and biochemistry, over other fields. He was also connected to the Communist Party and became a member of its Central Committee in 1962. His authority cannot therefore be described as independent of the political system that enabled his rise. At the same time, he did not behave merely as an obedient transmitter of party instructions. He possessed his own scientific programme and attempted to influence national policy according to his understanding of research needs. This capacity distinguished a powerful scientific politician from a replaceable administrative functionary. Šorm could use loyalty to defend science, but the same position allowed his disciplinary preferences to shape institutional priorities. His presidency demonstrates that professionalisation did not automatically produce pluralistic self-government. It could instead create a technocratic form of academic authority in which scientific excellence, political access, and personal command reinforced one another (*Franc, 2018*; *Franc & Dvořáčková, 2024*).

During the 1960s, Šorm's leadership became associated with greater internationalisation and a gradual broadening of scientific debate. Czechoslovak researchers increased contacts with Western colleagues while maintaining extensive relations within socialist scientific networks. International conferences, foreign publications, research visits, and personal correspondence acquired renewed importance. These contacts exposed scientists to alternative methods of organisation and to the widening technological gap between research systems. They also strengthened professional communities whose standards could not be defined entirely through domestic political criteria. The Academy's natural scientists became increasingly willing to argue that excessive bureaucracy and ideological isolation weakened national research. Social scientists simultaneously developed analyses of economic reform, technological change, social structure, and modernisation. The Academy thus became one of the institutional environments in which the reform communist search for a more rational and participatory socialism developed. Šorm was not the radical intellectual leader of every reform initiative. He often acted cautiously and had to reconcile reformist pressures with his established position inside the system. Nevertheless, the authority of a president with genuine international scientific standing helped make demands for professional competence and greater openness politically consequential (*Nisonen-Trnka, 2008*; *Franc & Dvořáčková, 2024*).

The Prague Spring exposed both the possibilities and limits of Šorm's model. In 1968, ČSAV contained researchers who demanded democratisation, freedom of discussion, reform of membership, and stronger institutional autonomy. The Academy was simultaneously criticised as a privileged and authoritarian creation of the Stalinist period. Šorm initially appeared too cautious to some reformers who expected an immediate rejection of inherited practices. His position was difficult because he belonged to the scientific establishment that reform sought to change while also sharing several of its objectives. The Warsaw Pact invasion removed the possibility of resolving this tension through gradual internal transformation. Soviet troops occupied the Presidium building on Národní Street, giving the assault upon academic autonomy a direct physical form. Šorm condemned the invasion and refused to recant his position when political pressure intensified. His stance cost him the presidency in October 1969 and eventually his leadership of the Institute of Organic Chemistry and Biochemistry. He was subsequently marginalised and transformed from a central scientific statesman into a politically restricted figure. The same regime that had elevated him as a loyal organiser now treated professional and civic independence as disqualification. His fall demonstrated that scientific authority could influence policy only while it remained within boundaries ultimately determined by political power (*Franc, 2018*; *Garfield, 1992*; *Nisonen-Trnka, 2012*).

Šorm was not the only leader through whom the Academy's reformist potential was expressed. The microbiologist Ivan Málek served as a vice-president and developed an influential conception of modern biological research. Málek combined communist commitment, international scientific activity, institutional construction, and a growing concern for professional autonomy. His relationship with Šorm included cooperation as well as rivalry over disciplinary organisation and access to resources. Such rivalry shows that the politics of academic authority also operated horizontally among powerful scientific organisers. Vice-presidents, scientific secretaries, institute directors, and section leaders could build constituencies within their disciplines. They competed over whether new fields should belong to biological, chemical, medical, technical, or social-scientific structures. These classifications affected budgets, appointments, buildings, and long-term institutional identity. During the reform period, senior scientists could use their organisational positions to support

greater openness even if they had earlier benefited from the socialist Academy system. After 1969, figures such as Málek were removed or severely marginalised because their professional authority had become politically unreliable. Normalisation therefore did not replace incompetent administrators with competent ones according to neutral criteria. It reconstructed the hierarchy by separating scientific ability from the right to exercise institutional power (*Franc, 2018*; *Franc & Dvořáčková, 2024*).

Jaroslav Kožešník became the central presidential figure of this reconstruction. He took over as acting vice-chairman in October 1969 and formally assumed the chairmanship in May 1970. He then remained at the head of ČSAV until the end of 1980. Kožešník possessed genuine scientific credentials in mechanics, automation, modelling, and cybernetics. His disciplinary background suited a regime seeking to present normalisation as rational, technically competent, and oriented towards modernisation. Cybernetics had once been condemned as a bourgeois pseudoscience, but by the 1960s it had become important to automation, information processing, management, and visions of scientific-technological progress. A specialist in this field could therefore symbolise modern expertise without encouraging political pluralism. Kožešník was also a communist political figure and served within representative structures of the socialist state. His presidency combined technical prestige with dependable participation in the restored order. This did not mean that every decision he made was dictated directly by party officials. It meant that his authority was considered safe because it did not challenge the political settlement imposed after the Prague Spring. His appointment signalled that the Academy would continue to value science, but only under leadership compatible with normalisation (*Czech Academy of Sciences, n.d.*; *Míšková, Barvíková, & Šmidák, 1998*).

Kožešník's long presidency transformed exceptional political intervention into a stable administrative order. The first years after 1969 brought dismissals, forced resignations, demotions, exclusions from the Communist Party, restrictions on publication, and bans on foreign travel. Once these measures had reordered the institution, control increasingly operated through routine procedures. Research plans, personnel evaluations, directorial appointments, editorial approvals, travel permissions, and promotion decisions incorporated political expectations into everyday administration. The president stood at the summit of this machinery, but the machinery did not require his personal intervention in every case. Institute party organisations and cadre departments could identify politically vulnerable employees. Scientific secretaries and disciplinary bodies could redirect resources away from suspect groups. Directors understood that their own careers depended upon maintaining political order within their workplaces. Researchers learned which subjects, contacts, and formulations were likely to create difficulties. Academic authority consequently became preventative as well as punitive. The visible purge established the boundaries, while routine administration encouraged individuals to police themselves. Kožešník's political function lay partly in stabilising this predictable hierarchy after the turbulence of reform and repression (*Míšková, Barvíková, & Šmidák, 1998*; *Statutory Measure No. 26/1970 Coll., 1970*).

The political power of the normalised Academy cannot, however, be understood through Kožešník alone. Karel Friml, director of the Institute of Macromolecular Chemistry and chief scientific secretary during much of the 1970s, became especially influential in personnel interventions. Historical assessments identify him as one of the active organisers of purges affecting both Academy members and ordinary researchers. Some testimonies suggest that his interventions could be more zealous than those of the president himself. This distinction

matters because it reveals how executive offices below the presidency could exercise formidable power. A chief scientific secretary-controlled information, coordinated decisions, supervised plans, and communicated with institutes. The office could therefore translate general political expectations into specific professional consequences. Friml's position also shows that disciplinary background did not determine political conduct. A leader of a scientifically important chemical institute could participate actively in the restriction of other scientists. Scientific competence and political repression were not mutually exclusive qualities within the normalisation hierarchy. The same administrative knowledge that enabled effective research organisation could be used to dismantle careers and reshape institutions. Academic authority became most dangerous when professional procedures gave political exclusion the appearance of ordinary management (*Franc, 2018*; *Míšková, Barvíková, & Šmidák, 1998*).

Normalisation also changed the moral economy of leadership inside individual institutes. Directors were expected to maintain productivity while ensuring political stability. Some actively promoted ideological conformity and benefited from vacancies created by dismissed colleagues. Others used formal loyalty to protect research groups, preserve archives, or retain politically vulnerable specialists in subordinate positions. Many operated between these extremes and combined accommodation, ambition, fear, and professional responsibility. The central leadership depended upon such intermediaries because no Presidium could supervise every laboratory or manuscript directly. This dependence created limited zones of variation within an authoritarian system. One institute could remain comparatively open, while another became intellectually rigid under a more interventionist director. Natural sciences generally possessed greater room for protected specialisation, although travel, promotion, and appointment remained politically filtered. Humanities and social sciences faced closer regulation because their findings could challenge official interpretations of history and society. The result was not uniform intellectual silence but an unequal geography of constraint. Leadership politics reached researchers through local institutional cultures shaped by the character and choices of directors. The presidency represented the order publicly, but its everyday reality was produced by hundreds of smaller acts of authority (*Oates-Indruchová, 2008*; *Míšková, Barvíková, & Šmidák, 1998*).

Bohumil Kvasil succeeded Kožešník on 1 January 1981 and remained president until his death in October 1985. A physicist and specialist in mechanics, he continued the pattern of placing technical and natural-scientific expertise at the head of the Academy. His presidency belonged to the later phase of normalisation, when institutional stability had largely replaced the dramatic personnel conflicts of the early 1970s. ČSAV maintained a substantial network of institutes, international agreements, specialised facilities, and long-term research programmes. Political loyalty remained embedded in leadership selection, but public rhetoric increasingly emphasised scientific-technological development and economic effectiveness. Kvasil inherited an organisation whose procedures were stable but whose material and intellectual difficulties were becoming harder to conceal. Western equipment and information were often difficult to obtain, industrial implementation remained inefficient, and bureaucratic planning discouraged flexibility. His period in office does not carry the same symbolic associations as those of Nejedlý, Šorm, or Wichterle. This relative absence is itself revealing because late-socialist leadership increasingly presented itself as routine administration rather than historical transformation. The archival record of Kvasil's independent presidential secretariat demonstrates the breadth of central management required during these years. His

authority exemplified the institutionalised technocracy of a system that could preserve substantial scientific capacity without solving its growing structural stagnation (*Czech Academy of Sciences, n.d.*; *Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*).

Josef Říman's rise illustrates how scientific, administrative, and political careers could converge within the mature ČSAV hierarchy. Trained in biochemistry and molecular genetics, he had begun his Academy career within the institutional environment shaped by Šorm. His research, particularly in areas connected with RNA, gave him professional recognition beyond administrative office. In 1975, he became director of the Institute of Molecular Genetics. At the end of 1977, he replaced Friml as chief scientific secretary. He later became a vice-president and assumed increasing responsibility during Kvasil's illness. This progression provided him with experience at institute, disciplinary, and central levels. Following Kvasil's death, Říman was selected as president and formally took office in December 1985. His appointment was not an autonomous election detached from politics, because influential party bodies remained involved in leadership succession. Nevertheless, he was not simply an external functionary imposed upon an unfamiliar scientific community. He had travelled through the Academy's own career structure and understood its research organisation in detail. His authority therefore rested upon institutional mastery as well as political acceptability (*Franc, 2018*; *Czech Academy of Sciences, n.d.*).

Říman's presidency coincided with perestroika, growing awareness of technological decline, and limited attempts to revitalise socialist science. He promoted biotechnology as a strategically important field and sought improved equipment and material conditions. His period in office also witnessed a degree of renewed international contact. Restrictions affecting some scientists persecuted after 1968 were cautiously relaxed. Such changes should not be mistaken for a democratic transformation of the Academy. The Communist Party continued to define the political framework, and the existing leadership had not been chosen through free representative procedures. Yet the style of authority became less rigid than during the first normalisation decade. Scientific leaders increasingly acknowledged that isolation and underinvestment threatened Czechoslovakia's international position. The language of innovation, biotechnology, computing, forecasting, and modern management opened limited spaces for professional criticism. Říman could support such initiatives because they were compatible with the reform vocabulary emerging from the Soviet Union under Mikhail Gorbachev. He remained a leader of the late-socialist establishment, but his presidency also illustrates the establishment's attempt to repair itself through scientific expertise. The result was partial movement without a transfer of ultimate authority from the party-state to the scientific community (*Franc, 2018*; *Oates-Indruchová, 2008*).

The late-socialist leadership thus faced a contradiction that no managerial adjustment could resolve. The state needed honest scientific diagnosis of economic, technological, environmental, and social problems. At the same time, it restricted conclusions that questioned the political foundations of the existing system. Academy experts could study inefficiency, technological lag, demographic change, environmental damage, and future development. Their advice became politically inconvenient whenever professional analysis implied institutional pluralism, public accountability, or systemic reform. Presidents and directors were therefore expected to demand innovation without destabilising the hierarchy that obstructed innovation. They could request improved equipment while leaving cadre controls intact. They could expand selected international contacts while preserving political

screening of travel. They could encourage interdisciplinary forecasting while limiting the public use of critical social knowledge. This contradiction weakened the credibility of central leadership among younger researchers and previously excluded scholars. Administrative experience no longer automatically appeared as legitimate authority because it could also signify accommodation with stagnation. By 1989, the Academy retained substantial scientific capital but lacked a broadly accepted mechanism for determining who should govern it. The crisis of socialism therefore became a crisis in the source of academic authority itself (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*; *Blažka et al., 2014*).

The Velvet Revolution destroyed the political foundation upon which Říman's leadership rested. Researchers and institute employees quickly formed civic initiatives and demanded changes in personnel, governance, and institutional purpose. The existing Presidium could no longer claim legitimacy through its relationship with a ruling party whose monopoly was collapsing. On 6 December 1989, the Presidium resigned. An extraordinary general assembly on 12 December formally acknowledged the resignation and the emergence of a new representative movement. Říman's presidential term ended later that month. The speed of these events indicates that the crisis was not confined to public opinion outside the Academy. It originated within research workplaces whose employees no longer accepted reform conducted exclusively from above. The old leadership possessed administrative knowledge, but this knowledge could not compensate for its compromised political mandate. Nor could scientific qualifications by themselves erase the manner in which senior authority had been constituted under normalisation. A vacuum consequently opened between the collapse of appointed leadership and the creation of new democratic organs. Filling that vacuum required not simply another eminent president but an alternative principle of institutional representation (*Blažka et al., 2014*; *Czech Academy of Sciences, n.d.*).

The Chamber of Elected Representatives of ČSAV workplaces became the most important expression of this new principle. It emerged from civic activity coordinated by younger Academy employees and drew legitimacy from elections within individual institutes. The Chamber transformed workplaces from subordinate administrative units into constituencies capable of speaking about the Academy's future. Its authority was neither identical with the old corps of academicians nor reducible to revolutionary street politics. It represented researchers through their institutional communities. This arrangement enabled demands for democratisation to enter decisions concerning directors, institutes, budgets, and evaluation. It also prevented the transformation from becoming the exclusive property of previously powerful senior figures. At the same time, elected representatives required cooperation with experienced administrators and respected academicians who understood the complexity of the organisation. The resulting structure mixed pressure from below with expertise from within the former hierarchy. This mixture sometimes created conflict, but it also made institutional continuity possible. Authority was beginning to depend upon representation, transparency, professional justification, and the possibility of challenge. The Chamber therefore became an embryonic form of the academic self-government later embedded in the Czech Academy of Sciences (*Blažka et al., 2014*; *Franc, 2018*).

Otto Wichterle gave this democratic transformation its most powerful personal symbol. His achievements in macromolecular chemistry and soft contact lenses had earned international scientific recognition. During the 1960s, he had also become associated with demands for civic and academic reform. He was among the prominent supporters of the manifesto known as *Two Thousand Words*. After the defeat of the Prague Spring, he lost his directorial position and spent

much of the normalisation period outside the institutional leadership that his scientific standing might otherwise have justified. His biography therefore united discovery, invention, political marginalisation, and moral independence. Electing him president meant reversing the hierarchy created after 1969. A scientist whom normalisation had excluded from authority became the representative of an Academy seeking democratic legitimacy. The 59th General Assembly, held on 27–28 June 1990, elected a new twenty-six-member Presidium with Wichterle as chairman. His election was not merely compensation for personal injustice. It publicly declared that scholarly achievement and civic credibility should replace political conformity as sources of academic leadership (*Czech Academy of Sciences, n.d.*; *Nisonen-Trnka, 2012*; *Franc, 2018*).

Wichterle's presidency from June 1990 to December 1992 was symbolically strong but institutionally constrained in a new way. Unlike Nejedlý, Šorm, or Kožešník, he did not preside over a hierarchy whose authority was protected by a stable party-state. Power was now distributed among the Presidium, elected representatives, institute communities, reform committees, and the Committee for the Management of ČSAV Workplaces. The new leadership had to change directors, evaluate institutes, introduce competitive funding, restore international relations, and defend the Academy against proposals for dissolution. It also had to operate during severe financial uncertainty and the departure of researchers to universities, foreign institutions, and the private sector. Wichterle's prestige helped defend the continuing value of institute-based fundamental research. His communicative authority gave the Academy a public face distinct from the normalisation bureaucracy. Yet prestige could not substitute for budgets, legal reform, institutional evaluation, or agreement among competing academic constituencies. He therefore possessed less concentrated executive power than several of his predecessors. This limitation was not simply personal weakness. It reflected the democratic transformation of authority from presidential command towards distributed and accountable governance (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*; *Blažka et al., 2014*).

The final years of ČSAV also reopened the unresolved relationship between its Czechoslovak name and its actual institutional geography. The Slovak Academy of Sciences had long operated with substantial organisational independence, while ČSAV's own research institutes were concentrated in the Czech lands. Political federalisation after 1968 had not produced the balanced Czech academic structure once discussed by reformers. Wichterle himself had participated in proposals for a Czech academy in 1969 before normalisation halted them. After 1989, these older plans acquired new relevance as relations between the Czech and Slovak republics changed. The creation of the Academy of Sciences of the Czech Republic therefore involved democratisation, national institutional clarification, and preparation for possible federal dissolution. Wichterle's leadership connected the abandoned reform possibilities of 1968 with the practical reconstruction of the early 1990s. ČSAV legally ceased to exist on 31 December 1992 with the end of the Czechoslovak federation. Wichterle subsequently became honorary president of the new Czech Academy rather than its executive leader. This transition preserved the moral capital of his presidency while allowing a new governance system to begin under Rudolf Zahradník. The personalities examined in "Presidents and Reformers of AV ČR after 1993" would inherit an institution in which electoral accountability had become normal rather than revolutionary (*Franc, 2018*; *Blažka et al., 2014*).

Thus, the leaders of ČSAV embodied successive answers to the question of who could legitimately speak and decide in the name of science. Nejedlý grounded the new Academy in

communist state authority, national historical symbolism, and selective continuity with ČAVU. Šorm shifted the centre of gravity towards research organisation, international scientific standing, institute building, and technocratic expertise. His fall after 1968 demonstrated that even exceptional scientific authority remained conditional upon political obedience. Kožešník represented the stabilisation of normalisation through technically credible but politically dependable leadership. Kvasil personified the routinised technocratic administration of a mature late-socialist research system. Říman attempted limited renewal through biotechnology, equipment modernisation, and international reopening without escaping the compromised source of his institutional mandate. The resignation of the Presidium in December 1989 marked the collapse of authority derived from party-state appointment and normalisation hierarchy. The Chamber of Elected Representatives introduced a new claim that workplaces and researchers should participate directly in governing their institution. Wichterle then supplied the transition with a form of authority based upon scientific achievement, civic independence, persecution, and rehabilitation. His comparatively dispersed executive power reflected not failure but the emergence of collective self-government and institutional accountability. The history of ČSAV leadership therefore moves from the political selection of scholarly authority towards the difficult democratic construction of authority by the scientific community itself.

3. Presidents and Reformers of AV ČR after 1993

In the institutional history of the Czech Academy of Sciences, the presidency after 1993 cannot be understood merely as a succession of eminent scholars occupying the highest ceremonial office. The position emerged from the democratic reconstruction of Czech science and from the simultaneous disappearance of both the Czechoslovak federation and the Czechoslovak Academy of Sciences. Unlike the leadership of ČSAV, whose authority had been embedded to varying degrees in the structures of the party-state, the modern presidency was designed to derive legitimacy from scientific self-government, statutory procedure, and public accountability. This dual character made the President both the representative of an autonomous research community and the head of an organisation financed through a separate chapter of the state budget. The official succession comprises Rudolf Zahradník from 1993 to 2001, Helena Illnerová from 2001 to 2005, Václav Pačes from 2005 to 2009, Jiří Drahoš from 2009 to 2017, Eva Zažímalová from 2017 to 2025, and Radomír Pánek from March 2025 (*Czech Academy of Sciences, n.d.*; *Czech Academy of Sciences, 2025*). Each inherited an institution that had already been altered by the decisions of the preceding leadership, yet each also faced a different political economy of research. Zahradník had to demonstrate that the Academy deserved to survive the post-socialist rupture. Illnerová had to consolidate a democratic research organisation and give greater attention to generational renewal. Pačes presided over a fundamental reform of the legal position and governance of the Academy's institutes. Drahoš defended the institution against existential financial pressure and gave its public mission a new strategic language. Zažímalová led it through Europeanisation, the coronavirus emergency, expanding expectations of social responsibility, and renewed debates about scientific autonomy. Pánek entered office with an agenda centred on excellence, sustainable careers, technology transfer, political dialogue, and a more unified institutional voice. Read together, these presidencies reveal the gradual transformation of emergency leadership into a stable but continuously evolving system of academic representation.

The legal design of the presidency reflects the lessons drawn from the political subordination of science before 1989. Act No. 283/1992 established the Czech Academy of Sciences and defined the President as its statutory representative, authorised to act on behalf of the institution in all matters. The Academy Assembly, however, was designated as the supreme self-governing body, with authority over statutes, budgets, institutional structure, and the nomination of the President. The candidate selected by the Assembly is discussed by the Government and formally appointed by the President of the Czech Republic. A presidential term lasts four years, and no individual may serve for more than two successive terms. The arrangement combines several distinct forms of legitimacy rather than concentrating authority in a single source. Scientific legitimacy arises from the Assembly's choice, public legitimacy from the Academy's statutory position, and constitutional visibility from appointment by the head of state. The President manages the Academy's budgetary responsibilities, chairs its principal collective bodies, appoints Vice-Presidents from the elected Presidium, and appoints the directors of its institutes. Yet these powers are exercised within an architecture that includes the Academy Council, the Science Council, the Assembly, institute boards, and supervisory bodies. The President therefore possesses significant coordinating authority without becoming the personal sovereign of Czech non-university research. This structure separates the modern presidency from both the honorific leadership of a traditional learned society and the administratively dominant chairmanship possible under state socialism. It makes presidential influence dependent upon persuasion, coalition-building, procedural competence, and recognised scientific standing. The result is a carefully mediated model in which leadership remains powerful precisely because it is embedded in self-government (*Czech National Council, 1992*; *Czech Academy of Sciences, n.d.*).

For this reason, the history of presidential reform cannot be reduced to measures personally invented by individual office-holders. Every major change required interaction between the President, the Academy Council, the Assembly, institute directors, elected representatives, ministries, parliamentary actors, universities, and the broader research community. Presidential leadership could determine the tone of negotiations, articulate strategic priorities, and mobilise institutional support, but it could not legitimately replace collective decision-making. This distinction is essential when evaluating achievements that unfolded across more than one term. The legal transformation of institutes into public research institutions, for example, was prepared through prolonged discussion and implemented by a network of actors rather than by presidential decree. The same applies to evaluation reforms, career programmes, internationalisation, open science, and Strategy AV21. Nevertheless, presidents mattered because they converted dispersed institutional interests into a public argument about the national value of research. They also supplied a recognisable voice at moments when the Academy was challenged by governments, funding reforms, economic crises, or public emergencies. Their scientific biographies influenced which forms of evidence, cooperation, and organisational culture they found persuasive. Their leadership teams provided disciplinary balance and prevented the presidency from speaking solely for the field from which the President originated. Continuity among successive presidencies was reinforced because several future presidents first served as Vice-Presidents or members of the Academy Council. Illnerová and Pačes were Vice-Presidents under Zahradník, while Drahoš was a Vice-President under Pačes. The institutional succession was therefore competitive but also apprenticeship-based, allowing experience to pass through democratic changes of leadership. Reform in AV ČR consequently developed as a cumulative practice rather than a series of personal revolutions.

The first presidential election of the new Academy occurred in circumstances of exceptional uncertainty. Between 1 January and 25 February 1993, the former Committee for Managing the Institutes of ČSAV, chaired by the plant geneticist Jiří Velemínský, temporarily performed the functions of the Academy Council. The constituting Academy Assembly then elected Rudolf Zahradník President and Helena Illnerová and Václav Pačes Vice-Presidents. Otto Wichterle, the last Chairman of ČSAV and the moral symbol of its democratic reconstruction, became Honorary President. This configuration connected the reforming impulse of 1989–1992 with the legal institutions of the independent Czech Republic. The transition was orderly in formal terms, but it was not tranquil in either material or intellectual terms. The Academy had inherited institutes, property, personnel, research programmes, and international obligations from the dissolved federal organisation. At the same time, it faced demands for additional closures, mergers, staff reductions, and radical reconsideration of the role of non-university research. The new leadership could not rely upon the authority of an established institutional tradition because the legitimacy of the Academy itself remained contested. Nor could it simply disown ČSAV, since much of the country's best research capacity, equipment, collections, and specialist knowledge had developed within that institution. Its task was to separate scientific continuity from political continuity without pretending that the two had never intersected. The election of a distinguished scientist rather than a professional political administrator was intended to make this distinction visible. Zahradník's presidency thus began as an experiment in whether a scientific community could govern its own difficult transformation (*Czech Academy of Sciences, n.d.*; *Filáček, 2023*).

Rudolf Zahradník brought to the presidency the authority of a pioneering quantum chemist and an experienced builder of research teams. His work contributed to the establishment of quantum chemistry and molecular spectroscopy as internationally visible fields in Czechoslovakia. He had learned to practise theoretical science in an environment where computing resources, foreign contacts, and political freedom were frequently restricted. This experience gave his post-1989 institutional role a meaning that exceeded his personal scholarly distinction. Zahradník understood that international reputation could not be manufactured by official declarations, but had to rest on research groups capable of producing work recognised abroad. He was also known as an attentive mentor whose influence extended across several generations of chemists. His scientific authority therefore combined publication, disciplinary innovation, international networks, and the formation of younger researchers. Such a profile was particularly valuable when the Academy needed to persuade sceptics that it contained living scientific schools rather than only inherited bureaucratic structures. His presidency did not represent a withdrawal from research into administration, because he treated the organisation of science as part of scientific responsibility. The same habit of identifying promising questions in quantum chemistry informed his effort to distinguish viable institutional capacities from structures that could no longer be defended. His intellectual cosmopolitanism helped him resist an interpretation of Czech science based entirely on national self-sufficiency. At the same time, his attachment to the country's research traditions prevented internationalisation from becoming an argument for dismantling domestic institutions. Zahradník thus embodied the connection between scientific impact and institutional significance that defines the selection of personalities in this chapter (*IOCB Prague, 2020*; *Schwarz & Friedrich, 2021*).

The central problem of Zahradník's presidency was institutional survival through selective contraction. The early 1990s brought personnel reductions on a scale that affected almost

every part of the Academy. Institutes were evaluated, research programmes were reconsidered, and some workplaces were dissolved, merged, or substantially reorganised. These measures were not simply technical corrections to an otherwise stable system. They determined which communities would retain laboratories, archives, equipment, employment, and the ability to train successors. The humanities and social sciences faced especially difficult questions because genuine scholarship had frequently coexisted with institutions or programmes shaped by ideological demands. Natural and technical sciences confronted different but equally serious problems, including obsolete equipment, disrupted industrial relationships, and dependence on organisational assumptions inherited from central planning. Zahradník and his colleagues therefore had to defend the Academy while demonstrating that defence did not mean the preservation of every inherited unit. The new self-governing bodies assumed responsibility for decisions that under the previous regime would have been taken within political-administrative hierarchies. This was one of the harshest tests of the Academy's democratisation, since autonomy now meant accepting responsibility for painful internal choices. Evaluation supplied a language of quality and future potential, although no procedure could make the human consequences of contraction painless. The President's role was to maintain confidence that the process sought scientific renewal rather than institutional revenge. By the end of his first term, AV ČR was markedly smaller, but it had also become more selective, more autonomous, and more capable of explaining its structure in scientific terms (*Filáček, 2023*).

Survival also depended on changing the Academy's relationship with the Czech state. Market-oriented reformers could portray a large institute-based Academy as an expensive remnant of the Soviet model, while some university representatives questioned why research should remain concentrated outside higher education. Zahradník could not answer these criticisms by appealing to historical entitlement alone. He had to show that specialised institutes performed tasks that universities, burdened by the rapid expansion of teaching, could not always sustain at the same scale or over the same length of time. These tasks included maintaining major facilities, specialised laboratories, long-term datasets, collections, dictionaries, archives, and research teams built around problems rather than degree programmes. At the same time, the Academy had to abandon any implication that it possessed a monopoly over serious research. Cooperation with universities, participation in doctoral education, and competition for grants became indispensable parts of its new legitimacy. Zahradník's leadership consequently defended institutional differentiation rather than institutional hierarchy. The Academy would be neither a superior ministry of science nor a subordinate service organisation for universities. It would operate as a public non-university research system whose autonomy was justified by quality, continuity, and cooperation. This position required constant negotiation because public budgets made the Academy dependent upon political decisions even after ideological control had disappeared. Zahradník's achievement lay less in eliminating this dependency than in changing its terms. The state would continue to finance and regulate the Academy, but its research priorities would be shaped through scientific self-government rather than party command (*Czech National Council, 1992*; *Filáček, 2023*).

The international reintegration of Czech science formed another important dimension of the first presidency. Researchers who had previously encountered restrictions on travel, publication, equipment acquisition, and professional contact now entered a much more open but also more competitive environment. Zahradník used his own international standing to

restore relationships with foreign academies, universities, scientific societies, and individual scholars. The Academy's survival was thereby linked to its capacity to meet external standards rather than merely to persuade domestic political patrons. International reviewers increasingly participated in assessments, researchers competed for foreign grants, and institutes rebuilt connections interrupted or distorted during the socialist period. This development did not erase the inequalities between Czech science and wealthier Western systems. Laboratories still faced financial shortages, salaries remained comparatively low, and institutional adjustment demanded considerable administrative learning. Nevertheless, international engagement provided a horizon against which internal reform could be evaluated. Zahradník also helped establish the Learned Society of the Czech Republic in 1994, reviving the function of a selective association of distinguished scholars without confusing it with the institute-governing role of AV ČR. The separation was institutionally significant because ČSAV had combined the functions of a research organisation and a body of academicians. AV ČR would conduct research through institutes, while the Learned Society would cultivate personal scholarly distinction, free discussion, and representation of intellectual excellence. This arrangement preserved an older academic tradition while preventing honorific membership from becoming a mechanism of administrative power. The President's participation in both worlds demonstrated that institutional leadership and learned recognition could reinforce one another without becoming identical (*IOCB Prague, 2020*; *Czech National Council, 1992*).

Zahradník's second term, from 1997 to 2001, marked the transition from emergency reconstruction to more regular institutional consolidation. The continued operation of the Assembly and Academy Council normalised practices that had initially carried the uncertainty of constitutional invention. Institutes gradually adapted to competitive grants, international publication, new accounting requirements, and cooperation with universities and foreign partners. The Academy's public identity became less defensive because its survival no longer appeared to be questioned at every institutional turn. Yet stabilisation did not mean that financial or political vulnerability had disappeared. The President still had to persuade governments that basic research required continuity extending beyond electoral and project cycles. He also had to maintain solidarity among disciplines whose infrastructure, publication patterns, and public visibility differed considerably. The composition of the leadership helped in this respect by including representatives of physical, life, technical, social, and human sciences. Zahradník's presidency established the expectation that the head of the Academy must represent this disciplinary whole rather than act as an advocate for a single sector. It also established an informal standard according to which presidential legitimacy rested on recognised research achievement combined with institutional service. His departure after the maximum two successive terms demonstrated that continuity did not require personal permanence. The Academy could now transfer authority through an established electoral and statutory process rather than through political intervention. The institutional legacy of his presidency was therefore not a single programme but the successful normalisation of democratic scientific government. He left an Academy whose continued existence was more secure and whose leadership could turn from survival towards the quality of its internal development.

Helena Illnerová's election in 2001 represented both continuity with the founding leadership and an important symbolic change. She had served as Vice-President throughout Zahradník's two terms and therefore possessed unusually detailed knowledge of the Academy's post-1993 reconstruction. At the same time, she became the first woman to lead the Czech Academy and

its institutional predecessors, making visible a form of authority that had long remained exceptional at the highest level of Czech science (*Radio Prague International, 2001*). Her scientific work concerned chronobiology, particularly the mechanisms by which mammalian circadian and seasonal rhythms respond to environmental signals. This field demanded attention to temporal regulation, adaptation, and the interaction between internal systems and external conditions. Although institutional policy should not be mechanically derived from scientific specialisation, the metaphor is unusually apt in Illnerová's case. Her presidency addressed an Academy that had survived its acute crisis but still needed a sustainable rhythm of renewal. She brought to the office the perspective of an experimental physiologist, an experienced institute researcher, and a participant in international scientific organisations. Her leadership style was often associated with dialogue, careful explanation, and the conviction that excellence required supportive institutional conditions. She did not present consolidation as a reason for complacency. Instead, she shifted attention towards the people who would determine whether the reformed Academy remained scientifically creative. Her presidency thus made generational policy, research culture, and the human conditions of institutional continuity more visible.

One of Illnerová's most consequential initiatives was a programme supporting promising young scientists. The programme acknowledged that the severe restructuring of the 1990s had not by itself solved the problem of generational succession. Younger researchers entered an environment shaped by low salaries, uncertain career prospects, stronger international competition, and the expectation of mobility. Many could leave for foreign institutions without any reliable pathway of return. Others encountered internal hierarchies in which established senior scientists retained control over teams, resources, and institutional recognition. Supporting the next generation therefore required more than celebrating youthful talent rhetorically. It demanded funding instruments that provided time, independence, and visible institutional endorsement. Illnerová's initiative helped establish generational renewal as a responsibility of the Academy's central leadership rather than a matter left entirely to individual institutes. It also contributed to the environment from which later programmes and awards for early-career researchers would develop. The policy linked excellence with succession, emphasising that an institution unable to renew its scientific personnel would eventually lose the very traditions it sought to preserve. It further demonstrated that presidential reform could operate through incentives and recognition rather than structural abolition. Illnerová's own international scientific experience strengthened the argument that young Czech researchers should enter global networks without being permanently lost to the domestic system. The resulting approach treated mobility as a circulation of knowledge rather than as a simple one-directional departure. Her presidency thus broadened the meaning of institutional reform from the redesign of organisations to the cultivation of careers (*Institute of Physiology of the Czech Academy of Sciences, n.d.*).

Illnerová's presidency also contributed to a more communicative understanding of academic authority. The post-socialist Academy could no longer assume that its social value was self-evident to politicians, journalists, teachers, or citizens. Public representation required explanation of what basic research was, why it could not always promise immediate application, and how apparently specialised work contributed to education, culture, medicine, technology, and national intellectual capacity. Illnerová was well placed to perform this translation because chronobiology connected fundamental physiological mechanisms with questions readily recognisable in everyday life. She could present science as rigorous without

making it remote. This public role mattered at a time when the Czech research system was becoming more plural and when different organisations competed for attention and funding. Her position as the first woman President also altered the representational image of the Academy, even though one election could not eliminate structural inequalities in laboratories or leadership. It showed that the highest office was not formally reserved for the traditional male networks that had dominated much of institutional history. Yet Illnerová did not frame her authority solely through gender, and her presidency should not be reduced to symbolic precedent. She acted as the representative of the entire disciplinary range of AV ČR. Her leadership team included figures from physics, ethnology, plant science, mathematics, philosophy, materials research, medicine, and other fields. This breadth reinforced the principle that the presidency must combine a distinct personal scientific biography with collective disciplinary representation. Academic authority was becoming more publicly accessible, but it remained grounded in the plural research community of the Academy.

The institutional conditions of the early 2000s differed significantly from those confronting Zahradník in 1993. The Czech Republic was preparing for membership of the European Union, research funding was becoming more closely linked to evaluation and competition, and European programmes offered new possibilities for collaboration. These opportunities also increased the administrative and strategic demands placed upon institutes. Success required project offices, foreign-language competence, partnerships, mobility arrangements, and familiarity with complex funding rules. The President had to represent the Academy not only before the Czech state but also within an emerging European Research Area. Illnerová's international engagement helped present AV ČR as a European research organisation rather than an institution defined primarily by its post-socialist origins. At the same time, she defended the need for national institutional support because European projects could not maintain every laboratory, archive, or long-term research programme. Her presidency therefore balanced international openness with the preservation of domestic research capacity. It also deepened cooperation with universities, especially in doctoral education and joint research. Such cooperation was necessary, but it required attention to equality between partners because the Academy did not award university degrees independently. Institutes provided supervision, specialised environments, and infrastructure, while universities supplied accredited educational frameworks. Presidential leadership helped frame this division of labour as complementarity rather than competition. The Academy consequently entered the period of European Union membership with a more consolidated identity and a clearer commitment to generational development.

Illnerová's four-year term demonstrated that consolidation could itself be reformative. She did not confront an institutional rupture comparable to that of 1993, nor did she preside over a single dramatic reorganisation that could define her entire leadership. Her contribution lay instead in changing which problems were recognised as strategic. Career development, communication, the position of younger scientists, international participation, and the quality of institutional culture moved closer to the centre of Academy policy. This was an important shift because post-socialist reform had initially been measured largely through closures, personnel numbers, budgets, and legal structures. Illnerová showed that the durability of those reforms depended upon the everyday experience of researchers. She also maintained continuity in the Academy's defence of basic research while helping to make that defence less corporatist and more socially intelligible. The first female presidency widened the symbolic repertoire of Czech scientific leadership without breaking the principle of selection through

scholarly standing and self-government. Her term further confirmed that leadership succession could occur peacefully and predictably. When Václav Pačes assumed the presidency in 2005, he inherited neither an emergency committee nor an institution struggling for basic recognition. He inherited a consolidated Academy facing a new stage of legal, organisational, and European transformation. The transition between them illustrates how presidential periods overlapped in substance even when their formal mandates were clearly separated. Illnerová's presidency was therefore a bridge between the Academy's successful survival and the deeper reform of its institute-based governance.

Václav Pačes brought to the presidency a scientific biography rooted in molecular genetics and genomics. He had directed the Institute of Molecular Genetics and participated in research that connected fundamental understanding of genomes with diagnostic, therapeutic, and biotechnological possibilities. His group's work included internationally recognised genome sequencing, while his later activities extended to the scientific coordination of major collaborative infrastructures. Such experience was well suited to a period in which the distinction between basic and applied research was becoming increasingly porous. Genomics could produce fundamental knowledge while also opening paths towards medicine, biotechnology, and industrial cooperation. Pačes therefore personified an Academy that no longer needed to defend basic research by presenting it as isolated from use. Instead, it could argue that strong applications often developed from long-term inquiry whose eventual consequences could not be predicted in advance. His prior service as Vice-President and member of the Academy leadership provided continuity with the institutional settlement created during the 1990s. At the same time, his directorial experience gave him practical knowledge of institute-level administration, research teams, property, budgets, and personnel. This perspective became especially important as the legal status of Academy institutes was reconsidered. Pačes's presidency consequently joined scientific modernisation with organisational reform. It also strengthened the visibility of molecular and life sciences within the public image of the Academy without allowing them to displace its broader disciplinary mission (*Radio Prague International, 2006*; *STAR Cluster, 2019*).

The decisive institutional development of the Pačes period was the adoption and implementation of the legal framework for public research institutions. Act No. 341/2005 created the *veřejná výzkumná instituce*, or public research institution, as a distinct legal form for publicly founded research organisations. The accompanying amendments to the Act on the Czech Academy of Sciences prepared the transformation of Academy institutes into legally autonomous public research institutions. The new Statutes, approved in 2006 and effective from the beginning of 2007, described the Academy as a democratically organised network of autonomous scientific institutions. Each institute possessed its own legal personality, director, institute board, and supervisory board, while the Academy remained its founder and the coordinating centre of the system. This arrangement altered the relationship between the central leadership and the institutes more deeply than a simple change of administrative terminology. Institutes gained clearer responsibility for property, contracts, financial management, employment, and cooperation with external partners. Their autonomy, however, was paired with formal mechanisms of supervision, annual reporting, auditing, and founder responsibility. The Academy President continued to appoint directors and exercise important statutory powers, but institute governance now rested on a more differentiated legal architecture. The reform therefore decentralised operational responsibility without dissolving the Academy into unrelated organisations. It also sought to protect research institutes from

being treated as ordinary administrative departments of the state. Under Pačes, presidential leadership became increasingly concerned with governing autonomy rather than merely obtaining it (*Parliament of the Czech Republic, 2005*; *Czech Academy of Sciences, n.d.*).

The public research institution reform embodied a characteristically Czech compromise between decentralisation and institutional solidarity. Complete separation might have given individual institutes greater freedom, but it would also have weakened their shared bargaining power and endangered smaller or less publicly visible disciplines. Excessive centralisation, by contrast, would have reproduced the administrative habits from which the post-1989 Academy sought to distance itself. The adopted model preserved the Academy as a single national research framework while recognising that scientific responsibility had to be exercised close to the workplace where research was actually conducted. Institute boards introduced elected scholarly participation, and supervisory boards connected autonomy with financial and legal oversight. Directors became statutory representatives of their institutions rather than merely subordinate managers within a central office. The President and Academy Council retained strategic, appointive, evaluative, and coordinating authority, but could no longer treat institutes as undifferentiated administrative units. This balance created space for institutes to develop partnerships, manage intellectual property, participate in consortia, and respond to disciplinary opportunities. It also increased the professional demands placed on institute leadership, since scientific distinction alone was no longer sufficient preparation for complex legal and financial responsibility. Pačes's period therefore helped institutionalise a managerial layer that remained accountable to scientific self-government. The reform did not eliminate tensions between central priorities and institute autonomy. Instead, it provided procedures through which those tensions could be negotiated. Its durability demonstrates that one of the most important presidential achievements after 1993 was the construction of stable relationships among multiple centres of academic authority.

The Pačes presidency also coincided with the first years of Czech membership of the European Union. European programmes, infrastructures, and networks increasingly shaped the ambitions of Academy institutes. Participation required not only excellent individual researchers but also organisations capable of co-financing projects, administering international consortia, and sustaining expensive facilities. The emerging BIOCEV project, later developed jointly by the Academy and Charles University, exemplified the movement towards large-scale cooperation in biomedicine and biotechnology. Pačes's experience in genomics allowed him to understand both the scientific promise and organisational difficulty of such initiatives. His presidency encouraged a view of the Academy as a partner within broader research ecosystems rather than a self-contained institutional world. Cooperation with universities became increasingly visible in advanced education, shared infrastructure, and interdisciplinary centres. Relationships with industry also acquired greater importance as policymakers asked public research organisations to demonstrate economic relevance. Pačes could answer these demands by pointing to the practical possibilities of genetics while continuing to insist that application depended upon fundamental discovery. This position avoided both the romantic isolation of basic science and the reduction of research to short-term commercial return. It also prepared the conceptual ground for later technology-transfer structures and public-interest strategies. The Academy's internationalisation during this period therefore involved European funding, institutional partnerships, and a changing philosophy of how knowledge moved beyond the laboratory. Presidential reform was becoming

inseparable from the Academy's capacity to organise cooperation across legal and disciplinary boundaries.

Pačes left office in 2009 after a term that had made the governance of institutes more legally autonomous and administratively demanding. His presidency did not attract the existential symbolism associated with the Academy's creation in 1993, yet the public research institution reform reshaped everyday authority throughout the system. The change clarified who could own, contract, employ, supervise, and decide at institute level. It also strengthened the need for central coordination because greater legal autonomy could produce fragmentation if not joined to common evaluation, budgetary, and strategic mechanisms. Pačes's leadership showed that institutional reform after socialism was not completed when political control was removed. Democratic research organisations also needed workable rules for property, responsibility, oversight, and cooperation. His scientific background helped connect this organisational modernisation with the changing frontier of internationally networked research. The presidency itself became more complex as the Academy moved further into European programmes and public-private collaboration. Its holder now needed to understand not only state budgets and scholarly representation but also research infrastructures, contracts, intellectual property, and multiple funding streams. Pačes's Vice-President Jiří Drahoš was therefore prepared for the succession through direct involvement in this expanding agenda. Yet the environment changed abruptly as the financial crisis reached Czech science policy. The next presidency would be compelled to defend not merely the legal autonomy of institutes but their material capacity to function. The handover in March 2009 thus joined a completed governance reform to an approaching budgetary confrontation.

Jiří Drahoš entered the presidency with experience in chemical engineering, multiphase reactors, institute management, and European professional organisations. He had worked at the Institute of Chemical Process Fundamentals and had served as its director before becoming Vice-President of the Academy. His research background lay at the intersection of theory, experiment, engineering, and industrial relevance. This made him familiar with the practical continuum between fundamental knowledge and technological application. It also gave him experience of research fields in which expensive equipment, long-term teams, and cooperation with industry were indispensable. Drahoš inherited an Academy whose legal architecture had recently been modernised but whose financial position remained dependent on annual political decisions. His presidency consequently tested whether statutory autonomy could survive severe material pressure. The issue was not merely whether individual projects would receive less money. Dramatic reductions in institutional funding could have forced institutes to dismiss personnel, abandon programmes, or consume resources needed to maintain infrastructure. They could also have intensified competition among disciplines and weakened the solidarity on which the Academy's network depended. Drahoš therefore had to translate complex budgetary consequences into a public argument comprehensible beyond the research community. His authority rested not only on formal office but on his ability to appear as a measured and credible defender of a national scientific resource. This capacity became decisive within months of his election.

The budget conflict of 2009 was one of the most serious political tests faced by AV ČR after its founding. Draft funding plans envisaged a reduction approaching one billion Czech crowns in the following year and potentially much deeper cuts thereafter. Academy representatives interpreted the trajectory as a threat to the continued existence of parts of the institute system rather than as an ordinary austerity measure. Drahoš responded through negotiation with

Prime Minister Jan Fischer, public explanation, and mobilisation of support within and beyond the scientific community. The Government eventually proposed increasing the Academy's allocation by half a billion crowns compared with the threatened level, acknowledging that the original reduction would have had destructive consequences (*Government of the Czech Republic, 2009*). The confrontation demonstrated that formal autonomy offered little protection if the institution lacked the resources needed to exercise it. It also showed that presidential representation could become openly political without becoming partisan. Drahoš did not seek authority over government policy as a whole, but he contested a funding decision by articulating its likely effects on research capacity. The episode brought researchers, institute directors, students, learned societies, and sections of the public into a common defence of the Academy. It strengthened the perception that non-university research was not an obscure administrative inheritance but part of the country's intellectual infrastructure. At the same time, the crisis exposed the recurring vulnerability of long-term science to short political and fiscal cycles. Drahoš's success did not permanently solve the funding problem, but it prevented a shock that might have reversed much of the institutional stabilisation achieved since 1993.

The budget struggle influenced the strategic character of Drahoš's two terms. Defence against cuts had shown that the Academy required a more persuasive account of how excellent basic research related to the needs of society. This did not mean accepting the claim that every institute should produce immediately marketable results. It meant demonstrating that public relevance could take technological, medical, environmental, cultural, historical, legal, and social forms. The resulting Strategy AV21, introduced during Drahoš's second term, organised interdisciplinary research programmes around significant contemporary challenges. Its motto, "Top research in the public interest", joined scientific excellence with a more explicit commitment to public value. The programmes encouraged cooperation across institutes and disciplinary areas rather than simply adding another layer of central planning. Social sciences and humanities could participate alongside natural and technical sciences in addressing energy, health, food, mobility, resilience, and social change. The strategy therefore challenged a narrow model in which relevance belonged only to patent-producing disciplines. It also gave the Academy a recognisable public narrative that could be communicated to ministries, universities, municipalities, industry, and citizens. Fundamental research remained the institution's central mission, but its relationship with public problems became more deliberately organised. Later structures for knowledge and technology transfer developed within the same broader movement from passive availability to active connection. Drahoš's presidency thus transformed the lesson of the budget crisis into a strategic language of responsible science (*Czech Academy of Sciences, 2015*; *Filáček, 2023*).

Drahoš also contributed to a significant expansion of the President's public visibility. Earlier presidents had defended the Academy and represented Czech science abroad, but the conflicts of the 2009–2017 period made communication with wider society especially important. The President increasingly appeared not only as an internal administrator but as a public advocate for evidence, education, and rational debate. This development had advantages because it gave the Academy a human and recognisable voice. It also contained risks, since the political visibility of an individual could be mistaken for the political alignment of the institution. Drahoš's later candidacy for the presidency of the Czech Republic illustrated how scientific authority accumulated within AV ČR could enter electoral politics after an academic mandate had ended. His subsequent public career should not be projected

backwards as the hidden purpose of his Academy presidency. Nevertheless, it demonstrates that leadership of AV ČR could generate a form of civic credibility extending beyond research administration. This possibility differed sharply from the socialist model, in which movement between academic and political authority was commonly regulated through party structures. In the democratic order, an academic leader could enter politics as an individual candidate rather than as the institutional representative of science. The distinction protected the Academy's pluralism while acknowledging that scientists could participate in public life. Drahoš's presidency therefore widened the social meaning of academic representation. By the end of his second term, the Academy had survived a major financial confrontation and possessed a more explicit public-interest strategy. The office he transferred to Eva Zažímalová was consequently more visible, more communicative, and more deeply engaged with the national policy environment than it had been in 2009.

Eva Zažímalová assumed the presidency in March 2017 after a career in plant biochemistry, physiology, and the study of hormonal regulation. She had directed the Institute of Experimental Botany and served on the Academy Council, giving her experience of both institute autonomy and central governance. Her research on auxins and plant development connected molecular mechanisms with the adaptive behaviour of living systems. Like Illnerová before her, she entered the presidency from a field concerned with regulation, development, and interaction between organisms and their environments. Her leadership nevertheless reflected the institutional challenges of the late 2010s rather than repeating the agenda of the early 2000s. She sought stronger international integration and closer relationships with industry while repeatedly defending basic research against judgement based solely on immediate commercial application. This position was important in a policy environment increasingly attracted to innovation indicators, technological competitiveness, and measurable impact. Zažímalová argued that the eventual value of fundamental inquiry could not always be predicted at the moment funding decisions were made. At the same time, she did not treat this uncertainty as a reason for isolation from social and economic partners. Her presidency supported transfer, interdisciplinary programmes, European cooperation, and public communication as extensions of scientific strength. Her own membership of European scientific advisory structures gave the Academy greater visibility in discussions connecting research with policy. Zažímalová thus represented a mature phase in which AV ČR could pursue relevance without framing relevance as a concession extracted by the state (*Andrade, 2020*; *European Research Council, n.d.*).

The coronavirus pandemic transformed the conditions of Zažímalová's first term and offered an exceptional test of the Academy's public mission. Institutes contributed testing capacity, diagnostic research, protective materials, aerosol expertise, economic analysis, psychological advice, and public information. Molecular genetics, microbiology, chemistry, physics, economics, and social research became parts of a coordinated response to the same emergency. The Academy's organisational diversity, sometimes regarded as a source of fragmentation, became an asset because the crisis demanded several kinds of expertise simultaneously. Zažímalová described the Academy as being "on the same ship" as the rest of society and directed attention towards activities that could provide immediate assistance. This language did not subordinate research to political instruction. It framed solidarity as an expression of scientific responsibility. Institute autonomy allowed specialists to act rapidly within their own areas, while central communication made their contributions visible as part of a broader institutional effort. The pandemic also demonstrated that research capacity

cannot be created at the moment a crisis begins. Laboratories, trained personnel, equipment, data, and expert communities had to exist beforehand, often as the result of long investment in subjects without an immediately foreseeable emergency application. The Academy's response therefore supplied a powerful argument for stable institutional funding. It also strengthened the role of the President as a coordinator of expert visibility rather than as a substitute for specialist judgement. Under Zažímalová, crisis leadership became an important new dimension of presidential responsibility (*Czech Academy of Sciences, 2020*).

Zažímalová's second term extended the presidential agenda into questions of careers, equality, research integrity, threatened scholars, and the future legislative environment. Support for younger researchers continued through established awards and programmes, while new initiatives addressed returns from parental leave, international mobility, and the creation of independent research groups. These measures recognised that excellence depended on employment conditions and institutional culture as well as competitive selection. The Academy also expanded its attention to equal opportunities, ethical standards, responsible assessment, and the quality of the working environment. Russia's invasion of Ukraine gave another urgent meaning to institutional solidarity as Czech research organisations supported displaced and endangered scholars. The Academy thereby acted not only as a national institution but as part of an international community responsible for preserving scientific lives and careers under political violence. Zažímalová also confronted proposals for new research legislation that promised administrative modernisation but contained possible mechanisms for increased governmental influence. She publicly warned that government approval of provider strategies and restrictive conditions attached to institutional support could weaken scientific autonomy. This intervention recalled the foundational post-1989 principle that public financing must not become a route to political direction of research. Yet the form of the dispute was democratic and legal, conducted through public argument, consultation, and proposed amendment. Her presidency thus connected contemporary questions of bureaucracy and policy with the Academy's longer historical memory of external control. By 2025, AV ČR had become more internationally integrated and socially engaged, but the need to defend institutional autonomy had not disappeared (*Czech Academy of Sciences, 2024*).

Zažímalová's two terms also demonstrated the importance of continuity without institutional stagnation. Strategy AV21, created under Drahoš, remained an important framework and was expanded rather than discarded. Technology transfer developed further through specialised support, licensing, and a growing number of spin-off companies. International evaluation and European research programmes became routine elements of institutional life. Open science and responsible research assessment acquired greater prominence, reflecting changes occurring across the European Research Area. The central leadership simultaneously had to respect the legal independence of institutes and encourage common standards. Zažímalová's presidency therefore relied heavily on coordination, consultation, and the creation of institutional frameworks rather than direct command. Her scientific profile strengthened the representation of life sciences, but her public role covered the Academy's entire range from physics and biomedicine to history, language, economics, and philosophy. As the second woman President, she made female leadership less exceptional at the highest level, although gender inequalities throughout Czech research remained unresolved. Her term also showed that the President increasingly required competence in crisis communication, European policy, workplace culture, and research legislation. These responsibilities had accumulated

gradually across the preceding presidencies. The office was no longer defined primarily by the defence of the Academy's existence, as it had been in the early 1990s. It was defined by the management of a complex relationship between excellence, social trust, organisational diversity, and political accountability. Her departure in March 2025 therefore marked the end of an era but not the exhaustion of the reform agenda.

Radomír Pánek entered the presidency with a markedly different generational and managerial profile. A plasma physicist specialising in thermonuclear fusion, he had worked at the Academy since 2000 and directed the Institute of Plasma Physics from 2015 to 2025. He led projects connected with the COMPASS tokamak and its planned upgrade, gaining experience in large infrastructure, advanced technology, and international scientific coordination. His roles in EUROfusion, Fusion for Energy, EURATOM, and advisory structures connected with ITER placed him within one of Europe's most complex research environments. Fusion research requires cooperation among states, research organisations, industries, engineers, physicists, and long-term public funders. It therefore provided a background highly relevant to an Academy increasingly dependent upon international consortia and strategic infrastructures. In December 2024, the Academy Assembly selected Pánek from several candidates with a first-round majority. The Government considered the nomination, and the President of the Republic appointed him in accordance with the statutory procedure. He succeeded Zažímalová on 24 March 2025 and became the youngest leader of the Academy in approximately six decades. His election was notable because he had not previously served as a member of the Academy Council, unlike the succession patterns connecting several earlier presidents. This distance from the central governing apparatus offered the possibility of organisational innovation but also increased the importance of cooperation with experienced Council members. Pánek consequently entered office as both an institutional insider and a partial outsider to established presidential routines (*Czech Academy of Sciences, 2024*; *Czech Academy of Sciences, 2025*).

Pánek's opening programme combined continuity with a desire for a more proactive and unified Academy. He rejected the language of abrupt revolution, arguing that a complex institution benefits more from purposeful evolution than from indiscriminate restructuring. At the same time, he identified the ageing Act on the Academy, uneven remuneration, unstable funding, and fragmented communication as matters requiring attention. His agenda placed research excellence and stronger support for European Research Council applications alongside competitive salaries and better career conditions. It included support for younger scientists, returns from parental leave or work abroad, work–life balance, equal opportunities, and research ethics. Pánek also sought to simplify knowledge and technology transfer and to deepen cooperation with industry without reducing the Academy's mission to commercialisation. A particularly important objective was to make AV ČR a more active source of impartial evidence for Parliament, Government, the President, regional authorities, and the public administration. This ambition returned the presidency to one of its fundamental functions: translating scientific expertise into forms that decision-makers can use without allowing political authorities to determine scientific conclusions. The leadership appointed for 2025–2029 distributed responsibilities among Vice-Presidents representing the Academy's three broad research areas and Council members responsible for finance, evaluation, European cooperation, open science, transfer, regional relations, and Strategy AV21. Such distribution confirmed that the President's effectiveness depends upon collective competence rather than personal command. Pánek's emphasis on a shared Academy identity

also responded to the tension between fifty-four legally independent institutes and the need for a strong common public voice. His early programme therefore brought the post-1993 history full circle: autonomy still had to be protected, but it now also had to be coordinated, communicated, and made socially effective (*Czech Academy of Sciences, 2025*).

Thus, the presidents and reformers of AV ČR after 1993 formed not a sequence of isolated personalities but a cumulative tradition of democratic scientific leadership. Rudolf Zahradník transformed the moral and institutional energy of the Velvet Revolution into a viable Academy capable of surviving contraction, evaluation, and political scepticism. Helena Illnerová consolidated that achievement by directing attention towards generational renewal, communication, and the human conditions of scientific continuity. Václav Pačes presided over the reform that gave institutes the legal status, responsibilities, and governing bodies of public research institutions. Jiří Drahoš defended their material foundations during the budget crisis and articulated Strategy AV21 as a bridge between excellent research and the public interest. Eva Zažímalová deepened international integration, defended the irreducible value of basic science, and demonstrated the Academy's capacity for coordinated expertise during the pandemic and subsequent geopolitical uncertainty. Radomír Pánek began a new cycle centred on institutional unity, sustainable careers, European excellence, transfer, and more systematic scientific advice to the state. Across these presidencies, the office moved from crisis stabilisation towards strategic coordination without losing its foundational dependence on self-government. Presidential authority remained limited by law, elected bodies, institute autonomy, disciplinary plurality, and public responsibility. Those limitations did not weaken leadership but prevented it from reproducing the command structures associated with the former party-state. The modern President became an intermediary among researchers, institutes, government, universities, international organisations, industry, and society. The institutional history of AV ČR consequently shows that scientific autonomy is not preserved by distance from governance, but by forms of governance capable of combining scholarly freedom with collective responsibility.

Scientists of Discovery, Invention, and International Recognition

1. Natural Scientists and the Formation of Global Reputations

The international reputation of a natural scientist cannot be reduced to the number of discoveries associated with a name or to the honours received during a lifetime. It is formed through a prolonged interaction between intellectual originality, experimental reliability, institutional support, scientific communication, and the ability of later generations to recognise the significance of earlier work. In the Czech lands, these factors rarely operated under stable political or linguistic conditions. Scientists worked successively within the Habsburg monarchy, the national movements of the 19th century, independent Czechoslovakia, Nazi occupation, state socialism, the federal Czechoslovak state, and the democratic Czech Republic. Each transformation altered the channels through which knowledge, instruments, publications, and professional recognition could circulate. Some

scientists became internationally visible because their results entered rapidly expanding disciplines at precisely the right moment. Others achieved recognition only retrospectively, after political isolation, restricted travel, linguistic marginality, or inadequate scientific communication had delayed the reception of their work. Still others established reputations less through one spectacular discovery than through the creation of a method, laboratory, journal, collection, or research school. These different paths reveal that scientific reputation is simultaneously personal and institutional. The scientist supplies the intellectual achievement, but institutions preserve evidence, train successors, translate local discoveries into internationally legible forms, and defend scientific memory against political rupture. The history of Czech and Czechoslovak natural science must therefore be read as a history of reputational infrastructures rather than as a ceremonial gallery of famous individuals. This approach also guards against the "Matthew effect", through which already recognised scientists and institutions accumulate further recognition while contributions made at less visible centres remain comparatively neglected (*Merton, 1968*).

Global scientific reputation has never meant the simple abandonment of national or local settings. Science may aspire to universal validity, but it is practised through laboratories, universities, academies, correspondence networks, publishing markets, diplomatic relationships, and systems of patronage situated in particular states. A discovery made in Prague, Brno, or another centre of the Czech lands had to pass through these structures before it could become part of international knowledge. During the 18th and 19th centuries, Latin and German often offered wider channels of communication than Czech, even when the scientist concerned participated actively in Czech cultural life. Later, French, Russian, and finally English acquired particular importance for disciplinary mobility and international publication. Political borders also changed the meaning of scientific identity. A scholar born in Bohemia might be described as Austrian, Bohemian, German, Czech, or Czechoslovak depending upon the period, language of publication, institutional affiliation, and retrospective national tradition. Such designations cannot be treated as interchangeable, yet neither should they be used to divide scientific networks that were inherently multilingual and transregional. The circulation of scientific knowledge commonly preceded the emergence of the nation-state that later claimed its authors. International science was therefore neither placeless nor entirely national, but was produced through the continuous negotiation of locality and mobility (*Crawford et al., 1993*). This tension became especially important for the Academy tradition, because its institutions repeatedly combined the representation of Czech or Czechoslovak science with the ambition to participate in knowledge that recognised no national frontier. Global reputation was strongest when these two functions reinforced rather than contradicted each other.

Ignaz von Born illustrates how an international scientific reputation could be built before the existence of a Czech national academy or a modern research profession. His work in mineralogy, mining, metallurgy, and the classification of collections connected the natural resources of the Habsburg lands with a European republic of letters. Born was not simply a collector of specimens or a technical adviser to rulers. He transformed mineralogical objects into instruments of comparison, correspondence, and intellectual exchange. His catalogues enabled distant scholars to examine a collection conceptually even when they could not visit it physically. His work on metallurgical processes likewise demonstrated that theoretical knowledge and practical mining experience need not belong to separate worlds. Born's activities in Prague contributed to the social environment from which the Private Learned

Society and subsequently the Bohemian Society of Sciences developed. Learned sociability, editorial work, collecting, and technical investigation were mutually reinforcing elements of his scientific identity. His reputation was consequently produced through several overlapping audiences: court administrators, mine operators, mineral collectors, natural philosophers, and members of European learned societies. The geography of this reputation was imperial and European rather than Czech in the later national sense. Nevertheless, the institutional habit that he represented—the organised exchange of observations through a permanent learned association—became part of the genealogy of the Academy. Born's career also reveals the dependence of early scientific visibility upon mobility, aristocratic or governmental patronage, and command of transnational languages. The international recognition of Bohemian science began not with institutional isolation, but with intensive participation in wider Central European networks (*Wilson, n.d.*).

The careers of Tadeáš Haenke and Kaspar Maria Sternberg demonstrate two further routes from the Czech lands into global natural history. Haenke's participation in the Malaspina expedition carried a scholar educated in Prague into the Pacific world and Spanish America. His observations and collections were produced in settings where exploration, imperial competition, navigation, botany, and commercial knowledge were inseparable. The specimens that he gathered acquired scientific significance only when they were classified, transported, compared, and incorporated into collections accessible to other naturalists. His career thus shows that the global reputation of an explorer depended not only on personal courage or observational skill, but also on the survival and institutional destination of the material collected. The Royal Czech Society of Sciences recognised Haenke, while parts of his scientific legacy later entered collections connected with the National Museum. Sternberg followed a different but complementary path. His palaeobotanical research helped to establish the study of fossil plants as a field connecting botany, geology, and the reconstruction of deep time. At the same time, his role in founding the National Museum supplied the Czech lands with an institution capable of preserving specimens, organising expertise, and addressing an educated public. The museum was not peripheral to scientific research, because collections constituted essential research infrastructures before the modern experimental institute became dominant. Sternberg's scientific and institutional activities therefore strengthened each other, giving international palaeobotany a material base in Prague and giving the museum a recognised scholarly purpose (*Schweizer, 2004*). Together, Haenke and Sternberg reveal how exploration and collection transformed geographical distance into scientific authority, although the credit attached to particular discoveries remained dependent upon metropolitan publishing and classification systems (*Cutter, 1983*).

Jan Evangelista Purkyně represented a decisive transition from learned natural history to experimental biomedical science. His investigations ranged across physiology, histology, embryology, pharmacology, sensory perception, and the organisation of laboratory research. Several anatomical and physiological terms associated with his name entered the international vocabulary of medicine and biology. Yet the durability of his reputation cannot be explained by eponyms alone. Purkyně treated the organism as a field for systematic experimentation in which carefully designed observations could disclose relations between structure and function. His studies of vision and subjective sensory phenomena made the investigator's own perception an object of disciplined scientific analysis. His work on tissues and cells contributed to the growing recognition that microscopic structures were fundamental to the understanding of living organisms. He also grasped that modern physiology required

dedicated space, instruments, assistants, collections, and regular teaching rather than the occasional private experiment of an individual professor. This conviction led him to establish an early physiological institute in Breslau, where laboratory organisation became inseparable from scientific inquiry. His students and collaborators helped to transmit practices that could travel beyond the immediate content of his published findings. Purkyně's reputation was therefore both conceptual and organisational. He was internationally recognised because he helped to define what experimental physiology could study and how it could be institutionally practised (*Czech Academy of Sciences, n.d.*). In his career, the laboratory began to replace the learned cabinet as the principal location from which Czech natural scientists could address the wider scientific world.

Purkyně's return to Prague gave his international scientific standing an explicitly institutional and national dimension. He did not understand Czech scientific emancipation as a withdrawal from European scholarship. Rather, he regarded the development of Czech terminology, teaching, publishing, and research institutions as the means by which a previously disadvantaged linguistic community could participate more fully in universal science. This position distinguished cultural self-assertion from intellectual provincialism. His physiological institute in Prague created a setting in which research, education, and the cultivation of Czech scientific language could proceed together. Purkyně also participated in the Royal Czech Society of Sciences and briefly served as its presiding officer, thereby connecting experimental science with the older learned-society tradition. More importantly, his treatise *Academia*, written between 1861 and 1863, envisaged an autonomous non-university scientific institution incorporating institutes from the principal fields of contemporary knowledge. The proposal anticipated a structural feature that became central to the 20th-century academy: the concentration of sustained research outside ordinary university teaching obligations. It also treated institutional autonomy as a condition of intellectual productivity rather than as a privilege detached from public responsibility. Purkyně's project was not immediately realised, but its later canonical status shaped the historical self-understanding of the Czech Academy of Sciences. The Academy's statutes explicitly place his project within the institutional tradition to which the present organisation considers itself an heir (*Czech Academy of Sciences, n.d.*). His global reputation consequently operated on two levels, combining internationally recognised biomedical discoveries with a durable model of how a smaller scientific nation might organise research. Few figures demonstrate more clearly that institutional imagination can become part of a scientist's intellectual legacy.

The foundation of the Czech Academy of Sciences and Arts created a more formal framework for translating individual reputations into collective national representation. Natural scientists entered an institution that also included the humanities, literature, and the arts, reflecting the broad cultural programme of Czech nation-building. This arrangement offered visibility and prestige, but it did not immediately provide the dense network of specialised laboratories associated with later research academies. The natural and technical sciences were concentrated within a limited part of the Academy's class structure, while universities, museums, professional associations, and state institutes continued to carry much of the actual research. Election to the Academy nevertheless conferred symbolic authority and incorporated scientific achievement into a national cultural canon. Membership could assist communication, publication, and access to scholarly networks, particularly for disciplines that lacked secure institutional support elsewhere. At the same time, academy recognition could reproduce existing hierarchies of gender, social origin, language, and metropolitan location.

The overwhelming visibility of men among the internationally known natural scientists of this period was not evidence that scientific ability was naturally distributed along gendered lines. It reflected women's restricted access to secondary education, universities, professional appointments, laboratories, and academy membership. A responsible history of reputation must therefore distinguish between documented prominence and the unequal mechanisms that decided whose work could become prominent. ČAVU helped make Czech science institutionally legible abroad, but it did not eliminate the inequalities embedded in the scientific profession. Its principal achievement was to affirm that original natural research formed part of the cultural and political capacity of the Czech nation. Its principal limitation was that symbolic recognition still exceeded the resources available for sustained collective research.

Bohumil Němec's career shows how a scientist could combine disciplinary innovation, university organisation, public authority, and academy leadership. Trained in botany, he became a central figure in the development of Czech plant anatomy and physiology. His research addressed the mechanisms through which plants perceive gravity, including the role attributed to starch-containing structures in specialised cells. These investigations belonged to an internationally debated field in which experimental design had to connect microscopic observation with the behaviour of the whole organism. Němec did more than contribute results to that debate. He helped to establish an institutional home for experimental plant science at the Czech university in Prague and trained researchers capable of extending the field. His work consequently acquired importance through a school rather than through an isolated sequence of publications. As a teacher, rector, editor, and participant in learned institutions, he also represented natural science within Czech public life. Such prominence created opportunities for international communication, but it exposed scientific authority to political expectations and national controversies. Němec's reputation was thus neither purely laboratory-based nor merely ceremonial. It arose from the ability to link research programmes, disciplinary language, postgraduate formation, and institutional advocacy. The later international standing of Czech experimental botany drew upon foundations that he and his colleagues had established before the age of large academy institutes (*Žárský, 2023*). His example demonstrates that the founder of a research environment may exert an influence extending far beyond the citation history of any single experiment.

Emil Votoček performed a comparable formative role in Czech organic chemistry. His work included carbohydrate chemistry, analytical reagents, synthetic procedures, and the construction of an appropriate Czech chemical vocabulary. Terminological labour might appear secondary when compared with molecular discovery, but it was essential to the development of advanced scientific education in Czech. A discipline cannot reproduce itself nationally if students lack precise language in which to learn, teach, and debate its concepts. Votoček simultaneously resisted intellectual enclosure by publishing internationally and maintaining contact with research beyond Czechoslovakia. He trained a generation of chemists whose subsequent careers connected university departments, industrial laboratories, and academy institutes. His significance therefore lies partly in the genealogies of expertise that followed him. The Czech school of organic chemistry was not created by a single institutional decree in 1952, but developed through practices and mentorship accumulated during earlier decades. Votoček's work also illustrated the productive relationship between fundamental chemical investigation and problems arising from technology or manufacturing. This connection later became especially important in a country where chemistry occupied a prominent place in industrial policy. His global reputation rested

on credible specialised research, whereas his institutional significance rested on making such research reproducible within the Czech educational environment. The interaction of these two achievements helped turn Prague into a durable centre of chemical science (*International Union of Pure and Applied Chemistry, 1998*). Votoček thereby personified an important principle of reputation formation: international distinction becomes institutionally consequential when it generates successors rather than ending with its original holder.

The interwar Czechoslovak Republic widened the political and institutional space in which such scientific traditions could develop. Czech-language universities, German-language institutions, ČAVU, the Masaryk Academy of Labour, museums, state research establishments, and specialised societies created a plural scientific landscape. The new state treated science as evidence of cultural maturity and as an instrument of economic modernisation. Yet international reputation continued to be distributed unevenly across disciplines and institutions. Fields possessing standardised methods, strong journal systems, and portable instruments could travel more readily than research dependent upon local description or a small linguistic public. Personal study abroad and participation in congresses therefore remained crucial. The economic difficulties of the interwar period constrained laboratory expansion, while political conflict increasingly affected cooperation between Czech, German, Jewish, Slovak, and other scholarly communities. Nazi occupation then destroyed careers, expelled or murdered researchers, closed Czech universities, appropriated institutions, and severed international networks. The reputational loss caused by this violence cannot be measured only by publications that failed to appear. It also included untrained students, abandoned experiments, dispersed collections, and professional relationships that could no longer mature. Post-war reconstruction restored some research lines while the expulsion of the German-speaking population and the communist seizure of power introduced further discontinuities. The international success of post-war Czechoslovak science was therefore achieved not upon an intact foundation, but amid profound demographic, political, and institutional breaks.

Jaroslav Heyrovský became the most internationally visible representative of Czechoslovak natural science because he joined experimental originality with the creation of a broadly usable analytical method. His decisive work began with the investigation of electrochemical processes at the dropping mercury electrode. In 1922 he identified the principle that led to polarography, a method capable of recording current–voltage relationships and using them for qualitative and quantitative analysis. The importance of the achievement lay not only in observing a new phenomenon. Heyrovský converted the phenomenon into a reproducible procedure that other laboratories could adopt. The method offered applications across physical chemistry, analytical chemistry, medicine, metallurgy, environmental investigation, and industrial control. Its scientific mobility was enhanced by instrumentation, because an apparatus could embody a procedure more consistently than a textual description alone. Heyrovský and his collaborators refined both the conceptual foundations and the technical implementation of polarographic analysis. Articles, demonstrations, lectures, and personal contacts made Prague a destination for foreign researchers interested in the new method. Polarography consequently became associated with a recognisable place, group, and scientific leader. This association was central to Heyrovský's global reputation, since the spread of the method simultaneously advertised the productive environment in which it had originated. His subsequent Nobel Prize confirmed a reputation already established through decades of international use rather than creating that reputation from nothing (*Nobel Prize*

Outreach, n.d.). The symbolic politics of that award belong more fully to *Nobel-Level Achievements, International Awards, and Scientific Prestige*, but its institutional foundations are essential here.

The "Heyrovský school" mattered because it transformed an individual discovery into collective competence. Students and collaborators learned not only how to operate instruments but also how to recognise new electrochemical problems and extend the method into unfamiliar domains. The group developed terminology, standards, experimental routines, and forms of tacit knowledge that could not be acquired from publications alone. Foreign visitors carried these practices into other scientific systems, while Czechoslovak researchers gained partners and audiences abroad. The establishment of a dedicated Polarographic Institute in 1950 gave this community a permanent organisational form shortly before the creation of ČSAV. In 1953 the institute entered the new Academy structure, allowing physical chemistry to acquire personnel and equipment beyond the scale ordinarily available to a university chair. State socialism could therefore provide substantial resources for a research line whose international standing preceded the new regime. At the same time, official celebration of Heyrovský allowed the state to present Czechoslovak science as both nationally distinguished and compatible with universal standards. The relationship was not simple political appropriation, because the institute's scientists used institutional support to pursue genuine research and international collaboration. Nevertheless, access to travel, foreign currency, equipment, and publication remained dependent upon administrative and political decisions. Heyrovský's school survived these constraints because its reputation was distributed across methods, instruments, pupils, and international users rather than residing only in official honours. Its history demonstrates the resilience produced when scientific credit is embedded in a research community. The institute that later bore Heyrovský's name preserved this lineage while broadening its programme beyond classical polarography.

Eduard Čech offers a contrasting example in which global reputation depended upon concepts, proofs, and mathematical language rather than laboratories or instruments. His research in topology and differential geometry addressed problems whose validity did not depend upon local natural resources or expensive experimental equipment. This did not make mathematics institutionally independent. Advanced research still required libraries, seminars, correspondence, journals, talented students, and sufficient time free from routine teaching. Čech developed results that became permanently embedded in international mathematical vocabulary, including concepts associated with his name in topology and homology theory. Eponymy in this case reflected the repeated usefulness of ideas across subsequent mathematical work. His periods of study and contact abroad helped place him within the rapidly developing international community of topologists. Yet he did not merely import a foreign research agenda into Czechoslovakia. He organised seminars in which younger mathematicians learned to work collectively on unresolved problems and to subject arguments to sustained criticism. These seminars helped create a distinctive research culture whose influence exceeded Čech's individual publications. Mathematical reputation was therefore generated through a combination of abstract originality and disciplined social organisation. The recognition of Čech as one of the leading Czechoslovak mathematicians of the 20th century rests upon both dimensions (*Czech Digital Mathematics Library, n.d.*). His career shows why a history limited to material laboratories would overlook some of the Academy tradition's most consequential forms of scientific institution-building.

Čech also helped translate mathematical distinction into the institutional architecture of post-war research. He participated in efforts that led to the formation of a central mathematical institute, initially connected with the Czech Academy of Sciences and Arts and later incorporated into ČSAV. The institute offered an environment in which specialised research could continue independently of fluctuations in university teaching loads. It also created opportunities for seminars, editorial work, international exchange, and the preservation of research continuity. The communist reorganisation of science supplied this project with greater organisational resources but subjected it to a new ideological and administrative hierarchy. Mathematics occupied an ambiguous position within that hierarchy. Its strategic importance to physics, engineering, defence, and planning gave it institutional value, while the abstract character of much mathematical research offered partial protection from direct ideological prescription. Such protection was never complete, since appointments, travel, and leadership still depended upon political assessments. Čech's pre-communist international reputation nevertheless gave the new Academy a form of inherited legitimacy that could not simply be manufactured by political decree. His pupils and institutional successors-maintained links between Czechoslovak mathematics and wider developments despite the restrictions of the Cold War. Here continuity across the establishment of ČSAV was more important than the official narrative of a completely new socialist science. The state could reorganise the institutional framework, but it could not instantly create the intellectual capital on which successful institutes depended. Čech's example therefore complicates any strict division between "bourgeois" learned traditions and socialist academy research. Global mathematical standing emerged from cumulative work that crossed the political boundary of 1948.

František Šorm became one of the most powerful organisers of the chemical and biochemical sciences within ČSAV. His scientific interests included natural products, peptides, nucleic-acid components, and biologically active compounds. These fields placed organic chemistry in direct conversation with the emerging molecular understanding of life. Šorm assembled researchers capable of moving between synthesis, structural analysis, and biological investigation. The Institute of Organic Chemistry and Biochemistry, formally established in 1953, provided this programme with an unusually strong institutional base. Under Šorm's direction, the institute developed a culture in which fundamental research and potential therapeutic application were treated as mutually productive. Its reputation rested upon a density of expertise rather than a single laboratory result. Younger scientists encountered demanding standards, technically ambitious problems, and colleagues working across the border between chemistry and biology. International contacts were crucial because research on peptides, nucleotides, and natural substances advanced through rapid comparison with results obtained elsewhere. Šorm used his academic authority to promote Czechoslovak chemistry in international organisations and scholarly forums. In doing so, he made the institute visible as a collective centre rather than merely as his personal workplace. The subsequent achievements of researchers trained within this environment confirm the long institutional reach of his organisational choices (*IOCB Prague, n.d.*). The global reputation of Czech organic chemistry during the later 20th century cannot be understood without the infrastructure and research culture that Šorm helped to consolidate.

Šorm's position also exposes the political ambiguity of scientific authority under state socialism. He was simultaneously a distinguished chemist, an institution-builder, a senior representative of ČSAV, and a participant in the governing structures of the socialist state.

Such roles could provide resources and limited protection for research, but they tied academic leadership to political responsibility. During periods of relative liberalisation, authoritative scientists could use their positions to expand international exchange and defend professional standards. During political crisis, the same authority could become vulnerable to ideological reversal. Šorm supported the reform movement of the 1960s and was removed from leading positions after the suppression of the Prague Spring. His fall demonstrated that an international scientific reputation did not guarantee institutional security during normalisation. It also affected the research environment around him, since leadership purges altered recruitment, travel, and the confidence with which institutes pursued foreign collaboration. Nevertheless, the scientific school associated with the institute could not be erased as easily as an officeholder could be dismissed. Skills, research questions, laboratory practices, and informal loyalties survived within the institution. International colleagues also retained memories of scientific quality that differed from the evaluations imposed by domestic political authorities. Reputation could therefore function as a limited archive outside the state, preserving recognition during periods of official marginalisation. This protection was unequal and could not restore lost positions or years of work. Yet it helps explain why certain Czechoslovak research traditions recovered rapidly after 1989: their credibility had remained alive in disciplinary networks even when domestic institutions were politically distorted.

Milan Hašek's investigations of immunological tolerance provide one of the clearest examples of a major Czechoslovak contribution whose international recognition remained contested. Through experiments involving the joining of embryonic circulatory systems, Hašek demonstrated that exposure to foreign biological material during development could produce a lasting state of immunological tolerance. The result addressed a fundamental question: how an organism distinguishes its own tissues from foreign ones. It also possessed profound implications for transplantation biology and clinical medicine. Comparable research conducted by the British team associated with Peter Medawar entered the dominant international narrative more effectively. Differences in experimental model, interpretation, timing, publication, and access to influential scientific networks affected the allocation of credit. Hašek's work was known, but it did not acquire the same canonical position in Anglophone accounts of immunology. This asymmetry illustrates why priority and reputation are related but not identical. A discovery must be translated into the conceptual language of an emerging field and circulated through journals, conferences, institutions, and personal networks capable of amplifying it. Scientists working outside the principal Western centres faced additional obstacles when political tension restricted mobility and communication. Hašek nevertheless built an influential Czechoslovak school of immunology whose members understood the originality of the work and extended its research questions. Later historical reassessment has restored greater visibility to his contribution (*Iványi, 2003*). His case reminds us that global reputation is an outcome of communication and power as well as experimental achievement.

The school surrounding Hašek further demonstrates that scientific reputation may disperse across people and countries after political rupture. Czechoslovak immunology brought together researchers in genetics, microbiology, transplantation, and cellular biology. It developed through institutes in which collective experimentation, breeding facilities, biological materials, and specialised technical labour were indispensable. Students and collaborators carried its intellectual habits into their subsequent careers. The Warsaw Pact invasion and normalisation, however, transformed this productive circulation into involuntary dispersion.

Researchers who emigrated entered institutions in Western Europe and North America, while some who remained encountered political restrictions or removal from positions. From one perspective, this represented a severe loss to Czechoslovak institutions. From another, the émigré scientists extended the international reach of a research culture formed at home. Their publications and appointments made elements of the Czechoslovak school visible even when its domestic history was suppressed or depoliticised. Yet it would be misleading to treat forced emigration as a beneficial method of internationalisation. The country lost mentors, research leaders, and potential institutional successors, while individuals bore the costs of disrupted lives and reconstructed careers. The international reputation of the school survived partly because it ceased to be contained within Czechoslovak borders. This paradox will be examined more fully in *Czech Scientific Exile as an International Extension of National Science*. For the present argument, it shows that a national scientific tradition may continue globally even when the state has damaged the institutions from which it emerged.

Jan Svoboda's work in retrovirology represents another path to international standing developed under politically restrictive conditions. Beginning with research on Rous sarcoma virus, he explored the relationship between tumour-producing viruses and the genetic material of host cells. His experiments contributed to the understanding that viral information could persist within cells and later generate infectious virus. This research formed part of the conceptual transformation that led to the provirus model and modern molecular retrovirology. Svoboda's scientific distinction lay partly in the originality of his questions and partly in the biological systems he developed for testing them. Reproducible cell lines, virus-rescue experiments, and careful genetic reasoning gave international researchers tools as well as conclusions. He maintained scholarly relationships across the Cold War divide, even when travel and communication required negotiation with political authorities. Foreign colleagues recognised him as a participant in the formation of a field rather than as a peripheral commentator. His career also displayed unusual temporal persistence. Retrovirology changed dramatically with the discovery of reverse transcriptase, oncogenes, and eventually human retroviruses, yet Svoboda continued to contribute to its evolving conceptual framework. The Institute of Molecular Genetics provided a durable home in which this long research trajectory could be sustained. The international community, in turn, offered recognition that could not be entirely controlled by domestic political evaluations. Retrospective accounts by colleagues have placed Svoboda firmly within the history of modern retrovirus research (*Hejnar, 2017*; *Weiss, 2018*).

Luboš Perek demonstrates how a global reputation could arise from the interaction of research, scientific infrastructure, and international scientific diplomacy. His astronomical work concentrated particularly on planetary nebulae and the structure of the Galaxy. The catalogue of Galactic planetary nebulae produced with Luboš Kohoutek supplied astronomers with an organised body of data that could be used across national observatories. A catalogue is less dramatic than the announcement of a singular discovery, but its value can be more enduring because it coordinates the observations of an entire field. Perek also supported the construction of major observational facilities in Czechoslovakia, including the two-metre telescope at Ondřejov. Such infrastructure made it possible for domestic astronomers to participate in research requiring sustained and technically advanced observation. His service as general secretary of the International Astronomical Union placed a Czechoslovak scientist within the governance of global astronomy during a politically divided era. Later work connected him with United Nations activities concerning outer space and with the emerging

problem of orbital debris. These roles did not replace his scientific identity, but enlarged its institutional significance. Perek acted as a mediator between national scientific capacity, international disciplinary organisation, and global regulation of a new technological domain. His career therefore illustrates how reputation can be built through the trusted coordination of knowledge as well as through individual discovery. It also shows that international organisations sometimes provided scientists from smaller states with authority unavailable through bilateral political relationships. Perek's standing combined scholarly credibility with an ability to represent science across ideological boundaries (*International Astronomical Union, 2020*).

Emil Paleček's research on the electrochemistry of nucleic acids reveals how an initially unconventional result can produce a long and internationally influential programme. In the late 1950s and early 1960s, he demonstrated that DNA was electrochemically active and that electrochemical methods could yield information about its structure. The finding challenged assumptions about what polarographic and related techniques could reveal about biological macromolecules. It also connected the Czech electrochemical tradition associated with Heyrovský to the molecular biology of nucleic acids. Paleček encountered scepticism because novel interdisciplinary results often fit imperfectly within the expectations of established disciplinary communities. Persistent experimentation was therefore essential to distinguishing a genuine phenomenon from an artefact. Over time, electrochemical analysis of DNA and RNA developed into an important field with implications for biosensors, diagnostics, structural studies, and the detection of molecular interactions. Paleček's reputation consequently grew through delayed recognition rather than immediate universal acceptance. His work demonstrates that international visibility may depend upon the maturation of a field capable of understanding the original result. The Institute of Biophysics in Brno provided the continuity required for such a long research programme. Successive collaborators extended the approach into new techniques and biological questions, transforming an individual discovery into a broad area of expertise. The resulting reputation belonged simultaneously to Paleček, his research group, and the institute that sustained the work. Later reviews of nucleic-acid electrochemistry made this Czech contribution part of the international genealogy of the field (*Paleček & Bartošík, 2012*; *Bártová et al., 2025*).

Otto Wichterle's global reputation joined fundamental polymer science with a material that entered everyday life. His research on hydrophilic polymers helped establish the scientific basis for soft contact lenses and other biomedical applications. The subsequent public narrative often concentrates on the ingenious apparatus with which he produced experimental lenses under politically adverse conditions. That episode deserves detailed attention in *Inventors, Applied Researchers, and Technological Innovators*. Within the present discussion, the more important point is that Wichterle's reputation rested upon a deep command of macromolecular chemistry rather than a fortunate act of improvisation. He understood how molecular structure, water absorption, mechanical behaviour, biocompatibility, and manufacturing technique had to be combined. The creation of the Institute of Macromolecular Chemistry gave this research area a permanent institutional setting within ČSAV. Wichterle's removal from leadership during normalisation revealed once again that scientific distinction offered no immunity from political punishment. Licensing decisions and state control over intellectual property also shaped how the economic value of his research was distributed. International use of soft contact lenses nevertheless made his name recognisable far beyond specialised chemistry. After 1989 he acquired a further symbolic role as the first president of

the transformed Czechoslovak Academy of Sciences. His scientific and civic reputations consequently reinforced each other, although they arose from different phases of his life. The continuing biomedical-polymer programme of his institute demonstrates how a globally known invention can generate an enduring research lineage rather than merely a commemorative legend (*Institute of Macromolecular Chemistry of the CAS, n.d.*).

Antonín Holý's achievements in medicinal chemistry show even more clearly that contemporary global reputation is often produced through international co-operation rather than national self-sufficiency. At the Institute of Organic Chemistry and Biochemistry, Holý investigated modified nucleosides and nucleotides with the patience and precision characteristic of fundamental synthetic chemistry. Acyclic nucleoside phosphonates emerging from this work displayed antiviral properties of exceptional importance. Their development required expertise that no single laboratory possessed. Holý's chemical creativity was joined to the biological and medical research of Erik De Clercq and colleagues in Leuven. Subsequent co-operation with the American company Gilead Sciences supplied the development, clinical, regulatory, and manufacturing capacity necessary to turn promising molecules into widely used medicines. Compounds associated with this research contributed to therapies against HIV, hepatitis B, and other viral diseases. The international reputation produced by these medicines was therefore shared across a transnational chain, although Holý's originating contribution remained indispensable. This structure complicates narratives in which a lone national genius delivers a finished invention to the world. Modern biomedical innovation depends upon durable trust, negotiated intellectual property, complementary institutions, and the repeated exchange of results across borders. The financial returns from successful licensing also strengthened IOCB Prague and expanded its capacity for further research. In this instance, internationalisation did not drain the Czech institution but created resources that could support a new scientific generation. Holý's legacy consequently unites discovery, therapeutic application, institutional renewal, and global partnership (*IOCB Prague, n.d.*).

The international prominence of the Prague school of quantum chemistry provides an especially revealing example of reputation formed through mentorship and intellectual lineage. Jaroslav Koutecký and Rudolf Zahradník helped establish a community capable of applying theoretical and computational approaches to problems of molecular structure, reactivity, spectroscopy, and intermolecular forces. The school emerged when access to computing resources and unrestricted international exchange remained limited. Its members compensated partly through mathematical ingenuity, carefully chosen problems, intensive seminars, and strong relations between theory and experiment. Zahradník became a particularly influential mentor whose pupils and collaborators pursued careers in Czechoslovakia and abroad. The names associated with this broad lineage include Josef Michl, Jiří Čížek, Josef Paldus, Pavel Hobza, and Pavel Jungwirth, although their research programmes developed in distinct directions. Čížek's work on coupled-cluster approaches became fundamental to high-accuracy quantum chemistry. Hobza's studies of non-covalent interactions helped reshape the understanding of weak forces in molecular and biological systems. Other members of the network connected theoretical chemistry with photochemistry, spectroscopy, molecular design, and the physical chemistry of aqueous environments. The existence of an identifiable "Prague school" did not imply intellectual uniformity. Its reputation arose from the ability to generate independent researchers who retained a culture of conceptual rigour and international engagement. Migration and foreign

appointments widened this network, while academy institutes in Prague preserved a local centre of continuity. The school thus became an international community with a recognisable institutional origin (*Schwarz & Friedrich, 2021*).

The political history of Czechoslovakia repeatedly tested whether international scientific reputation could protect such schools. During the most restrictive periods, foreign correspondence could be monitored, invitations could be refused, and access to journals or instruments could be delayed. Scientists judged politically unreliable might be prevented from teaching, leading laboratories, travelling, or supervising doctoral students. These measures attacked the mechanisms by which reputation was reproduced even when they did not prohibit every experiment. Normalisation was particularly damaging because it combined institutional continuity with selective exclusion. Institutes remained open, but their leadership structures and personnel policies were politically reconfigured. Some internationally respected scientists continued to work in reduced or protected positions, while others emigrated or left research entirely. Foreign colleagues occasionally supplied invitations, publications, equipment, or personal solidarity, thereby maintaining narrow channels of scientific communication. Such assistance was valuable, although it could not substitute for institutional freedom at home. The survival of strong research lines therefore depended upon combinations of tacit knowledge, informal mentorship, generational loyalty, and carefully negotiated contact with the outside world. Reputation functioned as a resource, but one whose practical value depended upon the willingness of institutions to recognise it. The state might celebrate famous national achievements while simultaneously restricting the people and practices capable of producing new ones. This contradiction became one of the defining features of scientific authority in late socialist Czechoslovakia.

The Velvet Revolution altered these mechanisms more rapidly than it altered the accumulated distribution of scientific resources. Researchers gained freedom to travel, publish, establish partnerships, and participate in international organisations without ideological screening. Institutes could recruit foreign scholars, invite external evaluators, and compete for international grants. English-language publication increasingly became the principal route to visibility in many natural-science disciplines. Bibliometric indicators, journal rankings, citation databases, and competitive project funding acquired greater influence over institutional judgement. These instruments exposed weak or isolated research more clearly, but they also favoured disciplines with high publication frequency and dense international citation cultures. The transformation therefore replaced political evaluation with procedures that were more professionally legitimate but not entirely neutral. Institutes inherited unequal equipment, ageing personnel structures, and research agendas formed under different conditions. Leaders had to decide which traditions possessed genuine international potential and which survived mainly through institutional inertia. Reorganisation, closure, merger, and selective investment became instruments for restoring competitiveness. International peer review provided an external language through which these decisions could be defended. At the same time, excessive reliance on immediate measurable output risked undervaluing long-term programmes resembling those of Paleček or other researchers whose influence matured slowly. The post-1989 system consequently required a balance between openness to external judgement and the preservation of informed institutional autonomy. The Academy's transformation made international reputation a central criterion of legitimacy, but it also forced continuous debate over how that reputation should be measured (*Filáček, 2023*).

European integration further changed the scale at which Czech natural scientists formed reputations. Participation in European framework programmes connected academy institutes with multinational consortia, shared infrastructures, mobility schemes, and common research agendas. Entry into such networks gave Czech teams access to equipment and expertise that could not be reproduced within a relatively small national system. It also required institutes to contribute distinctive knowledge rather than merely seek inclusion. Competitive European grants strengthened the authority of principal investigators capable of assembling international teams and managing complex projects. Returning researchers brought with them laboratory practices, publication strategies, and professional expectations acquired abroad. Foreign doctoral candidates and postdoctoral researchers gradually made some academy institutes more linguistically and culturally diverse. These developments loosened the earlier identification of Czech science with research performed exclusively by Czech citizens. A discovery made in an academy laboratory might result from a multinational team, while a Czech scientist might lead an important programme from an institution outside the country. National reputation thus became increasingly networked. The Academy benefited when international mobility generated circulation and collaboration rather than a permanent one-way loss of talent. Yet smaller or less fashionable disciplines could struggle to enter the most influential consortia, reproducing centre–periphery relations within European science. Internationalisation therefore created opportunities without abolishing competition over visibility, agenda-setting, and resources. The most successful Czech institutes learned to use their historical specialisations as platforms for partnership rather than as reasons for intellectual isolation.

Contemporary scientific reputation is also more collective than the heroic language of discovery commonly suggests. Advanced experiments may depend upon specialised technicians, software developers, facility managers, data curators, statisticians, and research administrators whose names seldom enter public commemoration. Large instruments and biological collections can support hundreds of projects whose authors work in several countries. A highly cited paper may represent years of institutional investment made before the recognised principal investigator joined the project. Conversely, an internationally famous scientist can strengthen an institute by attracting students, funding, partnerships, and public attention. The relationship between individual and institution is therefore reciprocal but unequal. Institutions need visible figures, while visible figures rely upon forms of labour that conventional biography often conceals. A complete history must recover this collective foundation without denying the role of unusual imagination, judgement, or persistence. It must also recognise that global reputation can be fragile. Changes in funding priorities, failed succession, loss of infrastructure, or dependence upon one charismatic leader may cause a celebrated programme to decline. The strongest research schools are those capable of transferring authority, renewing their questions, and allowing pupils to become independent rather than permanent followers. In this respect, the enduring legacies of Purkyně, Heyrovský, Čech, Šorm, Paleček, Wichterle, and Holý reside not only in remembered achievements but in institutions that continued to generate new research. Scientific memory becomes productive when it functions as a resource for renewal rather than as a substitute for it.

Public recognition adds another layer to the formation of global reputations. Some discoveries, such as soft contact lenses or antiviral medicines, can be connected readily with visible effects on human life. Others, including abstract topology, catalogues of planetary nebulae, or theoretical descriptions of molecular interactions, require interpretation before their

significance becomes publicly intelligible. National media and political representatives tend to favour discoveries that can be narrated through a single inventor, decisive moment, or celebrated prize. Such narratives create valuable public interest but may compress decades of collective work into a simplified legend. Academy institutions therefore carry a responsibility to explain not only what was discovered but how a scientific environment made discovery possible. Historical archives, oral testimony, laboratory instruments, correspondence, and institutional records are essential to that explanation. They also permit reassessment of contributions that earlier narratives neglected, including the work of collaborators, technicians, women researchers, and scientists disadvantaged by exile or repression. International reputation is never entirely fixed because new evidence and changing disciplinary concerns can alter the historical distribution of credit. Hašek's place in the history of immunological tolerance is one prominent example of such reconsideration. The recovery of overlooked contributions should not become an exercise in competitive national grievance. Its purpose is to produce a more accurate account of how knowledge circulated and why some voices were amplified more strongly than others. By cultivating critical scientific memory, the Academy can connect public pride with historical honesty. This function is especially important in a society whose scientific institutions experienced repeated political rewriting.

The global reputations formed within the Czech Academy tradition consequently display several distinct temporal patterns. Born, Haenke, Sternberg, and Purkyně became visible through the multilingual networks of imperial and European learned science. Němec and Votoček connected disciplinary modernisation with Czech-language education and national institutional development. Heyrovský and Čech transformed original research into internationally recognised methods, concepts, and schools that crossed the transition to state socialism. Šorm, Hašek, Svoboda, Perek, Paleček, Wichterle, and their contemporaries worked within the resource-rich but politically conditional structure of ČSAV. Their careers reveal combinations of support, ideological pressure, institutional resilience, delayed recognition, and transnational solidarity. Holý and later generations operated increasingly through multinational partnerships linking academy research with universities, clinical institutions, research infrastructures, and industry. None of these patterns should be treated as a simple progression from provincial dependence to complete international integration. Earlier naturalists could be remarkably cosmopolitan, while contemporary researchers may still encounter inequalities between scientific centres and peripheries. Nor did political democratisation automatically guarantee intellectual excellence. It removed decisive restrictions, but competitive reputation still required sustained funding, effective leadership, demanding evaluation, and the renewal of research communities. The historical advantage of the Academy lay in its ability to preserve long programmes beyond the duration of individual grants or university appointments. Its recurrent danger lay in allowing administrative security or political favour to replace critical scientific judgement. Global standing emerged when institutional continuity supported intellectual risk rather than conformity.

Thus, the formation of global reputations among Czech and Czechoslovak natural scientists was neither the spontaneous reward of genius nor the automatic product of national institutions. It resulted from the interaction of discovery, method, mentorship, material infrastructure, publication, mobility, political power, and historical memory. Individual distinction mattered most when it could be translated into a research school or an institution capable of surviving its founder. Conversely, strong institutions gained international legitimacy when they allowed original scientists sufficient autonomy to pursue questions whose value

was not immediately obvious to administrators or political authorities. The trajectory from Born's learned networks and Sternberg's collections to Purkyně's physiological institute, Heyrovský's polarographic school, Čech's mathematical seminars, and the specialised institutes of ČSAV reveals a cumulative institutional development. That development was repeatedly interrupted by occupation, dictatorship, purges, emigration, and economic constraint. Nevertheless, knowledge survived through publications, instruments, pupils, foreign colleagues, and professional traditions that political regimes could restrict but not wholly command. After 1989, international peer review and European integration offered new mechanisms of recognition while introducing new forms of competition and measurable hierarchy. The most persuasive global reputations remained those grounded in sustained intellectual contribution rather than publicity or ceremonial distinction alone. They belonged at once to particular people, to their collaborators, to their institutes, and to the transnational communities that tested and used their work. Remembering these scientists therefore requires more than celebrating national success. It requires an understanding of the institutional conditions that made success possible and of the exclusions that prevented other contributions from becoming equally visible. In this sense, the history of globally recognised natural scientists is also a history of the Academy's capacity to transform individual creativity into durable public knowledge.

2. Inventors, Applied Researchers, and Technological Innovators

The history of invention within the Czech Academy tradition begins with a distinction between discovery, invention, application, and innovation. A discovery identifies a phenomenon, relationship, or principle that already exists in nature, whereas an invention combines knowledge into an artefact, process, instrument, or reproducible technical solution. Applied research is broader, since it includes investigations directed towards a practical problem even when they do not result in a patentable invention. Innovation occurs only when a new solution enters social, medical, industrial, administrative, or commercial practice. These stages frequently overlap, but they should not be collapsed into a single linear sequence. A scientist may discover a principle without producing an instrument, while an engineer may transform an existing principle into a technically successful device. A patent may protect an invention that never reaches production, whereas an unpatented method may transform an entire discipline. The familiar model leading smoothly from basic research through application to commercial success therefore describes only one possible trajectory. Historical studies of innovation have shown that knowledge moves repeatedly between research, engineering, production, users, and institutions rather than travelling in one direction (*Godin, 2006*). This is especially evident in Czech and Czechoslovak history, where political ruptures, state ownership, industrial structures, foreign licensing, and restricted mobility repeatedly redirected technological development. The relevant personalities must consequently be assessed not only by the originality of their ideas but also by their capacity to connect different stages of the innovation process. Their careers reveal whether the Academy and its predecessors possessed the institutional intelligence needed to transform knowledge into durable public value.

This approach also requires careful definition of the Academy's historical boundaries. Many important inventors in the Czech lands worked at technical universities, hospitals, industrial laboratories, military institutions, or specialised state institutes rather than inside ČAVU, ČSAV, or AV ČR. They nevertheless shaped the technological culture from which academy

research emerged and with which academy institutes later interacted. Excluding them completely would create an artificial institutional isolation that did not exist in practice. At the same time, every Czech technological achievement cannot retrospectively be credited to the Academy. The central question is therefore whether a personality or research line influenced the Academy's institutional environment, entered one of its institutes, collaborated with its researchers, or exemplified a problem that the Academy later had to address. This criterion brings engineering, medicine, chemistry, computing, and scientific instrumentation into a common narrative without dissolving their institutional differences. It also prevents patent counts from becoming the principal measure of importance. Some technologies required decades of collective refinement, while others depended upon one decisive conceptual or engineering intervention. In certain cases, commercial production occurred outside the Academy, although the indispensable knowledge originated within it. In others, state industrial organisations possessed the manufacturing capacity but lacked the scientific autonomy needed for sustained innovation. The history of technological personalities is therefore an institutional history of interfaces. Its protagonists worked at the boundaries between science and engineering, laboratory and factory, state and market, publication and patent, or public mission and private reward.

The 19th-century careers of František Křižík and Viktor Kaplan illustrate the technological environment that preceded the modern research academy. Křižík combined electrical engineering with entrepreneurship, improving arc lighting, developing signalling systems, building electrical installations, and participating in the electrification of transport. His authority did not arise from academic publication alone, because public demonstrations, exhibitions, factories, municipal contracts, and functioning infrastructure made his competence visible. He represented the inventor as an organiser of industrial modernity. Kaplan, an Austrian-born professor working at the German Technical University in Brno, followed a more academically structured path. His adjustable-blade turbine emerged from prolonged research into water flow, turbine efficiency, cavitation, and the limitations of existing Francis turbines. Patented during the 1910s, the Kaplan turbine made low-head and variable-flow hydropower considerably more efficient. Its commercial success required experimental facilities, technically skilled assistants, patent administration, foundries, turbine manufacturers, and confidence from power-plant operators. The invention therefore belonged to Brno's multilingual technical environment as much as to Kaplan individually. It became an internationally used technology because industrial partners could convert experimental geometry into reliable large-scale machinery (*Polák, 2021*). Neither Křižík nor Kaplan should be appropriated retrospectively as an employee of the Academy. Their careers matter because they demonstrate that the Czech lands already possessed a culture in which experimental science, engineering education, entrepreneurship, and international patenting could meet.

ČAVU could recognise distinguished inventors and technical scholars, but it was not designed primarily as an engineering-development organisation. Its broad combination of science, literature, and art strengthened national representation while limiting the concentration of resources in large technological programmes. Much practical research therefore occurred in technical universities, industrial enterprises, agricultural stations, hospitals, military establishments, and professional associations. The foundation of the Masaryk Academy of Labour after the creation of Czechoslovakia reflected the desire to organise technical and economic knowledge more directly around national development. Its existence showed that cultural academies and institutions of applied expertise performed related but distinct

functions. The interwar republic required electrification, transport, communications, chemical production, public health, resource surveys, and industrial standardisation. Inventors consequently depended upon institutions capable of mediating between theoretical expertise and the operational needs of a modern state. Czechoslovak industry supplied strong manufacturing traditions, particularly in engineering, machinery, glass, chemicals, optics, and armaments. Yet private companies, universities, and state offices did not automatically form a coherent innovation system. Problems of finance, patent ownership, industrial secrecy, and foreign competition repeatedly complicated the adoption of academic knowledge. The subsequent creation of ČSAV promised to concentrate research capacity more effectively, but it also subordinated science to socialist planning and centralised political authority. The institutional challenge was therefore not simply to increase the quantity of applied research. It was to preserve creative feedback between theoretical inquiry, technical experimentation, production, and users without allowing any one administrative centre to dominate the entire process.

Jaroslav Heyrovský's polarography is a foundational example of a discovery becoming an instrument-based technology. The original electrochemical insight of 1922 concerned the current passing through a dropping mercury electrode under changing voltage. Its practical power became much greater when Heyrovský and Masuzo Shikata developed an apparatus that automatically recorded current–voltage curves. The polarograph converted a delicate experimental procedure into a visible, repeatable, and transportable analytical method. Automation reduced the dependence of results upon the manual skill and patience of an individual investigator. Recorded polarograms could be preserved, compared, published, and interpreted by researchers working in different laboratories. The instrument therefore embodied scientific reasoning in mechanical and electrical form. Its users did not need to reproduce every stage of Heyrovský's original conceptual path before obtaining useful measurements. Polarography spread into pharmaceutical analysis, metallurgy, environmental investigation, clinical chemistry, food testing, and industrial quality control. This diffusion transformed a physical-chemical discovery into a general analytical technology (*Czech Academy of Sciences, 2022*). Heyrovský's achievement was consequently not confined to the invention of an apparatus, because he and his collaborators developed the theory, procedures, terminology, and research school necessary for reliable application. The case demonstrates that an instrument becomes innovative only when it is embedded in a community capable of interpreting what it records.

The polarograph also reveals the importance of collaboration across national and disciplinary boundaries. Shikata was not a peripheral assistant but a scientifically significant partner in the automation of the method. Their work connected Prague with Japanese chemistry and demonstrated that innovation could emerge from the encounter of different research traditions. Instrument manufacture subsequently required technicians and firms able to produce dependable components at a scale exceeding the laboratory prototype. The design had to be standardised sufficiently for users who had never met its inventors. Manuals, calibration procedures, reference substances, and training courses became as important as the original machine. The Polarographic Institute established in 1950, and later incorporated into ČSAV, provided an organisational centre for extending the method. Socialist Czechoslovakia could present polarographic equipment as evidence that national science contributed directly to industrial and medical modernisation. Nevertheless, the planned economy did not eliminate delays in manufacture, shortages of components, or bureaucratic

separation between research institutes and producers. Successful application still depended upon personal contacts and technically competent intermediaries. Polarography survived successive political systems because its usefulness was demonstrable across them. Its history warns against attributing innovation solely to the inventor named on a method or prize. Heyrovský's global technological influence rested upon the coordinated work of collaborators, instrument makers, analysts, teachers, and institutional successors.

Antonín Svoboda occupies a similarly formative position in the history of Czechoslovak computing. Before returning to Czechoslovakia after the Second World War, he had acquired experience with mathematical and electromechanical systems in the United States. In Prague he established a laboratory for mathematical machines within the Central Institute of Mathematics, one of the institutions connected with the formation of ČSAV. His team designed and constructed SAPO, generally recognised as the first Czechoslovak automatic computer. The machine used electromechanical relays and was technically cumbersome by later standards. Its most original feature was the use of three parallel arithmetic units whose results could be compared by majority voting. This arrangement represented an early form of fault-tolerant computing. Svoboda understood that unreliable components did not necessarily make reliable calculation impossible if the architecture could detect and compensate for individual errors. The principle anticipated a problem that later became fundamental in aerospace, communications, industrial control, and other safety-critical systems. His group subsequently worked on EPOS electronic computers and contributed to the emergence of a domestic computing profession. Svoboda's international significance therefore lay not merely in assembling a national machine but in developing original architectural ideas (*IEEE Computer Society, n.d.*). Computing entered the Academy tradition as a combination of mathematics, electrical engineering, logical design, and institutional organisation.

The history of Svoboda's group also exposes the limits of technological innovation within an administratively fragmented socialist system. Computer development required rapid coordination between research design, component production, software, industrial manufacture, and users. Czechoslovakia possessed skilled mathematicians and engineers, but its electronic-component base could not always keep pace with international development. Decisions concerning standardisation and production were influenced by ministries, industrial enterprises, Comecon arrangements, and political assessments rather than technical criteria alone. A successful prototype therefore did not guarantee timely serial manufacture. Svoboda also faced distrust from officials who regarded his foreign experience and independent judgement with suspicion. His departure for the United States in 1964–1965 removed a central organiser from the domestic field he had helped to create. The loss affected not only one individual but also mentorship, strategic continuity, and the authority needed to defend original national designs. Czechoslovak computing continued, yet it increasingly operated under constraints imposed by technological dependence and bloc-wide standardisation. Svoboda's subsequent career abroad confirmed that the expertise lost at home remained internationally valuable. His biography will reappear in *Czech Scientific Exile as an International Extension of National Science*. Here it demonstrates that innovation systems can fail even when they possess excellent inventors, because political mistrust and institutional fragmentation prevent talent from becoming cumulative national capacity.

Armin Delong represents one of the most successful connections between academy research, instrument design, and industrial manufacture. As a young engineer in Brno, he participated in the team that constructed the first Czechoslovak electron-microscope prototype. Electron

microscopy demanded mastery of charged-particle optics, high vacuum, electromagnetic lenses, mechanical stability, specimen preparation, and electronic control. It was therefore a paradigmatic interdisciplinary technology. Delong and his colleagues did not merely copy an imported device. They developed a compact desktop transmission electron microscope that could be manufactured and used beyond a small circle of specialists. Cooperation with Tesla Brno allowed the instrument to enter serial production from the mid-1950s. The successful microscope received a gold medal at the Brussels World Exhibition in 1958, giving Czechoslovak instrumentation exceptional international visibility. The establishment of the Institute of Scientific Instruments in Brno within ČSAV provided a permanent research base for electron optics and related technologies. Delong became one of the central figures in that institute and sustained the development of microscopy over several decades. His achievement joined scientific understanding with an unusually clear sense of instrument usability and manufacturability. The early history of the institute records the direct progression from prototype construction to serially produced electron microscopes (*Institute of Scientific Instruments of the CAS, n.d.*). Delong's reputation consequently belonged as much to the technological culture of Brno as to his personal inventive ability.

The broader legacy of Delong's work can be seen in the persistence of electron microscopy as a regional technological specialisation. A successful instrument creates more than sales when it trains designers, technicians, users, service engineers, and suppliers. Each generation of microscopes generates practical knowledge concerning vacuum systems, detectors, electron sources, image interpretation, and precision manufacturing. Such knowledge circulates between research institutes, universities, and firms even when organisational structures change. The decline and restructuring of socialist enterprises after 1989 did not erase this accumulated competence. Delong himself participated in the creation of a new company bearing his name, connecting the earlier academy-industrial tradition with a market-oriented environment. Delong Instruments subsequently specialised in low-voltage transmission electron microscopes, electron guns, and customised electron-optical components. Other firms in Brno expanded in electron microscopy and related technologies, turning the region into a globally significant production centre. This outcome cannot be credited to one institution alone. It emerged from the long interaction of the Academy, technical universities, Tesla Brno, successor firms, skilled labour, and international corporate investment. Yet Delong's research school and the Institute of Scientific Instruments formed an indispensable part of that ecosystem. The company's account explicitly traces its origin to the team that constructed the first Czechoslovak microscope and to the compact instrument honoured at Expo 58 (*Delong Instruments, n.d.*). The case demonstrates how an academy-based instrument tradition can survive economic transformation by dispersing into a regional network rather than remaining inside one organisation.

František Šorm sought to make applied potential a systematic property of Czechoslovak chemistry rather than an accidental consequence of individual invention. At the Institute of Organic Chemistry and Biochemistry, he assembled programmes connecting natural products, peptides, nucleic-acid components, synthetic chemistry, biochemistry, and pharmacology. This organisation encouraged researchers to move from molecular structure to biological activity and possible therapeutic application. Šorm understood that the most fertile research questions often appeared at disciplinary boundaries. He also recognised that a large institute could maintain specialised equipment, compound libraries, analytical services, and teams whose combined capacity exceeded that of a university laboratory. Patentable results

were therefore not isolated from basic research but emerged from a dense programme of chemical inquiry. The institute developed compounds, production methods, peptide analogues, and pharmacologically relevant substances. Cooperation with medical researchers and industrial producers was necessary to carry these results towards practice. Under socialism, however, institutes lacked full contractual freedom and could not independently manage every aspect of licensing or foreign commercial negotiation. State foreign-trade organisations and ministerial bodies frequently intervened between inventors and international partners. Šorm consequently attempted to strengthen the Academy's ability to formulate its own patent interests during the reform period of the 1960s. His removal after 1968 weakened an institutional vision in which scientific excellence and practical application were mutually reinforcing. Nevertheless, the later achievements of Alois Píškala, Antonín Holý, and other IOCB researchers grew from the research culture that Šorm had helped to establish (*IOCB Prague, n.d.*).

Otto Wichterle brought this relationship between research and invention into its most publicly recognisable form. His technical imagination developed before the establishment of the Institute of Macromolecular Chemistry. After the Nazi closure of Czech universities, he worked in the Baťa industrial research environment at Zlín. There he participated in polymer research that contributed to the development of the Czechoslovak polyamide fibre later known as Silon. Industrial work taught him to think about materials not only through chemical formulae but also through processing, reproducibility, machinery, cost, and physical performance. This experience complicated any simple division between academic scientist and industrial inventor. Wichterle returned to higher education after the war, yet his ability to move between theory and manufacture remained central to his work. The communist reorganisation of universities and research repeatedly disrupted his institutional position. Such disruptions did not destroy his interest in polymers capable of interacting with living tissue. They did, however, influence where and how the decisive experiments could be performed. Wichterle's inventive style grew from a combination of chemical depth, practical experience, manual skill, and scepticism towards administrative limitations. His biography therefore challenges the romantic image of invention as a sudden idea detached from prior professional formation. The soft contact lens became possible because he had spent years learning how molecular structures become usable materials.

The scientific foundation of the lens was the creation of hydrophilic polymer networks suitable for biological contact. Working with Drahoslav Lím and other colleagues, Wichterle investigated poly(2-hydroxyethyl methacrylate), commonly abbreviated as pHEMA. The material could absorb water while retaining a stable three-dimensional structure. In its hydrated state, it was soft, transparent, and more compatible with living tissue than conventional rigid plastics. These properties suggested applications extending beyond ophthalmology into surgery, implants, drug delivery, and other areas of biomaterials' research. The celebrated 1960 article "Hydrophilic Gels for Biological Use" presented the material as a general scientific and biomedical possibility rather than merely a finished consumer product (*Wichterle & Lím, 1960*). The publication also demonstrates why the achievement should not be attributed to Wichterle alone. Lím's chemical contribution and the wider team's experimental labour were integral to the emergence of the hydrogel. Later heroic narratives often compressed this collective process into the image of a single inventor. Such simplification made the story memorable but obscured the institutional production of knowledge. The material required synthesis, cross-linking, purification, physical

measurement, biological testing, and repeated evaluation. None of these stages was sufficient independently. The hydrogel became technologically important because a research group recognised how several desirable properties could coexist within one polymer network.

A suitable material did not automatically produce a satisfactory contact lens. Early lenses manufactured by cutting and polishing hydrated or dry polymer pieces presented difficulties of shape, surface quality, optical precision, and reproducibility. Wichterle's decisive engineering contribution was to develop a spin-casting method. A liquid monomer mixture could be placed in a rotating mould, where centrifugal force, surface tension, mould geometry, and polymerisation combined to form the lens. The process linked chemical reaction directly with optical shaping. It reduced the labour required for machining and offered a path towards repeated production. Wichterle famously tested the method at home using an apparatus assembled from a Merkur construction set, a small motor, electrical components, and improvised glass moulds. The domestic machine has become an icon of Czech inventive ingenuity. Yet its historical meaning is more complex than the charming contrast between a child's toy and a global medical technology. It reveals a situation in which a highly qualified scientist had to work around institutional restrictions and doubts about the project. The improvised apparatus succeeded because Wichterle already possessed the scientific knowledge needed to control material and process. Later reconstructions confirm that the crucial innovation lay in integrating hydrogel chemistry with a technically reproducible mode of forming lenses (*Michálek, Podešva, & Dušková-Smrčková, 2022*). Improvisation accelerated invention, but it could not by itself supply clinical validation, mass manufacture, regulatory approval, distribution, or international patent defence.

The Institute of Macromolecular Chemistry gave Wichterle's research a broader and more durable organisational framework. Established within ČSAV in 1959, it brought polymer chemistry and polymer physics into close institutional contact. Its programme combined theoretical research, material synthesis, characterisation, processing, and practical application. This breadth was essential because polymers change their behaviour according to molecular architecture, manufacturing conditions, temperature, solvent interaction, mechanical stress, and time. A commercially viable biomedical material must therefore be understood across several analytical levels. The institute trained researchers who could develop hydrogels and other polymer systems beyond the original contact-lens application. It also connected Czech macromolecular science with international organisations and conferences despite Cold War restrictions. Large international symposia held in Prague strengthened the visibility of the field and created channels for technological exchange. Wichterle's leadership demonstrated that an academy institute could unite scientific depth with application without becoming a routine industrial testing facility. His approach was use-inspired rather than narrowly demand-driven. It resembled the category later described as research seeking both fundamental understanding and practical use (*Stokes, 1997*). This institutional balance was fragile because administrators could interpret application as an obligation to deliver immediate products. Wichterle's success depended upon maintaining enough autonomy for unexpected material properties and production ideas to emerge.

The international licensing of soft contact-lens technology exposed the distance between invention and economically competent innovation. In 1965 the Czechoslovak Academy reached an agreement with the American National Patent Development Corporation. Subsequent sublicensing, including arrangements involving Bausch & Lomb, helped move hydrogel lenses towards mass production and global markets. Foreign partners possessed

capital, manufacturing organisation, marketing networks, clinical connections, and access to regulatory environments unavailable to the Czech institute. International co-operation was therefore indispensable to the technology's rapid diffusion. At the same time, the negotiations revealed weaknesses in Czechoslovak patent strategy. Rights were controlled by state and institutional authorities rather than by Wichterle personally. Officials did not always understand the prospective scale of the international market or the complexity of defending patents abroad. Political restrictions also complicated Wichterle's participation in negotiations and litigation where his technical testimony was essential. Decisions concerning the sale or abandonment of rights reduced the long-term financial return available to Czechoslovak science. Wichterle himself received little material reward compared with the global commercial value generated by the invention. Detailed reconstruction of the patent history shows how administrative misjudgement could dissipate the benefits of world-class research (*Michálek, Podešva, & Dušková-Smrčková, 2022*). The case became a lasting lesson that public ownership of intellectual property requires professional management rather than passive bureaucratic possession.

Wichterle's political fate further demonstrates that a regime may celebrate an invention while punishing the independence that made it possible. His scientific authority encouraged him to participate in public debates during the reform era of the 1960s. He became associated with the civic language of the Prague Spring and with the manifesto *Two Thousand Words*. After the Warsaw Pact invasion, normalisation removed him from institutional leadership and restricted his scientific position. The punishment was irrational even according to the regime's declared interest in technological progress. It weakened a successful institute, interrupted mentorship, and signalled that political obedience ranked above inventive competence. Wichterle continued to embody the international prestige of Czechoslovak science, but he no longer possessed authority proportionate to that reputation. His later election as the final president of the Czechoslovak Academy of Sciences after 1989 gave his career a symbolic institutional resolution. It did not restore the lost years or recover the full economic value of the patents. Nevertheless, it allowed the reformed academic community to identify scientific autonomy with civic responsibility. Wichterle became more than the inventor of a medical device. He represented a type of researcher capable of uniting theoretical science, practical imagination, institutional leadership, and moral independence. The worldwide use of soft lenses made his technological achievement publicly visible, while political repression made its institutional conditions impossible to ignore (*Kyle & Shampo, 2016*).

Alois Pískala's work demonstrates a different temporal pattern in which invention preceded application by approximately four decades. At IOCB Prague during the 1960s, he synthesised 5-azacytidine and its deoxy analogue, later known as azacitidine and decitabine. These compounds interfered with biological processes involving nucleic acids and displayed potentially valuable antitumour activity. They were synthesised, published, and patented, but their clinical future was not immediately secured. Early pharmacological development faced questions of toxicity, dosage, disease selection, and mechanism. The international pharmaceutical environment was also not yet organised around the epigenetic interpretation that later made their effects especially significant. As the original patent protection expired, the compounds remained scientifically interesting without providing the institute with a straightforward commercial route. Decades later, changing knowledge of DNA methylation and new clinical strategies revived attention to them. Azacitidine entered the market in 2004, followed by decitabine in 2006, for the treatment of myelodysplastic syndromes and related

haematological malignancies. Their eventual success shows that an invention may have to wait for medicine, theory, regulation, and commercial strategy to catch up. It also reveals the difficulty of evaluating applied research by short-term impact. A compound abandoned after ten years might appear unsuccessful, while the same molecule may become clinically transformative after forty. IOCB's historical account therefore presents Pískala's compounds as a major achievement whose practical significance matured long after their original patents had expired (*IOCB Prague, n.d.*).

Antonín Holý's antiviral compounds emerged from the same institutional culture but followed a more successfully integrated international route. Holý began with the fundamental synthetic chemistry of nucleosides, nucleotides, and their analogues. His objective was not simply to imitate natural molecules but to create structures possessing greater chemical and metabolic stability. Acyclic nucleoside phosphonates offered a particularly productive solution. Their structural characteristics allowed them to enter biochemical pathways associated with viral replication while resisting some forms of degradation. The value of the compounds could not be determined by synthesis alone. They required extensive biological screening against different viruses and careful investigation of toxicity and metabolism. Holý maintained a disciplined programme in which negative results informed the design of subsequent molecules. This persistence distinguished medicinal chemistry from the search for a single fortunate compound. A successful drug candidate often emerges after numerous modifications that remain invisible in the final product's public history. IOCB supplied continuity, chemical expertise, analytical support, and an accumulated library of related structures. Holý's inventive achievement therefore lay in creating a productive molecular platform rather than only one pharmaceutical substance. The platform eventually yielded cidofovir, adefovir, tenofovir, and related therapeutic possibilities (*De Clercq & Holý, 2005*).

The decisive bridge between Holý's chemistry and antiviral medicine was his long collaboration with Erik De Clercq at the Rega Institute in Leuven. De Clercq's laboratory contributed biological and virological expertise capable of identifying the most promising activities among newly synthesised compounds. Repeated exchange between Prague and Leuven allowed chemical design and biological testing to guide one another. This relationship began under Cold War conditions when international mobility and communication were more difficult than ordinary retrospective accounts suggest. Its durability rested on scientific trust rather than a short project contract. The American pharmaceutical entrepreneur and scientist John C. Martin later recognised the therapeutic potential of the compounds. Collaboration with Gilead Sciences supplied further medicinal chemistry, preclinical development, clinical trials, regulatory work, manufacturing, and global distribution. Tenofovir eventually became a central component of widely used treatments for HIV and hepatitis B. Cidofovir and adefovir followed related but distinct therapeutic paths. None of these outcomes can be attributed exclusively to a Czech institute, Belgian laboratory, or American company. Their success arose from complementary capabilities organised across national and institutional boundaries. Holý's case therefore represents innovation as an international system of co-development. It also shows how a scientist based in a relatively small country could retain intellectual centrality within a global pharmaceutical network.

The commercial agreements associated with Holý's compounds transformed the institutional consequences of invention. Licensing revenue returned substantial resources to IOCB Prague. Unlike the earlier mishandling of Wichterle's patents, the antiviral agreements demonstrated the value of sustained legal and commercial competence. Revenue could be reinvested in

laboratories, instrumentation, research groups, fellowships, and the renovation of institutional infrastructure. It also gave the institute a degree of strategic freedom unusual within the Czech public research system. This financial success must not be confused with the private enrichment of a single inventor. It functioned as an institutional multiplier, allowing one research lineage to support future projects whose results could not yet be predicted. The arrangement offered a powerful argument for protecting the public ownership of research institutions while managing their intellectual property professionally. At the same time, exceptional licensing income created potential inequalities between IOCB and less commercially oriented Academy institutes. Not every discipline can or should produce globally marketed medicines. The financial model therefore could not become a universal standard by which historians, linguists, mathematicians, or environmental researchers were judged. Holý's achievement was exceptional because medicinal need, molecular originality, international partnership, patent protection, and a capable company aligned. The institute's later transfer strategy sought to make such alignment less dependent upon chance without pretending that it could be manufactured administratively (*IOCB Prague, n.d.*).

The wider portfolio of IOCB innovations cautions against constructing the history of applied chemistry around Holý alone. Researchers developed large-scale synthesis of guaiazulene, which entered the anti-inflammatory ointment Dermazulen. Work on biologically active peptides produced hormone analogues with therapeutic applications. Alois Píškala's azacitidine and decitabine eventually became important anticancer medicines. Other research groups investigated modified nucleosides, peptide hormones, enzyme inhibitors, and compounds with antimicrobial or metabolic potential. Many of these projects depended upon technicians, analytical chemists, pharmacologists, clinicians, patent specialists, and production engineers. Some technologies reached the market, while others remained useful research tools or developmental failures. Failure was not necessarily evidence of poor science. Pharmaceutical development has a high attrition rate because compounds may prove toxic, unstable, difficult to manufacture, commercially unattractive, or ineffective in clinical trials. An institution capable of innovation must therefore tolerate unsuccessful pathways while learning from them. The public narrative tends to remember the product and forget the compound series from which it emerged. A more accurate account treats invention as a portfolio of experiments whose collective risk cannot be assigned to one celebrated personality. IOCB's record of successful compounds makes this accumulated and team-based character especially visible (*IOCB Prague, n.d.*).

After 1993, applied researchers in the physical and technical sciences increasingly worked through large facilities and specialised centres rather than through the classical image of the solitary inventor. The development of high-power laser systems provides a clear example. Czechoslovak laser research had included the reconstruction of an iodine-laser system into PERUN during the 1980s and the launch of the more powerful PERUN II in 1992. This line supplied experience upon which later laser science could build (*ELI Beamlines, n.d.*). The HiLASE Centre of the Institute of Physics subsequently concentrated on high-average-power pulsed lasers and their industrial use. Researchers such as Jan Brajer and Petr Hauschwitz represented teams that combined laser physics, optical engineering, materials science, process control, and collaboration with companies. Laser shock peening could improve the durability of components, while precise surface structuring offered applications in energy, transport, medicine, and advanced manufacturing. Such technologies require repeated testing on industrial materials rather than laboratory demonstrations alone. Companies contribute

knowledge of production tolerances, costs, certification, and customer requirements. Academy researchers contribute access to unusual laser parameters, diagnostic methods, and longer experimental horizons. The resulting innovator is therefore often a team leader and institutional broker rather than the author of a single self-contained device. This model reflects the growing complexity of technological systems.

The Institute of Scientific Instruments offers a comparable contemporary example in biomedical signal analysis. Filip Plešinger and colleagues investigated high-frequency components of electrocardiographic signals that standard clinical interpretation had largely neglected. The research suggested that these components could reveal additional information about the electrical activation of the heart. Transforming the observation into a medical technology required collaboration with physicians, independent validation, software development, patent protection, and adaptation to clinical workflows. The resulting approach could support cardiac diagnostics and procedures associated with pacemaker implantation. A spin-off structure, VDI Technologies, was created to develop the method towards practical use. This path differed sharply from Wichterle's home-built lens apparatus. Contemporary medical innovation must navigate data protection, software reliability, regulatory evidence, hospital procurement, interoperability, and liability. The principal investigator therefore works within a network of clinicians, programmers, transfer specialists, investors, and managers. Bringing business leadership into the company can be as important as keeping the scientific inventors involved. The Institute's 2024 profile records both the research group and the patent or utility-model activity connected with the VDI monitor and cardiac-pacing procedures (*Institute of Scientific Instruments of the CAS, 2024*). The case shows how a long academy tradition in precision measurement can generate new technologies in a field far removed from electron microscopy.

Václav Navrátil represents a younger generation for whom the spin-off company became an intended vehicle of innovation rather than a reluctant institutional exception. During his doctoral research in Jan Konvalinka's laboratory at IOCB Prague, Navrátil and his colleagues developed the DNA-linked Inhibitor Antibody Assay, known as DIANA. The method connects molecular recognition with DNA-based amplification to detect enzymes and other proteins at exceptionally low concentrations. It can also support the screening of chemical libraries for inhibitors relevant to drug discovery. The scientific result was published, while international patent applications protected its potential applications. In 2018 DIANA Biotechnologies was established with assistance from i&i Prague and private investors. Navrátil moved from doctoral researcher to scientific entrepreneur and company leader. This transition required him to translate experimental performance into products, services, regulatory plans, investment arguments, and organisational strategy. During the COVID-19 pandemic, the company adapted its molecular expertise to PCR diagnostics, including saliva-based testing. The episode demonstrated the potential speed of a small research-driven company when scientific competence, manufacturing initiative, and urgent social demand converge. It also showed that a spin-off may develop in directions not anticipated when its founding technology was patented. The Academy's account of the company emphasises both the DIANA assay and the institutional support required to move it from postgraduate research towards diagnostics and drug development (*IOCB Prague, 2018*; *Navrátil et al., 2017*).

Such examples explain why technology transfer became increasingly professionalised within AV ČR. Scientists are not automatically equipped to conduct market analysis, negotiate licences, value patents, create companies, or communicate with investors. Requiring every

inventor to master these tasks can waste research time and produce avoidable legal mistakes. IOCB Prague established a dedicated transfer subsidiary, later known as IOCB Tech, to manage intellectual property and commercial development. Martin Fusek, trained as a chemist and experienced in both academic and private-sector settings, became one of the central architects of this model. The establishment of i&i Prague in 2017 added project scouting, commercial expertise, and pre-seed support. The i&i Biotech Fund, created with the European Investment Fund in 2021, supplied a larger investment mechanism for academic biotechnology projects. PharmTheon, launched in 2024, addressed the difficult translational space between promising compounds and the level of preclinical evidence expected by pharmaceutical partners. At the Academy-wide level, the Technology Transfer Centre developed a distributed network connecting central expertise with responsible staff in individual institutes. The PRAK programme, approved in 2023, supported intellectual-property protection and the movement of research results towards higher technological readiness. By 2024 the Academy reported a growing number of spin-offs and negotiations concerning seventeen licensing agreements with industrial partners (*Czech Academy of Sciences, 2024*). These structures did not replace inventors, but gave them institutional partners capable of carrying an idea through stages that earlier Czech innovators had often faced alone.

Professional transfer cannot eliminate the tensions inherent in public technological research. Patenting may attract investment, but premature secrecy can obstruct publication and open scientific exchange. Exclusive licensing may accelerate development, but it can also restrict access or concentrate publicly generated value in private hands. Spin-offs can preserve contact between inventors and their technology, yet conflicts of interest may arise when researchers divide their loyalties between an institute and a company. Commercially attractive fields may accumulate resources while socially essential but unprofitable research remains dependent upon public budgets. Medical technologies raise questions of affordability, clinical safety, patient consent, and equitable distribution. Digital and defence-related inventions create further concerns about privacy, surveillance, cybersecurity, export control, and dual use. Environmental technologies must be judged across their complete material and energy life cycles rather than by promotional claims alone. Patent quantity consequently provides a poor substitute for historical significance. The *Oslo Manual* similarly treats innovation as implementation rather than the mere existence of an idea or formal intellectual-property right (*OECD & Eurostat, 2018*). Evaluation should therefore consider scientific originality, technical reliability, actual use, public benefit, institutional learning, and the distribution of risks and rewards. The inventor remains important, but responsible innovation requires governance capable of asking who benefits, who decides, and who bears possible harm. For a publicly funded academy, technological success must ultimately remain compatible with scientific integrity and democratic accountability.

Thus, Czech and Czechoslovak inventors and applied researchers reveal a long movement from individual ingenuity towards increasingly complex systems of technological innovation. Křižík and Kaplan demonstrated how engineering knowledge entered industrial modernity before a comprehensive research academy existed. Heyrovský showed how a scientific method could become a widely used instrument through automation, standardisation, and a research school. Svoboda's computers revealed both the originality of Czechoslovak technical thought and the damage caused by institutional fragmentation and political distrust. Delong connected academy instrumentation with serial production and helped create a regional tradition that survived the collapse of socialist industry. Šorm made application a

programmatic feature of chemical research, while Wichterle transformed polymer knowledge into a biomedical technology of global reach. The mishandling of Wichterle's patents exposed the weakness of state-controlled innovation without professional commercial competence. Píškala's anticancer compounds demonstrated that practical relevance may emerge decades after the originating research. Holý's antivirals proved the power of long-term institutional support, international co-development, patent strategy, and the reinvestment of licensing income. More recent figures such as Navrátil, Plešinger, Fusek, and leaders of academy laser teams represent an environment in which invention, transfer expertise, investment, and spin-off formation are increasingly organised from the outset. Yet no administrative mechanism can manufacture genuine invention without intellectual freedom, disciplinary depth, technical skill, and tolerance of uncertainty. The Academy's technological contribution has been greatest when it protected these conditions while building competent bridges between the laboratory and society.

3. Nobel-Level Achievements, International Awards, and Scientific Prestige

Scientific prestige is neither identical with scientific quality nor distributed automatically in proportion to intellectual achievement. It is produced through a system of journals, citations, conferences, professional offices, academy memberships, honorary degrees, prizes, grants, public narratives, and institutional reputations. Within this system, the Nobel Prize occupies an exceptional position because it converts specialist recognition into worldwide cultural visibility. A Nobel laureate becomes not merely an eminent researcher but a public symbol of scientific excellence. Yet the prize recognises only particular disciplines and a very small number of individuals. Mathematics, computer science, astronomy, engineering, most environmental sciences, and many interdisciplinary fields remain outside its original categories. Nobel rules also restrict the number of recipients and generally exclude posthumous recognition, making the prize poorly adapted to some forms of collective or slowly acknowledged research (*Nobel Prize Outreach, n.d.*). The identification of "Nobel-level" achievement must therefore be used carefully. It should not become a speculative list of people who supposedly deserved an award. Instead, it can identify research whose originality and international consequence were comparable with work recognised at the highest level. In the Czech and Czechoslovak context, the distinction is particularly important because political isolation, linguistic inequality, exile, and institutional rupture repeatedly influenced international visibility. Scientific prestige must consequently be analysed as an achievement, a resource, and a historically uneven form of power.

Awards matter because they redistribute attention after a discovery has already entered scientific communication. An honoured scientist receives invitations, collaborators, institutional authority, media exposure, and often better access to research resources. The institution employing that scientist gains prestige that can attract students, international partners, and political support. These consequences illustrate the Matthew effect, through which recognition already acquired makes further recognition more likely. Studies of scientific prizes show that major awards can increase citations and visibility even when the intellectual content of earlier publications has not changed (*Farys & Wolbring, 2021*). Prestige therefore does not merely record achievement; it actively influences subsequent scientific careers. The process is cumulative because well-known laboratories are more easily trusted, invited, funded, and remembered. Researchers working in small countries or politically isolated

institutions may need substantially stronger evidence to achieve comparable visibility. Conversely, a single internationally celebrated personality can become a gateway through which an entire national research tradition is noticed. Such symbolic concentration is useful but also dangerous. It may cause institutions to organise their history around a few heroic figures while neglecting collaborators and schools. The history of Czech scientific prestige must accordingly examine both the benefits of recognition and the inequalities that recognition can reinforce.

Before the 20th century, the highest forms of scientific esteem did not include Nobel Prizes. Membership in leading academies, publication by respected learned societies, correspondence with eminent scholars, honorary appointments, and the international adoption of concepts or terminology performed comparable functions. Jan Evangelista Purkyně's reputation, for example, was established through the international reception of his physiological research and the circulation of his students, methods, and eponymous terms. Kaspar Maria Sternberg's authority arose from palaeobotanical work, collections, museums, and European scholarly networks. Their achievements cannot be retrospectively judged by whether they might have received a prize that did not yet exist. The absence of a Nobel framework makes visible a broader scientific economy of honour. Reputation was slower, more dispersed, and often attached to correspondence or institutional membership rather than a single ceremonial event. It could nevertheless exercise substantial influence upon appointments, patronage, and the movement of specimens or instruments. The later dominance of the Nobel Prize changed how earlier scientific history was narrated. Figures whose work resembled later prize-winning fields appeared easier to classify as precursors, while institution-builders and multidisciplinary scholars became less visible. This retrospective distortion is especially problematic for the Academy tradition, which depended upon organisers as well as discoverers. A balanced account must therefore treat international adoption, school formation, and disciplinary transformation as evidence of prestige even when no formal prize existed.

Jaroslav Heyrovský remains the central case because he received the 1959 Nobel Prize in Chemistry while working within the Czechoslovak scientific system. The official motivation recognised both the discovery and development of polarographic methods of analysis. This wording was significant because it acknowledged a sustained programme rather than a single experimental moment. Heyrovský had identified the analytical possibilities of the dropping mercury electrode in 1922 and then devoted decades to theory, instrumentation, applications, and training. By 1959 polarography had spread through chemistry, pharmacy, medicine, metallurgy, and industrial analysis. The Nobel Committee therefore rewarded a method whose value had been demonstrated internationally over a long period. Heyrovský received the entire Chemistry Prize rather than sharing it, further concentrating attention upon his name (*Nobel Prize Outreach, n.d.*). Yet the achievement had depended upon Masuzo Shikata, pupils, instrument builders, analytical chemists, and users who expanded the method. The prize transformed their collective research tradition into a personal international distinction. For Czechoslovakia, the award proved that a scientist based in Prague could shape a globally important field. For ČSAV, it supplied a level of international legitimacy that neither legislation nor political ceremony could create. Heyrovský became the most powerful symbol of continuity between pre-communist Czech science and the socialist Academy.

The road to that recognition was remarkably long. Heyrovský began receiving Nobel nominations in the 1930s, but the prize did not follow quickly. A historical reconstruction

counted sixty-three individual nominations between 1934 and 1959, submitted by Czech, Czechoslovak, and foreign nominators across several Nobel fields (*Barek, Fogg, & Muck, 2010*). These figures reveal an organised campaign of disciplinary advocacy as well as growing international confidence in polarography. Nomination was not a public vote and could not guarantee success. It required eligible scientists to articulate why the work deserved comparison with competing achievements from across the world. Repeated nominations helped preserve the claim while the method accumulated users and applications. The delay also illustrates the temporal conservatism of major prizes. Committees often wait until the durability of a discovery is clear, but this caution disadvantages scientists who die early or work in rapidly changing fields. Heyrovský survived long enough for polarography to establish an extensive international record. His work also retained a recognisable personal centre despite the increasing size of the research community. These conditions made it unusually compatible with Nobel conventions. The award was therefore the culmination of both scientific diffusion and sustained reputational labour.

The timing of the prize gave it particular political importance. Czechoslovakia in 1959 was governed by a communist regime that claimed science as a central force of socialist modernisation. The state had already honoured Heyrovský with the Czechoslovak State Prize and the Order of the Czechoslovak Republic (*Nobel Prize Outreach, n.d.*). The Nobel Prize nevertheless carried a different authority because it came from outside the socialist system. Officials could present it as confirmation that state-supported Czechoslovak science possessed international standing. At the same time, the achievement had originated decades before the creation of ČSAV and could not be credited wholly to socialist organisation. This created a useful ambiguity. The regime celebrated a laureate whose institutional career now belonged to the Academy, while the Academy inherited prestige generated under earlier political conditions. Heyrovský himself avoided becoming primarily a political spokesman and concentrated upon scientific work. His international distinction thereby remained more durable than the ideological claims made around it. The prize encouraged the Polarographic Institute and the wider Czechoslovak scientific community, strengthening confidence that research conducted behind the Iron Curtain could still receive universal recognition. The institutional history of the J. Heyrovský Institute explicitly describes the award as a stimulus for the institute and for national science more broadly (*J. Heyrovský Institute of Physical Chemistry, n.d.*).

The prize also reshaped the Academy's internal hierarchy of disciplines. Physical chemistry and electroanalysis acquired symbolic capital that could support requests for personnel, equipment, foreign exchange, and international travel. Younger scientists could enter a field associated with recognised excellence rather than institutional uncertainty. The name of Heyrovský became attached to an institute, medals, lectures, conferences, exhibitions, and educational programmes. Such commemoration converted personal distinction into organisational memory. It also created a standard against which later Czech scientific achievement was implicitly measured. The question of who might become "the next Heyrovský" periodically entered public discussion, often placing unrealistic expectations upon individual researchers. Nobel-scale research cannot be planned through patriotic aspiration alone. It usually depends upon years of uncertain work whose eventual significance is invisible at the beginning. Excessive concentration on a second Nobel Prize can therefore encourage symbolic impatience rather than institutional maturity. Heyrovský's real lesson was not that the Academy should seek another ceremonial triumph. It was that a durable research school,

open international communication, and methodological originality could eventually generate the highest recognition. The Academy preserved this interpretation most successfully when it supported electrochemistry beyond the historical method that had created its reputation.

The Cori couple represents another relationship between Prague science and Nobel recognition, but one formed through emigration rather than academy continuity. Gerty Theresa Radnitz and Carl Ferdinand Cori were born in Prague and studied medicine at the German University of Prague. They graduated in 1920, married, and subsequently left Central Europe for the United States. Their research clarified how glycogen is converted and recycled in the body, producing the model later known as the Cori cycle. In 1947 they shared half of the Nobel Prize in Physiology or Medicine, while the other half went to Bernardo Houssay. Gerty Cori became the first woman to receive the Nobel Prize in that discipline (*Nobel Prize Outreach, n.d.*). Their award demonstrated the scientific potential of education obtained within Prague's multilingual university environment. It did not, however, represent a direct achievement of Czech national institutions or of the later Academy. The decisive research was conducted in American laboratories after their migration. Their case therefore belongs to Czech scientific history through place of birth, education, and intellectual formation, but to American institutional history through mature research conditions. This distinction is essential if national scientific memory is to avoid appropriating achievements created elsewhere. The Coris reveal how Prague could form future laureates without possessing the institutions capable of retaining or fully employing them.

Gerty Cori's career also exposes gendered inequalities within the international reward system. Her scientific partnership with Carl was intellectually close, yet universities repeatedly treated her as the secondary member of the couple. She encountered nepotism rules, inferior appointments, lower salary, and doubts about whether a married woman should work alongside her husband. Her promotion to full professor came only in 1947, the year of the Nobel award. Such treatment demonstrates that final recognition can conceal decades of institutional inequality. The Nobel Prize did not erase the fact that her career had advanced more slowly than her scientific contribution warranted. It did, however, give her work an enduring visibility rarely available to women of her generation. Her election to scientific academies and receipt of further honours subsequently reinforced that position (*American Philosophical Society, 2022*). Within Czech historical memory, Gerty Cori has sometimes been described as Czech, Czech-American, Prague German, Jewish, Austro-Hungarian, or American. Each term captures part of a life that crossed political, linguistic, and institutional borders. The complexity should not be resolved by assigning her exclusively to one national canon. It should instead demonstrate how scientific prestige can illuminate the multinational history that later national narratives tend to simplify.

Vladimir Prelog provides an equally important example of educational influence extending beyond national ownership. Born in Sarajevo, he studied chemical engineering in Prague between 1924 and 1929. His doctoral supervisor was Emil Votoček, while Rudolf Lukeš became an especially important scientific mentor. Prelog remained in Prague until 1935, combining industrial employment with research conducted under difficult economic circumstances. His subsequent career led through Zagreb to ETH Zürich. In Switzerland he became one of the leading figures in stereochemistry, investigating the three-dimensional structure and reactivity of organic molecules. The Cahn–Ingold–Prelog system permanently embedded his name in the language used to describe molecular configuration. In 1975 he shared the Nobel Prize in Chemistry with John Cornforth. Prelog's Nobel biography explicitly

acknowledged Votoček as a founder of Czechoslovak chemical research and Lukeš as his mentor (*Nobel Prize Outreach, n.d.*). The award therefore indirectly confirmed the formative quality of the Prague chemical school. Yet Prelog was a Croatian-Swiss scientist, and the prize recognised work performed principally at ETH. His biography should be understood as evidence of Prague's transnational educational reach rather than converted into a narrowly Czech Nobel claim.

Prelog's career also shows how the prestige of a scientific school can travel through its students. Votoček himself never received a Nobel Prize, but his teaching contributed to the formation of a future laureate. Lukeš transmitted an approach to organic chemistry that Prelog carried into subsequent institutional environments. The reputational consequence returned retrospectively to Prague, strengthening recognition of the earlier Czechoslovak chemical tradition. This is a different form of scientific credit from formal co-authorship. A mentor may shape problem selection, standards of evidence, laboratory discipline, and intellectual confidence without appearing on the decisive later publication. International awards therefore illuminate genealogies as well as individuals. They reveal how scientific influence may pass through migration, political rupture, and institutional change. The Academy's later chemical institutes inherited some of the same disciplinary culture even though Prelog never became a ČSAV researcher. His life also warns against equating national retention with scientific success. Mobility allowed him to enter environments offering opportunities that interwar Central Europe could not consistently provide. The loss to one national system became a gain to a wider scientific community. A mature institutional history can acknowledge both outcomes without turning mobility into either betrayal or patriotic possession.

Peter Grünberg's 2007 Nobel Prize in Physics raises still more difficult questions of national attribution. He was born in Plzeň in 1939 into a German-speaking family during the Nazi occupation. His father worked as an engineer connected with the Škoda industrial environment. After the war, the family suffered internment and expulsion, and Grünberg grew up and was educated in Germany. His mature scientific career developed at Forschungszentrum Jülich. There he discovered giant magnetoresistance independently of Albert Fert's group, and the two scientists shared the Nobel Prize. The phenomenon became fundamental to modern magnetic data storage. Official Nobel materials identify his birthplace as Plzeň, Czechoslovakia, while his professional identity was German (*Nobel Prize Outreach, n.d.*). It would be misleading to present his prize as an achievement of Czech or Czechoslovak research institutions. At the same time, excluding him entirely would conceal the violent population transfers that altered the human geography of science after 1945. Grünberg's biography shows how political ruptures can sever birthplace from education, institutional affiliation, and scientific identity. His award belongs to the international history of science and to German research, while remaining connected to the difficult multicultural history of the Czech lands.

Milan Hašek is the most persuasive Czech example of an achievement closely related to Nobel-recognised work without receiving the prize itself. His experiments with embryonic parabiosis in chickens demonstrated that exposure to foreign cells during development could produce immunological tolerance. This phenomenon became fundamental to the understanding of transplantation and immune self-recognition. In 1960 the Nobel Prize in Physiology or Medicine went to Frank Macfarlane Burnet and Peter Medawar for the discovery of acquired immunological tolerance (*Nobel Prize Outreach, 1960*). Hašek's experiments addressed the same central biological principle. His results were experimentally substantial,

but their conceptual interpretation and international presentation weakened their position within the emerging canonical narrative. He described the work partly through terminology influenced by contemporary Soviet doctrines of "vegetative hybridisation". That framing did not communicate the significance of the phenomenon as effectively as the language used by Medawar's school. Publication in less internationally visible channels further limited reception. Hašek was known and respected, yet recognition did not crystallise around him at the decisive moment. The history of the Institute of Molecular Genetics accordingly describes him as having come close to the Nobel Prize (*Institute of Molecular Genetics of the CAS, n.d.*).

The Hašek case demonstrates that a correct experiment is not always enough to secure scientific priority or the highest reward. Results acquire meaning within conceptual frameworks. If the interpretation appears confused or connected with a discredited doctrine, other scientists may overlook the empirical evidence embedded within it. International language also matters because a result published in Czech or circulated through restricted networks has a smaller initial audience. Cold War divisions magnified these disadvantages. Western scientists had greater access to influential journals, conferences, and institutions capable of stabilising a particular interpretation. Hašek's relative youth and the still developing position of his research school also limited his authority. Later historical analysis concluded that his work deserved a more substantial place in the discovery of tolerance (*Iványi, 2003*). Retrospective correction cannot alter the 1960 award, especially because Nobel Prizes cannot be reassigned after the event. It can, however, produce a more accurate history of immunology. The purpose is not to diminish Burnet or Medawar, whose theoretical and experimental contributions were profound. It is to recognise that scientific breakthroughs often arise through partially independent and differently interpreted lines of work. Hašek's non-reward is therefore historically as instructive as Heyrovský's successful recognition.

Otto Wichterle represents another type of Nobel-level prestige because his most famous achievement belonged partly to a category the Nobel system does not recognise directly. The soft contact lens combined polymer chemistry, biomaterials, manufacturing technique, and medical application. Its global social effect was enormous, but there is no Nobel Prize for engineering design or invention as such. Wichterle could have been evaluated through Chemistry or Physiology or Medicine only if the committees had interpreted the underlying polymer research or biomedical consequence as fitting those disciplines. Whether he was formally nominated cannot be established for recent periods without observing the Nobel archive's fifty-year confidentiality rule (*Nobel Prize Outreach, n.d.*). Assertions that a person "should have won" must therefore remain historical judgements rather than claims about a known committee decision. Wichterle received other forms of international recognition, including posthumous induction into the United States National Inventors Hall of Fame in 2007. That honour specifically recognised the soft contact lens and its manufacturing process (*National Inventors Hall of Fame, n.d.*). His name also became attached to medals, lectures, educational programmes, and an Academy award for young researchers. These honours better matched the hybrid character of his contribution. They demonstrate that technological prestige possesses institutions and ceremonies distinct from those of Nobel science.

Antonín Holý's antiviral research generated an equally strong public argument about the relationship between medical impact and major prizes. His acyclic nucleoside phosphonates became the basis of medicines used against HIV, hepatitis B, and other viral diseases. The achievement united synthetic chemistry, virology, medicinal development, clinical trials, and international commercial partnership. Such distributed work creates difficulty for prizes

limited to a small number of recipients. Holý's chemical contribution was indispensable, but Erik De Clercq, John C. Martin, and large development teams also played central roles. The global use of tenofovir gave Holý a form of clinical prestige visible through the lives of millions of patients. He received numerous honours, honorary doctorates, the Czech Mind award, and international antiviral recognition. IOCB's institutional materials also record that he was nominated for the Nobel Prize, although the confidential nature of recent Nobel documentation prevents independent public reconstruction of the process (*IOCB Prague, n.d.*). His scientific standing therefore should not depend upon speculation about an unreceived award. It rests upon the originality of the molecular platform, the durability of the international collaboration, and the transformative therapeutic results. Holý's career demonstrates that socially consequential science can exceed the classificatory capacity of any single prize.

The institutional commemoration of Holý shows how prestige can be converted into a continuing international network. IOCB preserved his laboratory and office as sites of scientific memory. The institute established lectures bringing internationally distinguished researchers to Prague. The International Society for Antiviral Research created an Antonín Holý Memorial Award for major contributions to antiviral research and drug development. Such honours return his name to the specialist community rather than confining it to national remembrance. They also connect younger researchers with a model of long-term medicinal chemistry grounded in international partnership. This form of posthumous prestige differs from the Nobel system, which does not grant awards after death. It allows disciplinary communities to revise and renew their own historical canon. Memorial awards can nevertheless become ceremonial unless accompanied by active research and critical historical interpretation. IOCB's continuing nucleotide and antiviral programmes give the commemoration institutional substance. Holý's name signifies not only a completed achievement but a research direction still capable of development. The annual lecture series explicitly links his molecules with their continuing benefit to patients worldwide (*IOCB Prague, n.d.*). Prestige here functions as mentorship across generations, even when the original scientist is no longer present.

Alois Pískala reveals why the timing of awards may differ radically from the timing of discovery. His synthesis of azacitidine and decitabine occurred in the 1960s, but the compounds entered clinical markets approximately forty years later. By then, the original patents had expired and the international understanding of epigenetic regulation had changed profoundly. A prize committee considering immediate influence in the 1960s would have lacked evidence of their later therapeutic importance. A committee working after their medical adoption might have encountered difficulty identifying where credit should be placed among synthesis, mechanism, clinical development, and commercial revival. Pískala's case therefore demonstrates the inadequacy of award systems for discoveries with very long translational delays. The scientist may retire or die before the practical consequence becomes visible. The rule against posthumous Nobel awards makes such trajectories especially difficult to recognise. Institutional archives become crucial because they preserve priority when active reputational networks have weakened. IOCB's reconstruction of the compounds' history restores Pískala's role and distinguishes original synthesis from later development (*IOCB Prague, n.d.*). Such historical recognition does not possess the cultural force of a Nobel Prize. It nevertheless corrects the scientific record and shows why therapeutic success should be traced across its entire temporal chain.

Several of the Academy's most important disciplines have no realistic route to Nobel recognition. Eduard Čech's contributions to topology and differential geometry cannot be measured through a prize that excludes mathematics. Antonín Svoboda's fault-tolerant computing belonged to a field later associated with the Turing Award rather than a Nobel category. Armin Delong's electron microscopes combined physics and engineering but were principally achievements of scientific instrumentation. Luboš Perek's catalogues, astronomical leadership, and space diplomacy likewise crossed boundaries between research infrastructure and international organisation. In these cases, disciplinary adoption, eponymous concepts, citation, academy membership, leadership of international unions, and technological diffusion provide better indicators of prestige. The absence of a Nobel Prize does not place these achievements below work in chemistry or medicine. It reflects the historical architecture of Alfred Nobel's categories. The same problem affects contemporary fields such as climate science, systems biology, artificial intelligence, and materials engineering. Large interdisciplinary collaborations may produce transformations that cannot be attributed plausibly to three individuals. The Academy must therefore resist using Nobel compatibility as a universal hierarchy of disciplines. Scientific prestige should be plural enough to recognise proof, instrument, dataset, standard, infrastructure, and research school.

Election to an international academy constitutes one important alternative form of recognition. Such membership usually reflects sustained disciplinary esteem rather than one dramatic result. Rudolf Zahradník's standing in quantum chemistry was confirmed through participation in the International Academy of Quantum Molecular Science, Academia Europaea, and other scholarly bodies. Honorary doctorates and foreign medals further acknowledged his influence across institutional borders. These distinctions strengthened his authority when he led the post-1993 Czech Academy through difficult reforms. They demonstrated that he possessed a reputation independent of domestic office. His pupils and collaborators also carried the prestige of the Prague school of quantum chemistry into other countries and institutions. International membership offered access to conversations about disciplinary standards, appointments, conferences, and emerging research directions. Under state socialism, such recognition could provide limited protection against provincialisation, although political authorities still controlled travel and appointments. After 1989, it helped reconnect Czech science with organisations from which it had been partially separated. Zahradník's international reputation therefore became an institutional asset as well as a personal distinction. His obituary within the quantum-chemistry community explicitly identified him as a pioneer of the Prague school (*Schwarz & Friedrich, 2021*). This kind of peer recognition may be less visible to the public than a Nobel Prize, but it can be equally important within a discipline.

Awards conferred by the socialist state operated within a more ambiguous economy of prestige. State Prizes, orders, academy medals, titles, and ceremonial memberships could recognise genuine scientific achievement. Heyrovský's domestic honours before 1959 were not meaningless simply because they came from an authoritarian regime. Chemists, physicists, mathematicians, and engineers could receive awards for work that met real professional standards. Nevertheless, political loyalty, ideological compatibility, and institutional position also influenced access to honours. A prize could strengthen the authority of a scientist favoured by the party-state, while an equally accomplished researcher excluded during a purge could disappear from official commemoration. The regime used international achievements to legitimise itself and domestic awards to organise scientific hierarchy. This

dual system made it difficult to separate scholarly esteem from political approval. Some recipients accepted honours as recognition of their institutes and collaborators rather than as endorsement of the regime. Others used their standing to obtain resources or protect research communities. After 1989, blanket rejection of all socialist awards would have reproduced another form of political simplification. Each distinction must instead be evaluated in relation to the work recognised, the awarding institution, and the political circumstances of the recipient.

The democratic Academy developed its own honours to recognise scientific achievement while avoiding direct political control over disciplinary judgement. Its medals commemorate figures such as Purkyně, Heyrovský, and Wichterle and link contemporary research with historical traditions. The Academic Award, or *Praemium Academiae*, supplies substantial multi-year support to particularly distinguished researchers. The Otto Wichterle Award supports outstanding early-career scientists, while *Lumina quaeruntur* assists the formation of promising research groups. These programmes do more than decorate completed careers. They distribute resources that can make further ambitious work possible. In this sense, they are instruments of scientific policy as well as recognition. Their legitimacy depends upon transparent nomination, expert assessment, disciplinary fairness, and protection from personal patronage. Internal Academy honours cannot by themselves create international prestige. They can, however, give researchers the time, staff, and institutional confidence needed to obtain it. Recipients have included leading figures in mathematics, physics, chemistry, biology, medicine, and the humanities (*Czech Academy of Sciences, n.d.*). The most effective domestic award system therefore acts as a bridge between national responsibility and international competition.

European Research Council grants became one of the strongest contemporary markers of scientific prestige after the Czech Republic entered the European Research Area. An ERC grant is formally research funding rather than a lifetime prize. Nevertheless, its competitive selection, international peer review, researcher-centred design, and substantial resources give it strong symbolic value. Successful applicants are recognised as capable of defining an original and ambitious research programme. Their host institutions gain visibility and often use ERC success as evidence of international quality. Unlike the Nobel Prize, ERC schemes operate across a much broader range of disciplines and career stages. They can support work whose result is still uncertain rather than rewarding it decades later. This forward-looking character makes them especially important for institutional renewal. Yet ERC success also follows cumulative advantage because applicants need strong publication records, credible host environments, and time to prepare demanding proposals. Countries and institutes with weaker support structures may therefore underperform even when individual talent is present. The Academy has responded by developing mentoring, project-support, and incubator mechanisms. ERC prestige is consequently both individual and organisational. It measures not only the imagination of a principal investigator but also the institution’s capacity to make that imagination credible.

The Academy’s performance in the 2024 ERC Consolidator Grant competition demonstrated the growing effectiveness of this model. Four CAS researchers received awards: Karel Žídek from the Institute of Plasma Physics, Tomáš Pluskal from IOCB Prague, Elisabeth Hehenberger from the Biology Centre, and Martin Fotta from the Institute of Ethnology. Their projects represented plasma and materials research, chemical and biological analysis, evolutionary biology, and social-scientific inquiry. This disciplinary range was important because it showed

that international prestige was not confined to the Academy's historically celebrated chemical institutes. The result also placed the Academy conspicuously among leading European hosts in that particular competition. Such comparisons should not be turned into permanent rankings, since annual outcomes fluctuate and proposal numbers differ. Nevertheless, concentrated success signals that institutional conditions have improved. Each grant creates a team, trains younger researchers, attracts collaborators, and strengthens the host institute's international networks. The effects therefore extend beyond the named principal investigator. The Academy reported the four awards as one of its strongest recent international achievements (*Czech Academy of Sciences, 2024*). This form of prestige is less ceremonial than the Nobel Prize but more directly connected with the production of future science.

Tomáš Jungwirth's career illustrates how repeated European recognition can build a contemporary scientific reputation. His research in spintronics explored how electron spin and magnetic order could support new forms of information technology. Work on antiferromagnetic and later altermagnetic materials challenged the assumption that useful spintronic effects required conventional ferromagnetism. Jungwirth combined theoretical analysis, international collaboration, and experimental programmes at the Institute of Physics and abroad. He received an ERC Advanced Grant in 2011 and later became the first Czech-based scientist to secure a second grant in that category. Such repetition indicated not merely one successful proposal but sustained confidence in a developing research agenda (*Institute of Physics of the CAS, 2023*). The experimental confirmation of altermagnetism in 2024 further expanded the field's visibility. Recognition was necessarily shared across large international teams, including researchers such as Helena Reichlová and collaborating laboratories. Modern condensed-matter physics no longer fits comfortably within a solitary-hero narrative. Prestige accrues to the person who defines a programme, but also to the network capable of verifying its predictions. Jungwirth's trajectory shows how Czech Academy science can participate in setting an international agenda rather than merely joining one after its establishment.

Pavel Hobza represents a different contemporary prestige profile based upon disciplinary influence, citation, and specialised international honours. His theoretical and computational research transformed understanding of non-covalent interactions, including hydrogen bonding and dispersion forces. These interactions are central to molecular recognition, DNA structure, protein behaviour, materials, and drug design. Hobza's work became highly cited because it supplied concepts and computational approaches useful across several research communities. He received the Schrödinger Medal of the World Association of Theoretical and Computational Chemists in 2017 (*IOCB Prague, 2017*). Such a disciplinary award may possess limited public visibility while carrying considerable meaning among specialists. Citation indicators provide another form of recognition, but they require cautious interpretation. Highly cited work may be methodologically central, broadly applicable, or located in a rapidly expanding field. Citation counts also vary greatly between disciplines and can be amplified by collaboration size, database coverage, and pre-existing reputation. They should therefore support rather than replace expert judgement. Hobza's standing rests not on a numerical index alone but on the identifiable influence of his research questions and methods. His career demonstrates how a scientist may acquire global prestige without a single universally recognised prize.

Jiří Friml's international career illustrates the circulation of prestige between Czech scientific formation and foreign institutions. His research on the plant hormone auxin clarified how

molecular transport systems guide plant development and environmental response. He worked in several European research centres and received the EMBO Gold Medal in 2012. In 2024 the Austrian Science Fund awarded him the Wittgenstein Prize, Austria's most highly endowed research distinction, for pioneering plant-cell biology (*Austrian Science Fund, 2024*). Friml had by then been based at the Institute of Science and Technology Austria for more than a decade. His recognition therefore cannot be entered straightforwardly as an institutional achievement of AV ČR. It belongs to the broader history of Czech-trained and Czech-connected science operating within European mobility. His collaborations and intellectual links nevertheless affect the reputation of Czech plant biology. Such cases demonstrate why national scientific prestige increasingly circulates through networks rather than remaining confined within state borders. A researcher's success abroad may strengthen international awareness of the educational and disciplinary environment from which that researcher emerged. At the same time, it raises questions about whether domestic institutions provide sufficient conditions to attract or retain leading scientists. Prestige thus becomes part of the politics of mobility.

Gender remains a central issue in the allocation of scientific recognition. The exceptional status of Gerty Cori should not obscure the long under-representation of women among laureates, academy leaders, prize committees, and highly visible principal investigators. Historical barriers affected education, appointment, laboratory access, salary, career continuity, and the ability to accumulate independent credit. These disadvantages were reproduced in nomination networks because senior men were more likely to nominate colleagues already visible within male-dominated institutions. Czech science inherited many of the same structural patterns. Even in the modern Academy, women have remained under-represented in top institutional leadership despite stronger participation at earlier career levels (*Czech Academy of Sciences, 2021*). New forms of international support can help alter this reputational landscape. Helena Reichlová and Barbora Špačková established Dioscuri centres at the Institute of Physics in spin caloritronics and single-molecule optics. The programme combined international selection, substantial funding, and long-term institutional development. Their success signalled that scientific prestige could also be used to create leadership opportunities rather than merely reward already completed senior careers (*Max Planck Society, 2024*). Genuine equality, however, requires reform of everyday career structures as well as visible awards.

International prizes and grants also function as instruments of scientific diplomacy. A Nobel laureate, ERC grantee, foreign academy member, or major disciplinary prize-winner can represent the country in contexts where political influence is otherwise limited. Prestigious personalities attract visits, conferences, partnerships, and institutional agreements. During the Cold War, Heyrovský's standing helped demonstrate that Czechoslovak science remained connected to universal professional standards. After 1989, internationally recognised scientists such as Zahradník helped restore confidence in the reformed Academy. In the 21st century, ERC achievements, highly cited research, and participation in European scientific organisations signal that AV ČR is capable of hosting globally competitive work. Governments may use these successes to support national narratives of innovation and cultural maturity. The Academy must nevertheless prevent diplomatic display from replacing investment in ordinary research conditions. A handful of celebrated scientists cannot compensate for weak salaries, obsolete equipment, unstable careers, or insufficient institutional funding. Prestige is sustainable only when it rests upon a broad and renewable research base. Otherwise,

international honours become isolated peaks above an eroding landscape. Scientific diplomacy is most credible when exceptional personalities emerge from institutions that also protect the less visible labour of collective inquiry.

The Academy's public communication faces a related problem. Nobel stories are easily narrated because they provide a person, a date, a medal, and a discovery. Research schools, negative results, long datasets, technical infrastructures, and incremental improvements are harder to present dramatically. Public exhibitions and educational programmes devoted to Heyrovský have used the Nobel narrative effectively to explain polarography and the history of Czech chemistry. Similar commemoration of Wichterle and Holý connects science with recognisable benefits in vision and medicine. Such narratives can inspire students and strengthen public trust. Yet they must not imply that valuable science is valuable only when it culminates in a famous award. Most research necessary for national capacity will never receive spectacular recognition. Its importance may lie in monitoring, standardisation, data preservation, diagnostic reliability, or the training of specialists. The Academy's task is therefore to use prestige as an entrance into scientific understanding rather than as a substitute for it. A medal should lead the public towards the laboratory, institute, school, and historical conditions behind the achievement. When this occurs, personal distinction strengthens institutional literacy. When it does not, scientific history becomes a collection of exceptional names detached from the structures that produced them.

Thus, Nobel-level achievement and international scientific prestige within the Czech Academy tradition cannot be reduced to the number of prizes formally received. Heyrovský's 1959 Nobel Prize remains the clearest case in which an original Czech discovery, a durable research school, and international recognition converged within one scientific career. The Coris, Prelog, and Grünberg reveal different connections between the Czech lands and Nobel science through education, migration, multilingual institutions, and political displacement. Hašek demonstrates how experimental originality may fail to receive equivalent recognition when conceptual framing and international communication are weaker. Wichterle and Holý show that technological and medical transformation can exceed the boundaries of Nobel categories and rules. Pískala illustrates the problem of discoveries whose importance becomes visible only after the original inventor has left the active scientific community. Čech, Svoboda, Delong, Perek, Zahradník, Hobza, Jungwirth, Friml, and other figures confirm that disciplinary influence, international memberships, specialised awards, citations, grants, and school formation constitute alternative forms of global esteem. Post-1993 programmes such as *Praemium Academiae*, ERC grants, and Dioscuri centres have increasingly linked recognition with the resources needed for future research. These mechanisms remain vulnerable to cumulative advantage, disciplinary inequality, gender imbalance, and the symbolic concentration of credit. Scientific prestige is most valuable when it strengthens autonomous institutions rather than merely decorating already famous individuals. The Academy's historical achievement lies not simply in producing laureates, but in creating and preserving environments from which internationally consequential knowledge can repeatedly emerge.

Humanists, Social Scientists, and Guardians of Cultural Memory

1. Historians, Linguists, Philosophers, and Cultural Scholars

Historians, linguists, philosophers, literary theorists, art historians, Orientalists, and other cultural scholars occupy a distinctive place in the institutional history of Czech science. Their discoveries rarely take the form of a single experiment, patent, or measurable technological innovation. Yet their work has shaped the language through which Czech society understands its past, defines its political community, and enters into dialogue with other cultures. When assessing their significance, intellectual influence must therefore be considered together with institution-building, editorial labour, archival preservation, teaching, and public intervention. A critical edition may influence scholarship for generations without attracting public celebration. A grammar or dictionary may become so deeply embedded in everyday communication that its scholarly origins disappear from view. A philosophical concept may gain its widest influence only after the author has been silenced or has died. A research school can transform several disciplines even when it possesses no permanent building or official legal status. The relevant personalities should consequently be understood as creators of scholarly infrastructures as well as authors of individual works. Their careers reveal how knowledge was produced through academies, universities, museums, archives, journals, editorial offices, seminars, and informal intellectual circles. They also demonstrate that cultural authority could become a resource for national emancipation, state legitimacy, ideological control, or civic resistance. The humanistic gallery of the Czech Academy and its predecessors must therefore be read as a history of competing interpretations rather than as a ceremonial procession of unquestioned national authorities.

Scientific impact in the humanities is often cumulative, contested, and retrospective. Natural science usually rewards priority, whereas humanistic scholarship frequently acquires significance through reinterpretation, republication, translation, and institutional transmission. A historian may be remembered because later generations continue to argue with an interpretative model that they no longer accept. A linguist may influence society by establishing methods, terminology, archives, and editorial procedures that become collective property. A philosopher’s institutional significance may derive as much from maintaining an independent intellectual community as from publishing a canonical book. Cultural scholars also create classifications that determine what counts as literature, heritage, evidence, or national memory. Their choices influence library collections, museum exhibitions, school curricula, encyclopaedias, dictionaries, and public commemorations. This makes their authority socially powerful but also politically vulnerable. Governments have repeatedly sought to appropriate historians and philologists because these scholars work with the symbolic foundations of collective identity. At the same time, professional methods have enabled scholars to challenge patriotic legends, state-sponsored narratives, and inherited exclusions. The most significant personalities are consequently those who joined intellectual originality to the creation, defence, or renewal of durable scholarly practices. Such a criterion prevents the chapter from confusing public fame with lasting academic importance.

The earliest foundations of this tradition were laid within the Enlightenment culture of the late 18th century. Gelasius Dobner and Josef Dobrovský helped replace antiquarian reverence with

critical attention to sources, linguistic development, authorship, and chronology. Their scholarship did not reject attachment to the Czech lands, but it refused to treat inherited stories as self-authenticating truths. The Royal Bohemian Society of Sciences provided an institutional setting in which history, philology, and the study of regional culture could acquire scholarly legitimacy. It joined aristocratic patronage, clerical learning, university scholarship, and the expanding republic of European letters. This environment remained multilingual, and German and Latin were often more practical scholarly languages than Czech. The later national meaning assigned to its members should not obscure this cosmopolitan and dynastic context. Dobner's source criticism and Dobrovský's philology nevertheless created methods that could subsequently serve Czech cultural emancipation. They showed that a community's past had to be reconstructed from evidence rather than merely celebrated. They also established connections between Bohemian materials and collections located elsewhere in the Habsburg lands and Europe. The search for dispersed manuscripts already implied that national scholarship required international research mobility. Modern Czech historiography and philology thus emerged from a productive tension between local cultural commitment and transnational standards of evidence (*Czech Academy of Sciences, n.d.*; *Pánek, 2015*).

Josef Dobrovský became the most powerful personal embodiment of this critical beginning. He approached Czech and other Slavonic languages historically, comparatively, and grammatically rather than treating them as transparent expressions of an eternal national spirit. His scholarship helped establish Slavonic philology as a field with its own sources, methods, and European networks. Dobrovský's relationship to the Czech national revival was more complex than later patriotic commemoration sometimes suggested. He doubted whether Czech could easily regain every function demanded by romantic cultural activists, yet his research supplied many of the tools needed for that revival. This apparent paradox is central to his significance. Scholarly scepticism did not weaken Czech cultural development but gave it firmer intellectual foundations. Dobrovský also understood that the cultural history of the Bohemian lands could not be reconstructed from domestic collections alone. His journeys in search of manuscripts removed during the Thirty Years' War connected Czech research with libraries and archives in northern and eastern Europe. He thereby anticipated the later institutionalisation of foreign archival expeditions. His example joined precision in linguistic analysis with a broad conception of European intellectual geography. The modern Academy's commemoration of Dobrovský consequently honours not only a national philologist but an early advocate of evidence-based and internationally connected humanities (*Pánek, 2015*; *Sayer, 1998*).

Josef Jungmann represented a different but complementary phase of linguistic and cultural construction. Where Dobrovský had described and historicised the language, Jungmann worked more deliberately to enlarge its modern literary and intellectual capacities. His Czech–German dictionary was not simply a reference book but an intervention in the cultural future. It assembled vocabulary from historical sources, dialects, related Slavonic languages, translations, and contemporary literary experiments. This work offered writers, teachers, journalists, and scholars a greatly expanded linguistic repertoire. It also demonstrated that lexical codification could function as a collective cultural programme. Jungmann's achievement depended upon networks of contributors, readers, correspondents, publishers, and patriotic institutions rather than solitary inspiration. The resulting language was neither a recovered medieval essence nor an arbitrary invention. It was a modern construction rooted in historical evidence and shaped by the functional demands of a changing society. Later

academic lexicography would replace parts of Jungmann's method, but it inherited his understanding of the dictionary as a national intellectual infrastructure. His career therefore belongs to the prehistory of the Academy's Czech Language Institute as well as to the history of the National Revival. Jungmann illustrates how cultural scholarship can become institutionally significant long before it possesses a specialised research institute.

František Palacký carried critical historical scholarship into the centre of national public life. His ambition was to write a history of Bohemia that would withstand comparison with the strongest European historiography of his time. This required prolonged research in Czech, Austrian, German, Italian, and Vatican collections. His journey to Italy in 1837 continued Dobrovský's conviction that the sources of Bohemian history were dispersed across Europe. The resulting archival work helped establish a tradition that eventually produced the Czech Historical Expedition and the Czechoslovak and Czech historical institutes in Rome. Palacký was therefore both a historian and a precursor of international research infrastructure. His synthesis gave particular importance to the Hussite period and interpreted Czech history through conflicts involving religious, political, national, and civilisational principles. That interpretation influenced public consciousness far beyond the community of professional historians. It also became a subject of persistent criticism, revision, and political appropriation. Palacký's authority as the "father of the nation" can easily obscure the demanding archival labour on which his reputation rested. His significance lies precisely in the union of scholarly method, institutional organisation, national politics, and public narrative. Through him, Czech historiography became both a European scholarly enterprise and one of the principal languages of modern Czech political identity (*Pánek, 2015*; *Sayer, 1998*).

Pavel Josef Šafařík added a comparative Slavonic dimension to this emerging humanistic tradition. Born in the Slovak part of the Kingdom of Hungary and intellectually active within Czech cultural institutions, he resists retrospective confinement within a single national canon. His scholarship treated Slavonic languages, literatures, ethnography, and history as interconnected fields. This breadth reflected a period before modern disciplinary boundaries had become rigid. Šafařík's cooperation with Palacký also shows that 19th-century cultural scholarship was sustained by friendships and correspondence across the Habsburg lands. His work provided Czech intellectual life with a wider Slavonic horizon, but that horizon was neither politically innocent nor intellectually uniform. Comparative Slavonic studies could support cultural solidarity while also encouraging romantic generalisation and political expectations. Its strongest achievements came when comparison rested upon philological and historical evidence. Šafařík's presence in Prague helped make the city a meeting place for scholars concerned with different Slavonic languages and regions. That tradition later continued in the Slavonic Institute and in specialised Academy research. His biography is also a reminder that "Czech scholarship" was frequently produced by people whose origins, languages, and careers crossed later state borders. The Academy's humanistic inheritance is therefore better understood as a network of Central European interactions than as a closed ethnonational lineage.

The controversy over the allegedly medieval Dvůr Králové and Zelená Hora manuscripts became a decisive test of this critical tradition. The texts had acquired enormous symbolic value because they seemed to prove the antiquity, heroic character, and literary maturity of Czech culture. Doubting them therefore appeared to many patriots as an attack on the nation itself. Jan Gebauer's linguistic analysis, supported by Tomáš Garrigue Masaryk, Jaroslav Goll, and other scholars, demonstrated that professional criticism could conflict sharply with

popular cultural desire. The dispute concerned grammar, palaeography, literary history, chemistry, and historical probability, but its deepest issue was the moral authority of evidence. Gebauer endured hostility because he insisted that patriotism could not determine philological conclusions. Masaryk transformed this methodological principle into a wider ethical argument about national life. Goll's participation connected the controversy with the professionalisation of Czech historiography. Their opponents were not necessarily enemies of scholarship, for some possessed considerable learning and sincerely believed that criticism threatened a vulnerable culture. Nevertheless, the dispute established an enduring standard: national confidence had to survive the correction of national myth. It also demonstrated that cultural scholarship could become a form of public courage. The manuscripts remained culturally consequential even after their authenticity collapsed, confirming that scholarly exposure of a myth does not automatically erase its historical effects (*Cooper, 2023*; *Sayer, 1998*).

Jaroslav Goll gave Czech historiography a more durable professional and pedagogical structure. His historical seminar trained a generation of scholars to work critically with sources, historiography, foreign languages, and specialised research questions. The so-called Goll school was not an intellectually homogeneous organisation, but it created a recognisable professional culture. Its members included historians who later differed sharply in politics, interpretation, and institutional allegiance. Goll's own European experience encouraged him to place Czech history within wider diplomatic, religious, and cultural processes. He was also an organiser of scholarly communication. In 1895 he and Antonín Rezek established the *Český časopis historický*, which became the central professional journal of Czech historiography. The journal offered young historians a publication venue and connected domestic scholarship with international literature. Its review sections, bibliographical work, and editorial standards were as important as its major interpretative articles. Goll therefore exercised influence through students and institutions more than through a single national synthesis comparable to Palacký's. This form of authority resembles the later Academy model, in which research schools are reproduced through seminars, journals, projects, and editorial routines. His career demonstrates that institution-building can itself be a major humanistic achievement (*Pánek, 2021*).

Josef Pekař emerged from this environment but developed an authority distinctly his own. He combined exacting source scholarship with a strong interest in the social, religious, economic, and political forces shaping Czech history. His editorship of the *Czech Historical Review* strengthened its position as a coordinating institution for the discipline. Pekař also helped establish the systematic bibliography of Czech history, thereby turning the monitoring of scholarship into a permanent collective service. His disagreements with Masaryk over the meaning of Czech history revealed the limits of any simple separation between empirical research and philosophical interpretation. Pekař rejected the idea that Czech history followed a predetermined moral programme culminating in modern democracy. He emphasised historical particularity, discontinuity, Catholic traditions, aristocratic experience, and the changing interests of political communities. This made him a critic of teleological national narratives, although his own language of nation and historical continuity also reflected its time. Later political camps selectively appropriated different aspects of his work. His value lies less in providing a final answer to the "Czech question" than in demonstrating why historical meaning must remain open to argument. The debate between Palacký, Masaryk, Goll, and Pekař became a long-lived framework through which Czech intellectuals considered the relationship between evidence, morality, nation, and state. Pekař's institutional legacy

consequently includes both a scholarly journal and a culture of disciplined disagreement (*Pánek, 2021*; *Sayer, 1998*).

The Czech Academy of Sciences and Arts transformed philological ambition into organised, long-term research. Josef Zubatý illustrates how individual linguistic authority could be converted into collective academic infrastructure. His expertise extended from Indo-European and Old Indian studies to Slavonic philology, etymology, and Czech language culture. This range prevented Czech linguistics from becoming intellectually isolated within Bohemistics alone. Zubatý also participated in the early planning of a comprehensive monolingual Czech dictionary. He studied foreign lexicographical projects and assessed which organisational methods could be adapted to Czech conditions. The Academy's Office for the Dictionary of the Czech Language, established in 1911, turned such comparative investigation into a permanent workplace. Its card collections, editorial rules, specialised library, and network of excerptors made language research a large collaborative enterprise. The project required decades of labour whose contributors were far less visible than the leading academicians. It also consumed a substantial share of the Academy's resources because the dictionary was regarded as culturally and politically foundational. Zubatý's importance therefore lies in connecting comparative philology, academic leadership, and the practical design of collective research. The later Czech Language Institute inherited this union of scholarly method and national linguistic responsibility (*Dvořáčková, 2024*; *Czech Language Institute, n.d.*).

Art history created another bridge between cultural memory, European method, and institutional science. Max Dvořák, born in Bohemia and professionally established in Vienna, became one of the leading representatives of the Vienna School of Art History. His career resists retrospective ownership by a single national tradition. Dvořák joined close historical and philological research with an interpretation of art as an expression of changing spiritual and intellectual worlds. His work on monument conservation also treated cultural heritage as a public responsibility rather than an antiquarian luxury. Vojtěch Birnbaum later transferred important elements of the Vienna School into Czech university and scholarly life. His teaching contributed to the methodical professionalisation of Czech art history after 1918. Birnbaum's work on medieval architecture and the Baroque sought to place monuments in the Czech lands within broader European formal developments. Subsequent research has also shown that some claims once celebrated as uniquely original depended heavily upon international intellectual borrowings. This reassessment does not diminish his role but clarifies how national research schools are formed through selective transfer and adaptation. Dvořák and Birnbaum demonstrate that the scientific study of art emerged from movement between Prague, Vienna, Italy, and other European centres. Their legacy prepared the methodological and archival environment from which the Academy's Institute of Art History would later develop (*University of Vienna, 2025*; *Vybíral, 2015*).

Oriental studies further enlarged the cultural geography of Czech scholarship. Bedřich Hrozný achieved international renown by demonstrating the Indo-European character of the Hittite language and opening a major body of ancient Near Eastern material to historical interpretation. His achievement belonged to philology, archaeology, and ancient history rather than to natural science, although its public reception sometimes resembled the celebration of a spectacular discovery. Jan Rypka established an equally important reputation in Turkish and Iranian studies. Alois Musil, Vincenc Lesný, František Lexa, Moriz Winternitz, and other scholars connected textual study with travel, field research, religious studies, and cultural translation. Many of them had been trained or professionally established in Vienna before

returning to independent Czechoslovakia. The Oriental Institute, formally created in 1922, gave these fields an institutional base combining research, publication, language teaching, library development, and public expertise. Its early programme also reflected Czechoslovak diplomatic and economic interests in Asia and the Middle East. This mixture of scholarly curiosity and state interest requires critical interpretation, especially in light of wider European Orientalist traditions. Yet Czech Oriental studies did not arise from a major colonial empire and consequently developed through a distinctive combination of peripheral experience, cultural admiration, and national representation. The institute's international journals and specialised collections made Prague a significant centre for research on Asian and African societies. Hrozný and Rypka therefore represent a humanistic tradition whose national importance was achieved precisely through sustained engagement with cultures far beyond Europe (*Beránek, 2014*).

The Prague Linguistic Circle became the most internationally influential Czech-based research school in the humanities. Founded in 1926 around Vilém Mathesius and colleagues from several linguistic and cultural backgrounds, it joined Czech scholarship with Russian, Ukrainian, German, and wider European intellectual currents. Roman Jakobson and Nikolai Trubetzkoy brought experience from Russian linguistic debates and émigré networks. Mathesius contributed an organisational centre and a strong interest in functional analysis. Bohuslav Havránek, Bohumil Trnka, Jan Mukařovský, and other participants extended the programme into Slavonic studies, stylistics, literary theory, aesthetics, and the study of standard language. The Circle's strength came from sustained collective discussion rather than agreement on every theoretical question. Its members treated language as a structured system whose elements acquired meaning through relations and functions. They also rejected a rigid division between synchronic structure and historical development. The Circle published collectively, intervened in international congresses, and formulated propositions intended to define a common research programme. Prague consequently became a place where local linguistic questions generated concepts of global significance. The Circle's history confirms that a research school can create enduring institutional authority without being a state academy or conventional department. Its influence later entered Academy institutes, foreign universities, structuralist theory, semiotics, and the international vocabulary of linguistics (*Toman, 1995*).

Bohuslav Havránek was crucial in transferring the intellectual energy of the Prague Circle into permanent academic structures. His theory of the functional differentiation of the standard language rejected the idea that linguistic culture could be reduced to mechanical purism. Different communicative domains, including scholarship, administration, journalism, technology, and literature, required different forms of precision and expression. A living standard language therefore had to be analysed through its uses rather than measured against an imagined state of perfect purity. This approach was especially important in a society where language had long carried intense national symbolism. Havránek combined theoretical linguistics with dialectology, lexicography, Slavonic studies, editorial work, and institutional leadership. He participated in the preparation of the great Czech dictionary and later directed the Czech Language Institute. When the institute entered ČSAV in 1952, it became one of the new Academy's anchor institutions. Havránek's authority helped preserve professional continuity across the transition from the interwar scholarly world to the socialist Academy. That continuity was not politically neutral, but neither was it merely an effect of ideological conformity. The institute maintained collective projects whose value depended upon

accumulated archives, expert skills, and intergenerational cooperation. Havránek thus exemplifies how a research-school leader can protect methodological resources while adapting to a radically altered institutional regime (*Havránek, 1964*; *Czech Language Institute, n.d.*).

Jan Mukařovský extended Prague structuralism from language into aesthetics, poetics, theatre, visual culture, and the general theory of signs. He treated the artwork not as an isolated object containing an immutable beauty but as a sign whose functions and values changed within social relations. His distinction between aesthetic function, norm, and value made reception and historical variability central to cultural analysis. This approach allowed scholars to investigate both artistic structure and the institutions that defined something as art. Mukařovský's work therefore anticipated later semiotics, reception theory, and cultural sociology. His career also reveals the moral and institutional ambiguities of scholarship under dictatorship. After 1948 he acquired significant university and Academy authority while publicly accommodating the new ideological environment. Structuralism itself came under political attack, and its vocabulary was temporarily displaced by officially sanctioned Marxist categories. Mukařovský directed the developing Institute of Czech Literature, where institutional consolidation coexisted with ideological pressure. It would be misleading either to erase his theoretical originality because of this accommodation or to separate his scholarship completely from his exercise of authority. His biography demonstrates how a major intellectual can simultaneously preserve a research tradition, reshape an institution, and participate in a restrictive political order. The case therefore requires critical commemoration rather than either denunciation or hagiography (*Mukařovský, 1970*; *Institute of Czech Literature, n.d.*).

Felix Vodička represented both continuity and renewal within Czech literary structuralism. As Mukařovský's colleague and deputy, he helped develop a historical poetics attentive to the changing reception and concretisation of literary works. His scholarship demonstrated that literary history could not be reduced to biographies of writers or a succession of political periods. It had to examine genres, structures, norms, reading communities, and the transformations of aesthetic value. This made the study of literature compatible with broader questions about cultural institutions and historical communication. The Institute of Czech Literature offered a base for such collective work through archives, bibliographies, critical editions, dictionaries, and synthetic histories. These tasks could appear less theoretically dramatic than structuralist manifestos, but they ensured the discipline's continuity. During the liberalisation of the 1960s, Vodička became an important representative of renewed methodological openness. His removal from leadership after 1968 showed that control of literary history mattered to the normalisation regime. The state understood that the interpretation of literature affected the boundaries of legitimate cultural memory. The subsequent narrowing of research agendas did not completely erase earlier methods, because they survived in publications, personal networks, and partially protected specialist work. Vodička's career thus connects a celebrated theoretical school with the less visible institutional struggle to preserve scholarly standards.

Václav Černý embodied another form of humanistic authority, grounded in comparative literature, criticism, moral judgement, and resistance to intellectual regimentation. His interests crossed Czech, French, Spanish, and broader European literary traditions. He treated literature as an encounter between individual freedom, historical responsibility, and cultural form. Černý's public criticism made him influential beyond the university, but it also repeatedly

exposed him to political hostility. After communist intervention removed him from normal university life, the Academy offered a limited form of professional refuge. This shelter should not be romanticised, because it remained conditional and could be withdrawn. Nevertheless, the possibility of working within an Academy environment preserved research capacities that the university system had rejected. Černý's scholarship on medieval and modern literature also challenged simplistic divisions between national culture and European influence. His criticism defended the right to make evaluative distinctions at a time when ideological authorities demanded prescribed conclusions. He consequently represented a model of the humanist as both specialised scholar and public conscience. The tension between those roles was never fully resolved, for moral criticism could itself become polemical and exclusionary. His career nevertheless shows why institutional autonomy matters most clearly when it protects a scholar whose judgement is inconvenient to power (*Czech Academy of Sciences, n.d.*).

Zdeněk Nejedlý demonstrates the opposite danger: humanistic prestige can be converted into extensive political power. As discussed in "Leaders of ČSAV and the Politics of Academic Authority", his scholarship in musicology and history gave him cultural credentials that a conventional party administrator would have lacked. He interpreted Czech history as a struggle between progressive and reactionary traditions. Hussitism, the National Revival, Bedřich Smetana, popular culture, and communism could consequently be placed within a single legitimising narrative. This synthesis was rhetorically powerful because it presented socialism as the culmination of national history rather than a foreign political imposition. Nejedlý's presidency of both the late Czech Academy of Sciences and Arts and the new ČSAV personified the transfer of cultural authority into state-directed science. His case reveals why the intellectual quality of some earlier scholarship cannot be evaluated separately from later institutional conduct. He did not merely write interpretations but helped determine which interpretations received positions, publications, resources, and official recognition. Humanistic scholarship thereby became an instrument for classifying personalities and traditions as progressive or hostile. Yet his authority also depended on genuine cultural knowledge and on themes deeply rooted in Czech public life. This complexity made his influence more durable than crude political propaganda alone would have been. Nejedlý must therefore be included not as a representative humanist to celebrate but as a warning about the political convertibility of scholarly prestige.

The incorporation of humanistic institutes into ČSAV in 1952 created unprecedented research capacity while subjecting it to centralised ideological control. History, philosophy, linguistics, literary studies, archaeology, Oriental studies, and art history acquired permanent staffs and long-term institutional programmes. Large dictionaries, source editions, bibliographies, archaeological surveys, and national syntheses could now be organised on a scale that older learned societies had rarely sustained. This was a genuine expansion of professional research. At the same time, staffing decisions, publication plans, foreign contacts, and interpretative frameworks were exposed to party supervision. The humanities were particularly vulnerable because their subjects touched national identity, religion, class conflict, state legitimacy, and contemporary political memory. Some institutes protected demanding specialist work beneath obligatory ideological language. Others actively participated in the production of dogmatic interpretations. The distinction between scholarship and propaganda therefore ran through institutions and sometimes through the work of the same person. Collective projects could produce lasting reference works even when their introductions repeated politically

prescribed formulas. Conversely, apparently abstract theoretical debates could carry significant implications for intellectual freedom. ČSAV's humanistic history must consequently be judged through this unstable coexistence of enlarged capacity, partial shelter, professional compromise, and political coercion (*Czech Academy of Sciences, n.d.*; *Institute of History of the CAS, n.d.*).

Josef Macek and František Graus illustrate the movement of socialist historiography from Stalinist certainty towards more complex social history. Both initially worked within Marxist frameworks that emphasised class conflict, feudal relations, popular movements, and the revolutionary dimensions of Hussitism. Their early positions cannot be separated from the political reconstruction of historiography after 1948. Macek, as director of the Institute of History, possessed considerable institutional authority. Graus shaped the *Czechoslovak Historical Review* and became an important mediator between domestic and foreign historiography. Over time, both engaged increasingly with French, British, German, and other international scholarship. Social and economic history, comparative analysis, collective mentalities, and the experience of subordinate groups provided ways to move beyond rigid political formulas. This development did not constitute a simple conversion from false ideology to neutral scholarship. Marxist questions about labour, social structure, and popular agency could generate important research when detached from predetermined conclusions. The liberalisation of the 1960s allowed these historians and their younger colleagues to reconsider national myths and the meaning of historical progress. Graus's departure after the invasion transferred part of this Czech scholarly development into Western European historiography. Macek's later exclusion demonstrated that reformist academic authority offered no reliable protection after political reversal. Their careers show how an ideologically founded research school could produce methods that eventually exceeded the regime's desired limits (*Kučera, 2016*; *Pánek, 2021*).

František Šmahel, Jaroslav Mezník, and Dušan Třeštík belonged to a younger generation that transformed Czech medieval studies while experiencing the consequences of normalisation. Šmahel combined the study of Hussitism with research on universities, political thought, humanism, rituals, and social structures. His work treated the Hussite Revolution as a European historical phenomenon rather than merely a national emblem. Mezník brought exacting source criticism to the study of medieval towns, Moravia, and political institutions. Třeštík reinterpreted the early Přemyslid state, Great Moravia, chronicles, legends, and the formation of Czech historical identity. These scholars had learned from Graus, Macek, and the reform atmosphere of the 1960s, but they did not reproduce a single school doctrine. After 1968, political dismissals and imprisonment seriously damaged the Institute of History. Šmahel was forced from normal academic employment and for a period worked as a tram driver before finding a position in a regional museum. The survival of his research demonstrates how scholarship can continue outside the institutions designed to support it. After 1989 he returned as director of the restored Institute of History and helped rebuild its international authority. Třeštík later joined rigorous medieval research with provocative public reflection on nation, statehood, and historical myth. Their collective significance lies in transforming repression into a post-1989 programme of institutional renewal rather than allowing restored memory to become mere commemoration (*British Academy, n.d.*; *Institute of History of the CAS, n.d.*; *Pánek, 2021*).

Karel Kosík gave Czechoslovak reform Marxism one of its most internationally resonant philosophical works. His *Dialectics of the Concrete* sought to recover human praxis, historical

agency, and critical reason from the formulas of official dialectical materialism. The concept of the "pseudoconcrete" described a world in which socially produced relations appear as natural and self-evident facts. This argument enabled criticism of both positivist reduction and bureaucratic ideology. Kosík's philosophical language remained Marxist, but it reopened Marxism to phenomenology, existential questions, and the problem of everyday life. The work circulated widely abroad and attracted readers across political and philosophical boundaries. Its international success demonstrated that intellectual originality could emerge within, yet against, the conceptual world of state socialism. Kosík's position in the Academy's Institute of Philosophy gave him access to a professional research environment during the reform period. After 1968 he was expelled from institutional life, his publications were restricted, and his library was subjected to police intervention. The regime thereby acknowledged that abstract philosophical categories could possess political force. After 1989 Kosík returned to public debate, although he remained critical of both the former socialist order and the new capitalist transformation. His career makes him important not as an uncomplicated dissident hero but as a thinker whose critique repeatedly exceeded the institutions and ideologies that sought to contain it (*Kosík, 1976*; *Feinberg et al., 2022*).

Jan Patočka represents the most powerful Czech example of philosophical authority becoming civic responsibility. Trained in the phenomenological traditions of Edmund Husserl and Martin Heidegger, he developed an original philosophy of the natural world, existence, history, and Europe. His concept of the "care of the soul" joined classical philosophy with the demand that human beings examine the conditions of truthful life. Patočka's academic career was repeatedly interrupted by occupation, communist exclusion, and restrictions on university teaching. The Academy provided periods of limited professional shelter, including editorial and research work connected with the Institute of Philosophy. Such employment preserved his participation in scholarly life without granting full intellectual freedom. During the Prague Spring he briefly returned to university teaching, only to be marginalised again under normalisation. His private seminars then created an informal institution in which philosophy survived through personal transmission. The *Heretical Essays in the Philosophy of History* connected reflection on Europe, war, sacrifice, technology, and responsibility. Patočka's role as a spokesperson for Charter 77 transformed accumulated philosophical authority into public moral action. His death after intensive police interrogation made him a central figure in the memory of Czech dissent. The preservation, editing, translation, and study of his writings by the Jan Patočka Archive later returned this suppressed legacy to institutional scholarship, showing how an Academy can become the guardian of a thinker whom the state once sought to silence (*Kohák, 1989*; *Tucker, 2000*; *Institute of Philosophy of the CAS, n.d.*).

Miroslav Hroch demonstrates that a personality may be central to Czech scholarly history without being defined primarily by an Academy office. Working principally in the university environment, he developed a comparative model of national movements among Europe's smaller nations. His distinction between phases of scholarly interest, patriotic agitation, and mass national mobilisation redirected attention from timeless national spirit towards social communication and political organisation. The model emerged from the specific experience of Czech historical scholarship but was never limited to the Czech case. It enabled systematic comparison involving Scandinavia, the Baltic region, Central Europe, and other societies. Hroch's international reception became particularly strong after translations made his work accessible to a wider audience. His example is important for the Academy because institutional history cannot be written as though non-university research existed in isolation.

Academy historians, sociologists, and political scholars debated and applied similar questions about national mobilisation, identity, class, and modernisation. Hroch also demonstrated that comparative method could detach the study of the National Revival from celebratory national biography. The patriot became a social actor operating within networks rather than the incarnation of an awakening collective essence. This approach did not abolish culture but investigated how language, memory, and political demand became socially effective. Hroch's reputation therefore represents the internationalisation of a Czech humanistic problem through comparative historical social science (*Hroch, 2000*).

Vladimír Macura brought semiotics, literary history, cultural anthropology, and essayistic imagination together in a distinctive postwar and post-1989 form of cultural scholarship. He investigated the National Revival not as a transparent return of suppressed identity but as an energetic production of signs, rituals, metaphors, translations, and symbolic landscapes. Czech culture appeared in his work as something constructed through repeated acts of naming and representation. He also analysed the symbolic vocabulary of Stalinism, showing how political power generated its own festivals, heroes, images, and temporal expectations. This continuity of method across nationalist and socialist subjects prevented cultural criticism from becoming a simple denunciation of one historical regime. Macura's scholarship drew upon Prague structuralism and the Tartu–Moscow school of cultural semiotics. At the Institute of Czech Literature, he helped reconnect research with international theory and with approaches marginalised during normalisation. His work also crossed the boundary between scholarship and literature, for he wrote fiction and cultivated an essayistic style capable of reaching readers beyond specialist circles. That breadth reflected an understanding of cultural memory as lived experience rather than merely archival content. Macura's analyses remain influential because they reveal how even ironic, invented, or politically compromised symbols can become socially real. He therefore represents a post-1989 humanist who renewed an institution by reinterpreting rather than simply restoring national tradition. His career shows that critical cultural memory depends upon the ability to examine the mechanisms through which communities imagine themselves (*Macura, 2010*; *Winner, 2000*; *Institute of Czech Literature, n.d.*).

The canon of Czech humanistic scholarship has long been disproportionately male, and this imbalance must itself become an object of institutional history. Milada Paulová offers a particularly important corrective. A historian of the Byzantine Empire, south-eastern Europe, and Czech–Yugoslav relations, she combined archival research with extensive international scholarly contacts. She was the first woman in Czechoslovakia to obtain the right to lecture at a university and later became the first female professor at Charles University. Her position was achieved within institutions whose formal rules and informal cultures had been designed largely by men. Paulová also worked through non-university scholarly bodies, including the Royal Bohemian Society of Sciences, the Czech Academy of Sciences and Arts, the Czechoslovak National Research Council, and the Slavonic Institute. Her biography therefore intersects directly with the institutional genealogy of the modern Academy. The obstacles she faced were not merely personal prejudices but structural restrictions on appointments, recognition, travel, and scholarly authority. Women also contributed extensively as archivists, editors, librarians, translators, excerptors, and research assistants without receiving visibility comparable to leading male academicians. Recovering this labour changes the meaning of institutional continuity because it reveals whose work sustained projects and whose names entered ceremonial memory. The modern Milada Paulová Award acknowledges this historical

problem, but commemoration cannot substitute for continued analysis of unequal scholarly careers. Paulová's inclusion therefore broadens both the gender composition of the chapter and its definition of institutionally significant achievement (*Brádlerová, 2020*; *Gender & Science, n.d.*).

Thus, the leading historians, linguists, philosophers, and cultural scholars associated with Czech learned institutions cannot be reduced to a collection of canonical authors. Their importance arose from the interaction of texts, methods, research schools, archives, journals, dictionaries, seminars, and public controversies. Dobrovský, Jungmann, Palacký, and Šafařík converted philology and history into foundations of modern cultural life. Gebauer, Masaryk, Goll, and Pekař demonstrated that national scholarship gained authority when it allowed evidence to challenge patriotic certainty. Zubatý, Havránek, and the academic lexicographers transformed the study of language into a permanent collective infrastructure. Dvořák, Birnbaum, Hrozný, Rypka, and the Prague Linguistic Circle showed that internationally recognised Czech scholarship was created through mobility, translation, and transnational research communities. Mukařovský, Vodička, Černý, Nejedlý, Macek, and Graus revealed the morally ambiguous relationship between intellectual authority and political institutions. Šmahel, Mezník, Třeštík, Kosík, and Patočka demonstrated how scholarly continuity could survive dismissal, censorship, internal exile, and coercion. Hroch and Macura carried Czech historical and cultural questions into comparative social science and international semiotics. Paulová's career exposes the gendered exclusions hidden beneath conventional accounts of academic greatness. Taken together, these personalities show that the humanities protected national memory most effectively when they subjected it to criticism rather than ritual repetition. Their collective legacy is therefore not a single interpretation of Czech culture but an institutional capacity to preserve evidence, sustain argument, revise inherited narratives, and reconnect intellectual freedom with public responsibility.

2. Social Scientists and the Interpretation of Czech Transformation

In the Czech social-scientific tradition, transformation has rarely meant only the replacement of the communist regime after November 1989. It has also denoted the longer passage from agrarian society to industrial modernity, from empire to nation-state, from parliamentary democracy to dictatorship, and from state socialism to a market-based European order. The word therefore encompasses several temporalities that overlap without becoming identical. Economic reform could proceed rapidly while legal habits, administrative routines, family strategies, regional disparities, and cultural expectations changed much more slowly. Social scientists made these uneven rhythms visible by examining what triumphalist political narratives tended to compress into a single moment of liberation. Their research demonstrated that institutional redesign never began on an empty field. Every reform encountered inherited organisations, professional networks, memories of earlier experiments, accumulated mistrust, and informal methods of adaptation. The Academy and its predecessor institutions provided one of the principal sites in which these processes could be conceptualised, measured, compared, and publicly discussed. Yet Academy researchers never monopolised the interpretation of Czech transformation, because decisive contributions also emerged from universities, exile institutions, independent research centres, and civic initiatives. The most productive interpretations frequently arose at the boundaries between these environments. Personal trajectories consequently reveal not only individual achievement but also changing

relations among research, expertise, public authority, and political responsibility. This wider understanding accords with the historical development of Czech sociology as a discipline repeatedly shaped by national crises and institutional ruptures (*Nešpor, 2014*).

Selecting personalities for this account consequently requires more than identifying the most visible commentators on post-1989 politics. Scientific significance must be judged through the concepts, empirical resources, institutions, and research communities that scholars created. Some figures formulated comprehensive theories of social change, whereas others developed surveys capable of revealing transformations that broad theory overlooked. Several crossed the boundary between scholarship and government because the new state urgently needed legal, economic, and administrative expertise. Others preserved analytical distance and questioned the assumptions guiding reform. A scientist's institutional importance may therefore lie in founding a department, rebuilding an institute, constructing a data archive, or opening Czech research to international comparison. Public influence is relevant, but it cannot substitute for methodological rigour or cumulative scholarly contribution. Nor should proximity to the Academy be treated as an absolute criterion, because Czechoslovak social science developed through movement between Academy institutes, universities, ministries, enterprises, dissident networks, and exile. The resulting field was intellectually plural but institutionally fragile. Personalities become especially revealing when their careers passed through more than one political order. Their biographies show how knowledge survived political dismissal, ideological reclassification, organisational dissolution, and the sudden revaluation of disciplines after 1989. They also reveal the danger of identifying scientific authority too closely with any single programme of transformation.

The deeper genealogy of this interpretive culture preceded both the ČSAV and the communist period. Tomáš Garrigue Masaryk had already joined empirical diagnosis, moral philosophy, and political engagement in his study of suicide and his writings on the Czech social question. His approach established a durable expectation that social science should investigate the moral condition of modern society rather than merely classify its institutions. Interwar sociologists such as Emanuel Chalupný, Josef Král, Inocenc Arnošt Bláha, and Otakar Machotka subsequently created competing Prague and Brno traditions. Their research addressed urbanisation, family life, education, social pathology, public opinion, and the relationship between individual agency and collective order. These schools were located primarily in universities and learned associations, yet they formed part of the intellectual inheritance later absorbed, transformed, or rejected by Academy institutions. Their diversity also matters because there was never one uncontested Czech theory of modernisation. Positivist measurement coexisted with philosophical sociology, social reformism, structural functionalism, and historically oriented cultural interpretation. The First Republic consequently offered later researchers both an institutional precedent and an unfinished scholarly archive. After 1948, much of this pluralism was condemned as bourgeois and removed from legitimate academic circulation. The loss concerned not only individual careers but also research methods, journals, teaching lineages, and links with international sociology. Post-1989 reconstruction therefore involved recovering interrupted national traditions as well as adopting contemporary Western theories (*Nešpor, 2014*).

The communist seizure of power in 1948 fundamentally altered the institutional conditions under which society could be studied. Sociology was marginalised or abolished because an independent empirical discipline threatened the Party's claim to possess scientifically guaranteed knowledge of historical development. Social contradictions were expected to

disappear within the official model of antagonistic classes inherited from Marxism-Leninism. Research that discovered persistent inequality, conflicting interests, bureaucratic privilege, or popular dissatisfaction could consequently be interpreted as politically subversive. The creation of the Czechoslovak Academy of Sciences in 1952 nevertheless assembled economists, lawyers, philosophers, demographers, psychologists, and statisticians whose work sometimes approached recognisably sociological questions. The Academy thus became both an instrument of ideological centralisation and a potential shelter for specialised expertise. Its hierarchical structure brought resources and professional employment, but it also placed research agendas close to state planning and Party supervision. Scholars learned to formulate socially relevant problems in languages that could pass institutional scrutiny. Quantitative methods, planning studies, demography, urban research, and organisational analysis occasionally provided limited spaces for empirical observation. These spaces were never fully autonomous, and their boundaries shifted with political conditions. Yet they enabled intellectual skills and informal networks to survive the most restrictive phase of Stalinism. The later revival of sociology would draw heavily upon these dispersed competencies. Institutional continuity therefore existed beneath the apparent disciplinary discontinuity.

The revival of Czechoslovak sociology during the 1960s transformed the Academy into a laboratory of reform-oriented social diagnosis. The Sociological Institute of the ČSAV, established in the middle of the decade, provided an organisational centre for empirical research, theoretical discussion, and international contact. Researchers no longer accepted official class categories as sufficient descriptions of socialist society. They investigated occupational differentiation, education, income, prestige, power, consumption, mobility, and living standards. Their questions were scientific, but their implications were inevitably political. If socialist society remained internally stratified, then political declarations of achieved equality required empirical reconsideration. Teams associated with Pavel Machonin, Radovan Richta, Ota Šik, and Zdeněk Mlynář approached this problem from different disciplinary directions. Sociology examined social structure, economics studied the failures of directive planning, political science analysed participation and institutional pluralisation, and interdisciplinary research considered the social implications of scientific and technological change. These programmes converged around the belief that complex modern societies could not be governed by administrative commands alone. Expertise therefore became part of the intellectual infrastructure of the Prague Spring. The same convergence also made social scientists particularly vulnerable when political liberalisation was reversed (*Machonin, 1969*; *Nešpor, 2014*).

Pavel Machonin became the central personality in the empirical reinterpretation of socialist social structure. The representative survey conducted by his team in 1967 produced an unprecedented body of data on stratification and mobility in Czechoslovakia. Instead of reducing social position to formal ownership of the means of production, the researchers employed multiple dimensions. These included education, income, occupational complexity, lifestyle, participation in power, and social prestige. The resulting picture contradicted the official image of an essentially homogeneous society composed of workers, cooperative farmers, and a service intelligentsia. It revealed status inconsistencies, unequal access to decision-making, and disadvantages affecting women, pensioners, and highly qualified employees. The analysis also suggested that political egalitarianism could coexist with bureaucratic hierarchy and dysfunctional allocation of rewards. Machonin's achievement was

therefore methodological and institutional as well as interpretive. He helped establish standards of representative survey research while building a team capable of joining international stratification debates. The collective volume *Československá společnost* appeared in 1969, immediately before censorship and organisational repression curtailed further discussion. Its history demonstrated how empirical evidence could become politically dangerous without containing an explicitly oppositional programme. The survey remained a benchmark because later researchers could compare post-socialist restructuring with a rare empirical portrait of pre-invasion Czechoslovakia (*Machonin, 1969*).

Machonin's return to sociology after 1989 connected the reform debates of the 1960s with the analysis of post-communist change. He participated in new surveys of social structure conducted during the 1990s and examined the formation of economic, political, and professional elites. His interpretation differed from accounts that treated liberalisation, privatisation, and electoral competition as sufficient indicators of successful transformation. For Machonin, systemic change had to be evaluated as a process of modernisation affecting institutions, social cohesion, human capacities, and quality of life. He criticised the rapid growth of inequality when it was not accompanied by transparent rules or productive institutional differentiation. He was similarly sceptical of spontaneous marketisation conducted before reliable regulatory and legal frameworks had been created. This position did not amount to nostalgia for state socialism. It reflected his long-standing concern with the relationship between social differentiation, functional performance, and political legitimacy. Machonin also stressed the importance of elite consensus while recognising that elite reproduction could preserve interests inherited from the former order. His work therefore placed continuity and rupture within the same analytical framework. The transition was real, but its direction and social results could not be deduced from the formal abolition of communist institutions. His collaborative volume on Czech society in transformation offered one of the most systematic domestic attempts to connect structural data with a theory of modernisation (*Machonin & Tuček, 1996*).

Radovan Richta represented a different, more technologically optimistic path towards interpreting social change. The interdisciplinary team that he led within the ČSAV produced *Civilisation at the Crossroads*, first published in Czech in 1966 and soon translated internationally. Its central concept was the scientific and technological revolution, understood as a transformation in which science became a direct productive force. Automation, education, information, research, and creative labour would replace the extensive industrial model based on physical work and quantitative expansion. The project treated modernisation as a civilisational process rather than a narrowly economic reform. It considered urban life, the environment, leisure, occupational structures, education, human development, and the changing relationship between intellectual and manual labour. This breadth made the study one of the most internationally recognised achievements of Czechoslovak social science. It also placed the Academy at the centre of long-range interdisciplinary forecasting. Richta's team argued that socialist society could succeed only by overcoming bureaucratic rigidity and investing in knowledge and human capacities. The argument converged with reform economics and stratification research, although its recommendations were generally less politically radical. Its humanist language made science appear capable of reconciling productivity with personal fulfilment. Richta's later accommodation with normalisation nevertheless illustrates the ambiguous relationship between intellectual innovation and academic power, since the architect of a reformist research programme subsequently helped

administer the institutional order that suppressed many of its participants (*Richta, 1969*; *Voříšek, 2017*).

Ota Šik placed the problem of transformation directly within the organisation of the socialist economy. As director of the Economic Institute of the ČSAV from the early 1960s, he helped turn an Academy institute into an important centre of reform economics. His analysis began with the recognition that rigid administrative planning distorted prices, weakened enterprise responsibility, and concealed information needed for rational allocation. Šik did not initially advocate the wholesale restoration of capitalism. He sought a socialist economy in which market relationships, enterprise autonomy, realistic prices, and macroeconomic planning could interact. This approach treated reform as institutional engineering rather than a simple change in ownership. It also implied that economic mechanisms could not be separated indefinitely from political accountability and freedom of information. The Economic Institute consequently became a bridge between theoretical economics, state administration, and the reform movement. Šik's ideas influenced the New Economic Model and the economic programme of the Prague Spring, although implementation remained partial and politically contested. After the Warsaw Pact invasion, his exile transformed him into an international representative of market socialism and the search for a democratic alternative to both command planning and unrestricted capitalism. His later ideas did not determine Czech policy after 1989, when rapid liberalisation acquired greater political authority. Nevertheless, his work preserved an alternative lineage in which markets required institutional coordination, social responsibility, and democratic control (*Šik, 1968*).

Zdeněk Mlynář extended reformist social science into the analysis of political organisation, legality, and democratic participation. Working at the Institute of State and Law of the ČSAV, he initially operated inside the intellectual structures of the communist system. His research team gradually moved beyond conventional jurisprudence towards a political sociology of interests, institutions, and citizen participation. The team's work questioned whether a modern socialist society could be governed through the permanent monopoly of a single hierarchical organisation. Mlynář's 1968 proposals sought to create legally regulated political pluralism without simply reproducing the pre-communist party system. This was a particularly sensitive form of social-scientific intervention because it translated empirical and theoretical criticism into institutional design. His movement from Academy research to the senior political leadership of the Prague Spring exemplified the temporary fusion of scholarship and reform authority. It also exposed the risks of that fusion when the political experiment was defeated. Mlynář's subsequent removal, dissident activity, exile, and comparative study of communist systems carried Czechoslovak transformation research beyond national institutions. In exile he examined the conditions under which Soviet-type regimes might change, thereby anticipating later transition studies. His post-1989 return to Czech intellectual life was complicated by the decline of reform-socialist ideas and the dominance of a sharper anticommunist rupture narrative. Even so, his career demonstrated that democratisation required rules, organised interests, accountability, and institutional imagination rather than goodwill alone (*Dufková & Rákosník, 2014*).

Viktor Knapp embodied the legal dimension of transformation and the contradictions of institutional continuity. As director of the Institute of State and Law, he helped consolidate legal research within the newly created ČSAV. His early proximity to communist political power and his participation in socialist legal reconstruction remain inseparable from any balanced assessment of his career. Yet Knapp also preserved connections with Central European civil-

law traditions and encouraged comparative, linguistic, and interdisciplinary approaches. His work on the use of cybernetic methods in law made him a pioneer of Czech legal informatics. During the reform era, he contributed to debates on judicial interpretation, constitutional change, and the federalisation of Czechoslovakia. These activities showed that law could not be treated merely as an obedient transmission mechanism for Party decisions. After 1968, his political position weakened, but his international reputation and scholarly productivity allowed important elements of legal research to continue. In 1990 he became vice-president of the Czechoslovak Academy and participated in renewed discussions about civil-law reform. His trajectory therefore linked communist codification, Prague Spring reform, normalisation-era professional survival, and post-1989 legal reconstruction. Knapp's work reminds historians that institutional continuity can preserve both compromised authority and valuable professional knowledge. The transformation of law depended partly on scholars capable of distinguishing enduring legal method from the ideological uses to which it had previously been put (*Tomášek, 2014*).

Normalisation after 1969 broke the reform coalition of sociologists, economists, philosophers, and legal scholars. Institutes were dissolved or reorganised, directors were replaced, research programmes were redirected, and politically unreliable employees lost their positions. The Sociological Institute and the Institute of Philosophy disappeared into a new Institute for Philosophy and Sociology under politically dependable leadership. Social science was again expected to confirm the Party's interpretation of an advanced socialist society. The purge altered careers, but it also destroyed teams and weakened the transmission of methods between generations. Some researchers entered manual or technical employment, while others moved into applied institutes where politically less visible subjects offered limited protection. Exile created another intellectual geography in which Czechoslovak questions were studied at Western European and North American universities. Those who remained often practised a cautious empiricism, presenting socially revealing findings in restrained theoretical language. International collaboration narrowed, although it never disappeared completely. The resulting scholarship cannot be divided neatly into resistance and collaboration, because professional survival involved different mixtures of accommodation, silence, methodological persistence, and occasional criticism. The later reconstruction of social science consequently had to repair both personnel losses and epistemic mistrust. Contemporary evidence of the purge confirms that the Academy's social-science institutes were among the institutions most extensively reorganised and politically supervised (*Payne, 1972*).

Jiří Musil played a decisive role in rebuilding institutional sociology after the collapse of communist rule. His earlier research in urban sociology, housing, demography, and social ecology had developed partly outside the central Academy structures. Applied research on cities and architecture gave him access to empirical problems while reducing direct exposure to ideological debates. International stays and cooperation with organisations connected to the United Nations and UNESCO placed his work within a broader European field. His studies treated the city as a complex social system in which spatial form, administration, demography, housing, and human relationships interacted. This perspective became especially valuable when post-socialist transformation began to reshape metropolitan regions, municipal government, property relations, and residential differentiation. In 1990 Musil became director of the re-established Sociological Institute of the ČSAV. Under his leadership, the institute introduced elected scientific governance, reorganised research priorities, renewed international relations, and revived its principal journal. The English-language *Czech*

Sociological Review helped make domestic research accessible to comparative scholarship. Musil also contributed to Central European University and later held leading roles in European sociology. His interpretation of transformation resisted national isolation because he viewed Czech change within the broader crises of European modernity. Institutional reconstruction, in his case, was inseparable from restoring professional standards, comparative horizons, and ethical responsibility (*Vodáková, 2017*).

Ivo Možný offered one of the most original explanations of why the communist regime collapsed with such unexpected speed. His essay *Why So Easily?* shifted attention from high politics to the family, informal exchange, social capital, and everyday strategies of reproduction. Možný argued that the socialist state had attempted to subordinate private life to a collective political project. Over time, however, family networks colonised the official system through favours, contacts, protected opportunities, and the conversion of political access into private advantage. The regime thereby produced actors who publicly conformed while privately accumulated resources and secured the prospects of their children. This informal order eventually ceased to satisfy either ordinary citizens or sections of the ruling elite. The apparent suddenness of 1989 therefore concealed a long erosion of institutional commitment. Možný's interpretation challenged explanations based solely on dissident mobilisation, economic crisis, or geopolitical pressure. It also anticipated later studies of capital conversion and elite reproduction. Although his institutional base was primarily Masaryk University rather than the Academy, his work belongs within the national field through which Academy sociology interpreted systemic change. His lively essayistic method demonstrated that analytically serious sociology did not have to abandon narrative accessibility. By connecting intimate life with macro-political collapse, he made the family a central institution in the history of Czech transformation (*Možný, 1991/2023*; *Janák, 2017*).

Jiří Kabele interpreted transformation as a contested reconstruction of rules, meanings, and institutional expectations. His approach differed from linear transition models that assumed a predictable movement from socialism towards an already established Western destination. Kabele emphasised the uncertainty experienced by actors who had to behave while the authoritative rules of the new order were still being created. Political and economic institutions were not simply installed from above. They acquired practical form through narratives, conflicts, improvisation, legal codification, and repeated interaction. Kabele distinguished between the formal constitution of an order and the regime through which its rules operated in everyday life. This enabled him to identify continuities that survived even when official institutions changed abruptly. His comparison of the movement from capitalism to socialism after 1948 with the return from socialism to capitalism after 1989 placed both transformations within a common analytical narrative. Concepts such as transformative myths and institutional copying explained how models travelled through hierarchical organisations. His work also integrated qualitative sociology, autobiographical testimony, historical reconstruction, and the sociology of law. Although based mainly at Charles University, Kabele collaborated with Academy researchers and contributed to projects reconstructing late socialist governance. His interpretation warned that institutional shells could remain empty when responsibility, enforcement, and legitimate expectations failed to develop. Transformation therefore appeared not as a completed event but as an extended process of making rules socially credible (*Kabele, 2005*; *Voříšek, 2017*).

Jan Švejnar approached post-communist transformation through international economics, labour markets, enterprise behaviour, and institutional design. His exile education in the

United States gave him access to methods and research networks largely unavailable within normalisation-era Czechoslovakia. After 1989 he joined Josef Zieleniec and other reform-minded scholars in creating a new centre for advanced economic education and research. CERGE began at Charles University in 1991, while the Economics Institute of the Academy was established in 1992 as the successor to earlier economic institutions. Their partnership eventually created CERGE-EI as a joint university–Academy workplace. This arrangement was itself an interpretation of transformation expressed through institutional design. It rejected the separation of research from doctoral education and adopted internationally competitive recruitment, English-language training, peer review, and publication standards. Švejnar's research examined firms, labour markets, privatisation, corporate governance, unemployment, and the social consequences of economic reform. His comparative orientation placed the Czech case alongside other post-socialist and emerging economies. This reduced the temptation to present Czech developments as entirely exceptional. At the same time, his continuing participation in Czech public debate connected international economics with domestic questions of policy and legitimacy. CERGE-EI consequently became a mechanism through which exile experience was reintegrated into national science without losing its global character (*CERGE-EI, 2024*; *CERGE-EI, n.d.*).

Jiří Večerník gave the Czech transformation one of its most sustained empirical records. Having participated in Machonin's stratification research, he carried the analytical concerns of the 1960s into the post-1989 period. His work focused on income distribution, labour markets, poverty, household strategies, the middle classes, economic values, and perceptions of inequality. This agenda challenged the tendency to evaluate transformation exclusively through aggregate growth, inflation, privatisation, or electoral results. Večerník asked how reforms were experienced by individuals and households. He examined the relationship between changing institutions and the moral expectations through which citizens judged rewards and hardship. His research showed that market differentiation could acquire legitimacy when connected to achievement, education, and transparent rules. It could also generate resentment when wealth appeared to result from privileged access, political connections, or weak regulation. Together with Petr Matějů, Večerník organised the Social Trends project and helped establish the Sociological Data Archive. Their synthetic report on Czech society after 1989 brought many specialised surveys into a coherent account of social change. Večerník's extensive English-language publication strengthened international awareness of Czech evidence. His work made social reporting a form of institutional memory through which later claims about the success or failure of transformation could be tested (*Večerník & Matějů, 1999*; *Nešpor, 2017*).

Petr Matějů placed education, mobility, distributive justice, and elite reproduction at the centre of transformation research. His methodological formation combined the late socialist study of stratification with advanced international quantitative sociology. After 1989 he investigated how political, social, cultural, and economic capital could be converted into new forms of advantage. This approach complicated the popular distinction between an entirely displaced communist elite and an entirely new capitalist elite. Individuals and families entered the new order with unequal resources that could be adapted to changing institutional conditions. Matějů also distinguished objective mobility from the ways in which people perceived their own gains and losses. Such perceptions were politically important because democratic legitimacy depended on interpretations of fairness as well as measurable income. His studies traced the movement from egalitarian norms towards stronger acceptance of meritocratic differentiation.

Yet they also showed that meritocracy required genuinely open access to education. When family background strongly conditioned educational opportunity, the language of merit could legitimise inherited advantage. Matějů therefore moved from research into policy debates over universities, student support, and educational reform. This transition from analyst to political participant made his career influential but also controversial. It exemplified the recurring difficulty of preserving scholarly independence while attempting to translate evidence into institutional change (*Večerník, 2017*).

Lubomír Mlčoch developed perhaps the strongest Czech institutional-economic critique of rapid market transformation. His understanding of economic behaviour was shaped by direct experience inside socialist enterprises after political exclusion had interrupted his university career. He observed that central planning did not operate as a simple hierarchy of rational commands. Enterprise managers, ministries, municipalities, and informal coalitions negotiated resources, concealed information, shifted responsibility, and pursued organisational interests. Mlčoch described this system through ideas resembling principal–agent problems, moral hazard, rent seeking, and incomplete responsibility. After 1989 he argued that changing ownership titles could not immediately create the institutional order presupposed by liberal economic theory. Markets required enforceable law, trust, responsible ownership, professional ethics, and credible organisations. Voucher privatisation and rapid asset transfers, in his view, risked reproducing irresponsible forms of control under new legal labels. His criticism was not a defence of state ownership. It was a warning that institutional evolution could not be replaced by political declarations or accelerated administrative design. Mlčoch's Christian social thought further expanded his economics towards questions of solidarity, the common good, and the moral limits of acquisitive behaviour. His work thereby connected Academy economic research, dissident-era informal analysis, university scholarship, and international institutional economics. It provided a counterweight to interpretations that measured transformation mainly by the speed of liberalisation and privatisation (*Mlčoch, 1998*; *Benáček, 2017*).

Michal Illner shifted attention from central reform strategies towards municipalities, regions, territorial administration, and local democracy. He had entered the Sociological Institute of the ČSAV during the revival of the 1960s and remained within its reorganised successor during normalisation. His earlier work on social indicators developed a cautious but valuable language for assessing living conditions, differentiation, and the territorial dimensions of policy. After 1989 he became a leading researcher of decentralisation and local government. The restoration of municipal self-government created thousands of political arenas in which democratic practices had to be learned rather than merely legislated. Illner examined relations between local autonomy, administrative capacity, cooperation, regional inequality, and citizen participation. His work showed that transformation occurred differently in metropolitan centres, industrial regions, small towns, and rural municipalities. Territorial reform could therefore generate democratic opportunities while also reproducing disparities in expertise and resources. As director of the Institute of Sociology between 1993 and 2001, Illner combined this research agenda with institutional leadership. He supported the consolidation of an Academy institute capable of participating in international comparative projects. His career linked methodological continuity from late socialism with the decentralised political questions of the new republic. The local and regional perspective corrected Prague-centred narratives and revealed the state as a differentiated territorial organisation (*Kopecká & Nešpor, 2021*).

Martin Potůček interpreted transformation through social policy, public policy, human development, and the capacity to govern. His early research on health systems and social forecasting had developed skills that became highly relevant after 1989. He rejected the assumption that a functioning market could independently resolve questions of welfare, education, health, housing, employment, and demographic change. Instead, he analysed the changing balance among state institutions, markets, civic organisations, professional communities, families, and individuals. This perspective turned social reform into a problem of coordination and responsibility. Potůček's concept of human potential emphasised that social expenditure could also represent investment in individual capabilities and collective development. His work on the crossroads of Czech social reform identified discrepancies between ideological programmes and their practical consequences. European integration expanded this agenda by requiring comparison with continental welfare regimes and multilevel governance. Potůček moved repeatedly between scholarship, advisory work, research administration, and public discussion. He helped institutionalise public policy as a university discipline while cooperating with researchers across the Academy and government. His involvement in strategic studies encouraged the evaluation of long-term alternatives rather than short electoral cycles. Critics could question the normative assumptions of particular scenarios, but the underlying contribution remained important. Transformation, in this interpretation, required governing capacity and informed collective choice, not simply deregulation (*Vodáková, 2017*).

Jiřina Šiklová introduced another indispensable level of interpretation by examining dissent, adaptation, social work, gender, and the communist "grey zone". Her career had begun during the revival of university sociology in the 1960s. Political dismissal after 1968 removed her from formal academic employment and redirected her towards hospital social work, samizdat, and dissident communication. These experiences gave her an unusual view of the spaces between open opposition and active regime support. Her concept of the grey zone described people who accommodated official structures without fully identifying with their values. Šiklová recognised that such intermediate groups would influence both the collapse of communism and relations within the post-communist public sphere. The concept complicated moral narratives dividing society into heroic dissenters and passive collaborators. It also anticipated tensions between former dissidents and citizens whose survival had depended upon quieter forms of compromise. After 1989, Šiklová helped establish social work and gender studies as legitimate fields of teaching and public discussion. The Gender Studies centre founded in her flat in 1991 became a library, meeting place, and civic institution. Her work demonstrated that democratic transformation included changing professional languages for care, ageing, inequality, and private life. By connecting lived experience with sociological reflection, she broadened the range of voices authorised to interpret the Czech past and present (*Šiklová, 1990*; *Voříšek, 2017*).

The institutionalisation of gender research further changed the meaning of Czech transformation. Early reform narratives often treated the market actor, entrepreneur, voter, or property owner as implicitly gender-neutral. Researchers such as Marie Čermáková, Alena Křížková, Hana Hašková, Hana Maříková, and their colleagues demonstrated that this apparent neutrality concealed unequal positions. Labour-market restructuring affected women and men differently because employment, care, family policy, occupational segregation, and wage formation remained closely connected. State socialism had promoted women's employment while leaving much unpaid domestic labour and caregiving unequally distributed. The post-

1989 withdrawal or redesign of public services could therefore intensify older inequalities even while formal rights expanded. Gender researchers examined pay gaps, work–family reconciliation, organisational discrimination, entrepreneurship, parenthood, and the social distribution of care. Their studies combined quantitative surveys with interviews, organisational analysis, and international comparison. The Gender and Sociology Department of the Academy's Institute of Sociology became an important site for this work. European research programmes provided comparative frameworks but did not erase the specificity of the Czech historical experience. This scholarship also challenged the assumption that gender questions were foreign additions to an otherwise completed democratic transition. It showed instead that the quality of democracy could be assessed through everyday access to resources, voice, recognition, and personal autonomy (*Křížková, Nagy, & Mrčela Kanjuo, 2010*; *Institute of Sociology, n.d.*).

The interpretation of transformation also depended upon research infrastructures whose creators were less publicly visible than prominent theorists. Survey series allowed scholars to trace changing attitudes towards democracy, markets, inequality, European integration, trust, and social security. The Sociological Data Archive made datasets available for secondary analysis, teaching, methodological scrutiny, and comparison across time. International programmes connected Czech evidence with broader studies of values, social justice, employment, education, and political behaviour. Such infrastructures transformed one-time observations into cumulative social knowledge. They also limited the capacity of governments or commentators to redefine the recent past through selective memory. The Public Opinion Research Centre acquired particular importance after its transfer to the Academy's Institute of Sociology in 2001. Its institutional history reaches back to the Czechoslovak public-opinion institute created in 1946, although political conditions repeatedly altered the autonomy and purpose of polling. Regular surveys provided a record of how citizens evaluated institutions and experienced political and economic change. The interpretation of results still required theoretical judgement, because public opinion could express anxiety, inherited expectations, immediate interests, or durable value change. Nevertheless, open methods and preserved data enabled competing interpretations to be tested. In this respect, data stewardship became a democratic function as well as a scientific service (*CVVM, n.d.*; *Institute of Sociology, n.d.*).

Taken together, these personalities did not produce a single Czech theory of transformation. Machonin emphasised multidimensional stratification and modernisation, while Večerník documented households, incomes, and changing economic values. Matějů investigated mobility, education, justice, and capital conversion, whereas Možný located systemic erosion within family networks and everyday life. Mlčoch questioned transformation without institutional responsibility, and Švejnar connected policy evaluation with internationally oriented economics. Illner studied territorial government, Potůček examined governing capacity and welfare, and gender researchers exposed inequalities concealed by formally universal models. Kabele interpreted rules and narratives as objects under construction, while Šiklová illuminated the morally ambiguous social spaces inherited from dictatorship. These approaches sometimes contradicted one another because their normative standards were different. Some privileged efficiency, others cohesion, equality, legality, participation, trust, or individual autonomy. Their disagreement was not a failure of Czech social science. It marked the restoration of an intellectual field in which transformation could become an object of evidence-based controversy rather than an official doctrine. The Academy's most valuable role was therefore not to certify a single national interpretation. It was to preserve the institutional

conditions under which rival explanations could accumulate evidence, confront criticism, and remain available to future reassessment (*Večerník & Matějů, 1999*; *Nešpor, 2014*).

Thus, the social scientists associated directly or indirectly with the Czech and Czechoslovak Academies transformed political rupture into a sustained field of scholarly inquiry. Their collective achievement lay not in agreeing on whether Czech transformation succeeded, but in demonstrating how many dimensions such a judgement required. They traced changes in ownership, law, political participation, social structure, family life, education, welfare, gender relations, territorial government, and public values. They also revealed that every apparent rupture contained institutional and biographical continuities. Reform-socialist research of the 1960s supplied concepts and data that could be reactivated after 1989. Normalisation fractured research schools, yet it did not eliminate empirical expertise, informal cooperation, or intellectual memory. Exile extended Czech social science internationally and later helped reconnect domestic institutions with global research. Post-revolutionary reconstruction created new institutes, journals, archives, doctoral programmes, and comparative networks. At the same time, movement between research and policy repeatedly raised questions about autonomy, authority, and public responsibility. The plurality of interpretations prevented economic liberalisation, national emancipation, Europeanisation, or democratisation from becoming an exclusive explanatory formula. Social science thereby served as a critical memory of promises made, costs distributed, opportunities opened, and inequalities reproduced. The Academy's enduring contribution was to make Czech transformation measurable, debatable, and historically intelligible rather than allowing it to harden into a self-congratulatory national myth.

3. The Academy as a Place of National Memory and Critical Reflection

The Academy's role in national memory cannot be reduced to storing documents or publishing authoritative accounts of the past. It operates where archives, scholarly interpretation, institutional identity, and public commemoration intersect. In this space, memory becomes both a research object and a social responsibility. The Academy preserves evidence that political regimes, families, professional communities, and cultural institutions have produced about themselves. It also subjects inherited narratives to source criticism, comparison, and revision. This double role makes it simultaneously a custodian and a critic of national memory. Custodianship without criticism would turn scholarly institutions into repositories of authorised tradition. Criticism without custodianship would detach interpretation from the material evidence on which historical knowledge depends. The institutional history of Czech science demonstrates why both functions are necessary. Archives were repeatedly dispersed, appropriated, censored, reclassified, or returned as political regimes changed. Historical personalities were likewise transformed from national heroes into ideological enemies and later rehabilitated as democratic symbols. The Academy became most valuable when it enabled these changes of reputation to be studied rather than merely reproduced.

Professional history and collective memory overlap, but they do not perform the same social work. Collective memory gives communities stories through which they recognise shared suffering, achievement, belonging, and moral obligation. Historical research asks how those stories arose, whose experiences they included, and which inconvenient elements they excluded. Memory tends to organise the past around symbols, anniversaries, exemplary lives, monuments, and emotionally resonant turning points. Scholarship reconstructs chronology,

institutions, competing interests, social structures, and the uncertain choices available to historical actors. The Academy mediates between these forms because its researchers participate in public culture while remaining accountable to disciplinary methods. Their task is not to deprive citizens of meaningful historical attachments. It is to prevent attachment from becoming immunity from evidence. The personalities selected here are consequently important not only because they wrote influential books. They also founded institutes, recovered archives, created journals, recorded testimony, assembled documentary editions, and reopened forbidden questions. Through such work, critical reflection acquired durable institutional form. National memory became less a completed narrative than a continuing conversation between evidence, experience, and democratic judgement.

The Academy inherited this responsibility from the learned societies that had helped construct Czech historical consciousness before the modern nation-state existed. The Royal Bohemian Society of Sciences assembled linguistic, historical, geographical, and antiquarian knowledge about the lands of the Bohemian Crown. The National Museum and the Matice česká connected scholarship with collections, publishing, and public education. František Palacký gave this activity an especially influential form by combining archival research, national interpretation, scholarly organisation, and political leadership. His historical synthesis provided Czech society with a narrative of cultural continuity and political meaning. Yet Palacký's significance also demonstrates the ambiguity of national historiography. A history written to establish the legitimacy of an emerging nation can become a powerful framework that later generations treat as self-evident. Learned institutions therefore preserved both sources and interpretive traditions. The Czech Academy of Sciences and Arts extended this scholarly infrastructure by supporting historical, philological, archaeological, and documentary research. It brought national culture into a formally organised academic environment while maintaining contact with wider European scholarship. The modern Academy did not inherit a neutral archive but a layered record of how Czech society had imagined itself. Critical institutional memory begins by recognising that even its earliest scholarly collections were shaped by choices about national significance.

The First Czechoslovak Republic intensified the connection between scholarship, democratic statehood, and public memory. Masaryk's presidency gave intellectual work unusual symbolic prominence because the head of state was himself a philosopher and sociologist. His interpretation of Czech history emphasised humanism, religious reform, moral responsibility, and democratic continuity. Josef Pekař and other historians challenged aspects of this philosophy, arguing for greater respect for historical specificity and warning against reading the past as a predetermined national programme. Their disagreement became a formative example of critical reflection within national culture. It showed that loyalty to a political community did not require agreement about the meaning of its history. Universities, archives, museums, learned societies, and the Czech Academy of Sciences and Arts sustained this plural environment. The original T. G. Masaryk Institute, founded in 1932, was designed to preserve Masaryk's library and papers, publish his works, and support independent study. Masaryk's donation of his private archive and library created a material basis for research that could outlast his political authority. The institute's later suppression and restoration would reveal how closely archival institutions were connected to changes in political legitimacy. Its history became a condensed representation of the 20th-century struggle over Czech democratic memory (*Masaryk Institute and Archives, n.d.*).

The communist transformation of scholarly institutions after 1948 replaced this pluralism with a much more closely directed historical culture. Zdeněk Nejedlý represented the strongest fusion of historian, cultural ideologue, minister, and institutional organiser. He interpreted national history as a progressive movement culminating in socialism and the political leadership of the Communist Party. Hussitism, the National Revival, democratic traditions, labour history, and antifascist resistance were reorganised within this teleological narrative. The establishment of the ČSAV in 1952 gave historical scholarship greater central resources while also subjecting it to ideological planning. The state did not abandon national history but appropriated it as a source of socialist legitimacy. Personalities who could be integrated into the progressive canon were celebrated, whereas politically unsuitable figures were marginalised or condemned. Masaryk became a particularly sensitive object because his democratic and humanitarian legacy contradicted the new regime's account of the First Republic. The T. G. Masaryk Institute was closed in 1954 during the official campaign against his intellectual heritage. Its collections survived, but their institutional meaning and accessibility were transformed. The same system that preserved substantial scholarly resources therefore attempted to regulate the questions that could legitimately be asked of them (*Masaryk Institute and Archives, n.d.*; *Kopeček, 2001*).

The Archives of the Czechoslovak Academy of Sciences, established in 1953, exemplified this tension between preservation and political control. Its responsibilities included collecting the records of learned societies, Academy institutes, scholarly organisations, and prominent scientists. Early holdings incorporated the papers of the Royal Bohemian Society of Sciences, the Czech Academy of Sciences and Arts, the Masaryk Academy of Labour, and the Czechoslovak National Research Council. These collections made it possible to reconstruct institutional continuities extending well beyond the socialist Academy. Archivists catalogued manuscripts, personal papers, administrative files, photographs, and documentary remains of scientific communities. Their professional work created forms of continuity that official institutional narratives did not always acknowledge. At the same time, access, classification, acquisition, and publication remained subject to the political environment. An archive may preserve a document while preventing it from entering public interpretation. It may also retain the administrative language of the institution that created the record. Critical archival scholarship must therefore reconstruct provenance and political context alongside documentary content. The survival of the collections nevertheless ensured that later generations could revisit questions that socialism had suppressed. In this sense, the archive preserved possibilities of future criticism that exceeded the intentions of the regime administering it (*Masaryk Institute and Archives, n.d.*).

The reform era of the 1960s brought a significant reopening of modern Czech and Czechoslovak history. Karel Kaplan investigated the internal mechanisms of communist power and gained unusual access to Party documentation. Jan Křen began reconsidering Czech–German relations and the post-war expulsion of the German population. Vilém Prečan studied the Slovak National Uprising and subsequently documented the Warsaw Pact invasion and its social consequences. Their work weakened simplified heroic narratives by placing political conflict, institutional responsibility, and previously silenced experiences back into historical analysis. These historians did not begin outside the socialist scholarly system. Their intellectual development occurred within institutions whose official purposes they gradually exceeded. Reform historiography thus emerged partly through the critical use of resources created by the regime itself. Access to archives enabled researchers to discover discrepancies

between political mythology and administrative evidence. International exchange also helped reconnect Czechoslovak historical scholarship with comparative methodologies. The Prague Spring enlarged the public audience for such findings and temporarily reduced censorship. Historical criticism became one component of the broader attempt to reform socialist authority. Its suppression after 1968 demonstrated once again that control of political power and control of historical interpretation were deeply connected.

Normalisation dismantled much of this reformist historical community. Historians were dismissed, transferred, prevented from publishing, or removed from professional research. Institutes were reorganised, leaderships replaced, and approved themes incorporated into centrally directed research programmes. The consequences extended beyond the exclusion of particular scholars. Research schools lost continuity, younger historians lost mentors, international communication contracted, and documentary discoveries remained unpublished. Jan Křen entered manual employment and participated in underground seminars and samizdat historical writing. Karel Kaplan and Vilém Prečan eventually continued their work in exile. Other scholars survived within official institutions by choosing less politically exposed subjects or adopting cautious forms of expression. The Academy's historical field consequently divided into official, semi-official, dissident, and émigré circuits. None of these circuits alone contained the complete national scholarly memory. Their later reintegration would require more than returning individuals to former positions. It required recognising samizdat, exile collections, private seminars, and suppressed manuscripts as parts of Czech intellectual history (*Payne, 1972*).

Vilém Prečan turned documentary preservation into a form of intellectual resistance. After leaving Czechoslovakia, he became a crucial intermediary among domestic dissent, émigré communities, Western researchers, and international public opinion. His work was based on the conviction that independent culture could survive only if its texts, correspondence, and institutional traces were systematically preserved. The Czechoslovak Documentation Centre of Independent Literature was established in the Federal Republic of Germany in 1986 after years of preparatory collecting. Its founders included writers, scientists, journalists, political émigrés, and supporters of Charter 77. Prečan served as its principal organiser and custodian. The centre collected samizdat, exile publications, dissident documents, correspondence, and other materials excluded from official Czechoslovak repositories. Documentation therefore became more than passive accumulation. It created an alternative public sphere in which suppressed voices could remain connected and historically legible. The archive also prevented the communist state from exercising complete control over the evidentiary record of opposition. After 1989, these collections helped reconnect exile memory with domestic scholarship. Prečan's career showed that an archive can operate as an institution of civic freedom before it becomes part of an established academic landscape (*National Museum, n.d.*; *National Security Archive, 2023*).

The foundation of the Institute of Contemporary History in 1990 gave this recovered documentary culture a new Academy home. The initiative emerged from the Historical Commission of Civic Forum, linking institutional creation directly with the democratic revolution. The new institute was intended to investigate Czechoslovak history between 1938 and 1989 independently of former ideological restrictions. Its chronological mandate encompassed the destruction of interwar democracy, Nazi occupation, post-war reconstruction, communist rule, the Prague Spring, normalisation, dissent, and the Velvet Revolution. This was not merely an extension of the existing Institute of History. Contemporary

history required specialised access to living witnesses, newly opened archives, exile materials, security records, and politically sensitive personal evidence. It also required procedures capable of protecting scholarship from becoming either revolutionary commemoration or retrospective prosecution. The institute began while many historical actors remained publicly active and personal reputations were being reassessed. Its researchers therefore worked within the immediate social consequences of the history they studied. The creation of a dedicated institute acknowledged that recent history possessed both scholarly specificity and exceptional democratic significance. It established the Academy as a place where political liberation could be converted into sustained, revisable research (*Institute of Contemporary History, n.d.*).

Prečan's directorship between 1990 and 1998 shaped the institute's foundational culture. His experience of domestic scholarship, political exclusion, exile documentation, and transnational cooperation gave him an unusually broad conception of contemporary history. He understood that the new institution needed archives, publications, bibliographies, international partnerships, and a professional community. The journal *Soudobé dějiny* was established in 1993 and became a major forum for research and historiographical debate. It provided space for documentary studies, methodological disagreement, reviews, and exchanges between Czech and foreign scholars. Peer review gradually replaced the political certification that had governed official historical publication. The institute also integrated historians whose careers had followed markedly different paths through reform communism, dissent, exile, or younger post-1989 training. Such diversity did not eliminate personal and interpretive conflict. It nevertheless prevented any single biographical group from owning the recent past. By the end of Prečan's directorship, the institute had become an established component of the Academy rather than a temporary revolutionary commission. Its continuity demonstrated that democratic memory required institutions capable of surviving the political moment that had created them (*Institute of Contemporary History, n.d.*).

Karel Kaplan supplied post-1989 historiography with an exceptionally detailed reconstruction of the communist political system. His earlier position within reform-era commissions had given him access to high-level Party documentation. Exile enabled him to publish analyses that could not appear in normalised Czechoslovakia. After his return, he became one of the leading personalities of the Institute of Contemporary History. Kaplan examined the Communist Party, political trials, relations between Gottwald and Slánský, the seizure of power, institutional repression, and the social consequences of Party rule. His work helped replace abstract condemnation with documentary reconstruction. It showed how decisions moved through committees, security institutions, personnel systems, and ideological campaigns. Kaplan's proximity to some of the institutions he later analysed also raised productive questions about retrospective knowledge and the historian's changing standpoint. He was neither an external observer of Czechoslovak communism nor a simple chronicler of personal experience. His scholarship converted privileged and politically dangerous knowledge into a public documentary resource. Through Kaplan, the Academy acquired continuity with reformist investigations that normalisation had attempted to erase (*Tůma, 2018*).

Oldřich Tůma consolidated the Institute of Contemporary History during its movement from post-revolutionary reconstruction towards mature international research. Originally trained in Byzantine history, he redirected his scholarship towards Czechoslovakia after 1945, the Cold War, popular protest, and the collapse of communist regimes. This disciplinary shift reflected the broader reorientation made possible after 1989. His research on demonstrations before

November 1989 examined the interaction between organised dissent, public participation, police power, and the gradual erosion of regime authority. As director from 1998 to 2017, Tůma oversaw a period of methodological diversification and international integration. Political history remained important, but it was joined by social, cultural, transnational, and everyday-life approaches. The institute's researchers increasingly treated Czechoslovakia as part of the European Cold War rather than an isolated national case. Tůma also represented historical expertise within the wider structure of the Academy and international memory networks. His leadership helped stabilise the institutional autonomy needed for controversial research. The institute could cooperate with government bodies, archives, museums, universities, and foreign partners without surrendering its scholarly mandate. In this respect, institutional consolidation itself became part of the Academy's democratic memory work (*Czech Academy of Sciences, n.d.*; *ENRS, n.d.*).

Miroslav Vaněk expanded this memory work by professionalising oral history in the Czech academic environment. Written archives were indispensable for reconstructing institutions, but they often privileged administrative voices and formally recorded events. Oral testimony opened access to experience, retrospective meaning, emotion, uncertainty, and everyday adaptation. Vaněk and Milan Otáhal's project on students during the Velvet Revolution demonstrated how interviews could complicate public images of revolutionary unity. Later research included dissidents, political elites, workers, women, members of younger generations, and ordinary citizens who had not appeared prominently in official records. The Oral History Centre was established within the Institute of Contemporary History in 2000. Vaněk helped connect its methodological development with international oral-history scholarship. His later presidency of the International Oral History Association symbolised the global recognition of the Czech research school. Pavel Mücke and other researchers further developed life-story interviewing and the study of memory across political ruptures. Their work shifted attention from what happened in 1989 to how people integrated 1989 into the narratives of their lives. The Academy thereby became a place where citizens could enter history as reflective narrators rather than merely statistical populations or subjects of state documentation (*Vaněk, 2008*; *Vaněk & Mücke, 2016*).

Oral history also required the Academy to distinguish carefully between testimony and transparent access to the past. Memory is shaped by later events, public narratives, interpersonal relationships, forgetting, and the need to give coherence to a life. Witnesses may combine personal recollection with stories absorbed from media, family, or commemorative culture. Contradictions do not automatically invalidate testimony because they can reveal how historical meaning is constructed. Interviewers nevertheless have an obligation to compare accounts with documentary evidence and wider social contexts. The relationship between researcher and narrator also affects what can be said. Ethical practice requires informed consent, sensitivity to trauma, transparent preservation, and caution about public exposure. These methodological demands transformed oral history from the collection of recollections into a disciplined research field. They also protected the Academy from treating witnesses as illustrations of narratives already decided in advance. A democratic institution should listen to experience without converting every memory into an unquestionable fact. The critical study of testimony thus joined recognition with interpretation. This balance made oral history one of the clearest expressions of the Academy's role as both a home of memory and a site of reflection.

The restoration of the T.G. Masaryk Institute after 1989 represented another form of institutional recovery. President Václav Havel authorised its re-establishment in January 1990

following a proposal from the Masaryk Society. The Academy's Masaryk Institute was subsequently created in 1995 to administer collections and place Masaryk research within a broader scholarly framework. Jaroslav Opat served as its first director. His own scholarly career had been interrupted by normalisation, and his work on Masaryk linked institutional restoration with personal rehabilitation. Eva Broklová later strengthened research on the First Republic, political institutions, and democratic traditions. The institute did not simply restore Masaryk to the position of national philosopher from which communist ideology had removed him. It treated his writings, correspondence, political actions, family networks, and international relationships as subjects of critical research. The distinction was essential because democratic memory could also become celebratory and selective. In 2006, the Masaryk Institute joined the Archives of the Academy, creating an institution in which historical research and archival stewardship were structurally connected. The present Masaryk Institute and Archives therefore embodies restoration without returning to the institutional world of the 1930s unchanged (*Masaryk Institute and Archives, n.d.*).

Critical editions became one of the principal methods through which the restored institute transformed symbolic memory into scholarship. The series *Spisy T. G. Masaryka* made his writings available in established textual form. The *Korespondence TGM* series reconstructed intellectual, political, and personal networks that cannot be understood through published works alone. Documentary projects concerning Edvard Beneš opened another politically sensitive field involving democracy, exile government, war, Germans, post-war reconstruction, and the transfer of power after 1945. Dagmar Hájková, Helena Kokešová, and their collaborators contributed to editions of correspondence, diaries, memoirs, and official papers. Their work demonstrated that scholarly editing is interpretive rather than mechanical. Editors establish provenance, chronology, textual variants, identities, missing contexts, and relationships among documents. They make evidence accessible while showing readers how archival knowledge is constructed. Such editions can challenge both hostile caricatures and uncritical admiration. They also disperse authority by enabling other researchers to inspect sources and propose alternative interpretations. Through documentary publication, national founders become historical actors situated within networks of disagreement, uncertainty, and changing circumstances (*Masaryk Institute and Archives, n.d.*; *Hájková et al., 2013*).

The Academy's archives also preserve the institutional memory of science itself. Their holdings record the activities of learned societies, research councils, institutes, commissions, presidents, scientific boards, and individual scholars. Administrative files can reveal how disciplines were prioritised, funded, reorganised, or marginalised. Personal fonds preserve correspondence, unfinished manuscripts, travel records, research notes, photographs, and evidence of informal scholarly networks. Together, these materials allow the Academy to become an object of its own historical investigation. Such self-study is essential because institutional anniversaries naturally encourage celebratory narratives. A critical history must also examine ideological conformity, personnel purges, compromised leadership, unequal access, failed reforms, and the consequences of political accommodation. It should neither portray the Academy only as a victim of regimes nor reduce its members to servants of power. Institutions contain competing actors and forms of agency. Archival research makes it possible to reconstruct how autonomy was defended, negotiated, surrendered, and rebuilt in particular circumstances. By preserving evidence against its own possible self-idealisation, the Academy performs an unusually important form of institutional accountability (*Masaryk Institute and Archives, n.d.*).

Jan Křen made Czech–German relations a central test of whether national history could sustain critical reflection. During the 1960s he began studying the post-war expulsion of Germans and the longer conflict between Czech and German national communities. Normalisation removed him from academic employment, but his research continued through samizdat, underground seminars, and foreign publication. His *Conflictual Community* rejected narratives that treated Czech and German histories as internally uniform and permanently opposed. After 1989, Křen became a major figure in the institutional rebuilding of international studies and cross-border historical dialogue. He helped establish and chair the joint Czech–German Commission of Historians. The commission did not eliminate political disagreement about Munich, occupation, collaboration, expulsion, property, or the Beneš decrees. It created a sustained scholarly framework in which these conflicts could be investigated through multilingual and multinational evidence. Křen's approach required Czech memory to recognise its own experience of oppression without denying violence committed against others. This did not equate Nazi occupation with post-war expulsion. It placed both within a history of nationalism, war, state destruction, demographic engineering, and difficult coexistence. His career demonstrated that critical national memory becomes stronger through reciprocal historical scrutiny rather than defensive isolation (*Pešek, 2021*).

Research on the borderlands extended this critical approach beyond diplomatic and political relations. The expulsion of Germans after 1945 transformed population, property, settlement, cultural landscapes, religious life, and local memory. New inhabitants entered towns and villages whose material environments preserved traces of displaced communities. Communist collectivisation and industrialisation subsequently added further layers of social discontinuity. Academy researchers examined these processes through archives, local studies, demographic evidence, photographs, monuments, and oral testimony. Their work showed that the borderlands were not empty spaces waiting to be nationally completed. They were regions marked by migration, coercion, resettlement, economic ambition, social experimentation, and loss. Public discussion of this history remained politically sensitive because it touched national legitimacy and family inheritance. The Academy's role was not to issue a single moral formula for the post-war settlement. It was to distinguish causation from justification and contextualisation from apology. Comparative research connected the Czech experience with wider European histories of forced migration and ethnic homogenisation. In this way, regional memory became part of a transnational history of 20th-century violence (*Institute of Contemporary History, n.d.*).

Czech–Slovak memory required a different form of critical partnership. Czechoslovakia had been a shared state, but its history was never experienced identically in Prague, Bratislava, the Czech lands, and Slovakia. Narratives of 1918, wartime statehood, the Slovak National Uprising, the communist takeover, federalisation, 1968, normalisation, and the 1992 dissolution contained different political and emotional emphases. Czech scholarship could easily treat Slovak history as a regional supplement to a Czech-centred national story. Slovak historiography could conversely interpret the common state primarily through asymmetry and unfulfilled sovereignty. The Czech–Slovak Commission of Historians created an institutional framework for sustained cooperation across the former federal boundary. The Institute of Contemporary History became its Czech institutional base. Exchange among researchers, teachers, students, archives, and publications helped preserve Czechoslovakia as a genuinely shared field of inquiry. This cooperation became more important as younger generations acquired no personal memory of the common state. It also resisted the retrospective

projection of post-1993 national categories onto earlier periods. Critical reflection required both societies to recognise unequal experiences without abandoning the history they had produced together. The Academy thereby supported a post-federal memory that was neither nostalgic reunification nor mutually isolated national narration (*Institute of Contemporary History, 2025*).

Jewish history and Holocaust research further transformed the boundaries of Czech national memory. Earlier narratives often represented Jews primarily as victims located outside the central history of Czech society. Research associated with Kateřina Čapková challenged this separation by examining Jews as participants in Czech, German, Jewish, urban, political, and transnational worlds. Her work on national identity in the Bohemian lands showed that linguistic and political belonging could not be reduced to fixed ethnic categories. The Inclusive History Research Group at the Institute of Contemporary History extended this approach to refugees, migration, mixed families, and post-war displacement. Holocaust research necessarily preserved the record of persecution and destruction. It also reconstructed the social lives, institutions, choices, and identities that preceded victimisation. This prevented Jewish history from becoming only an appendix to the history of Nazi occupation. Cooperation with the European Holocaust Research Infrastructure improved access to dispersed archival collections and comparative research tools. Digital projects such as MemoMap connected information about victims with the urban spaces in which they had lived and been persecuted. Such work inserted absent inhabitants back into the historical geography of Prague and the Czech lands. The Academy's national memory consequently became more inclusive by recognising that Czech history had always been multilingual, religiously diverse, and connected to movements across borders (*Čapková, 2012*; *Masaryk Institute and Archives, n.d.*).

The development of Romani history exposed another profound absence within established national narratives. Roma and Sinti had frequently appeared in official records through the categories of policing, social administration, racial persecution, or state assimilation. Their own testimonies, family histories, mobility, community institutions, and strategies of survival received far less attention. Researchers connected with the Prague Forum for Romani Histories and the Institute of Contemporary History sought to change this evidentiary imbalance. Kateřina Čapková's comparative initiatives connected Jewish and Romani histories without erasing their differences. Renata Berkyová and other scholars examined the Holocaust of Roma and Sinti, post-war recognition, memorial sites, and the formation of individual and collective memory. The Database of Romani Testimonies makes published accounts searchable and provides expert abstracts in Czech and English. This work matters because marginalised memory is not recovered merely by adding another commemorative date. It requires new archival practices, linguistic competencies, ethical relationships, and collaboration with the communities concerned. Research on forced sterilisation and welfare-state interventions also links communist and post-communist history with questions of bodily autonomy and institutional discrimination. These subjects challenge comforting narratives in which democratic development appears as a continuous national possession. By incorporating Romani voices and experiences, the Academy expands national memory beyond the history of dominant institutions and populations (*Institute of Contemporary History, n.d.*; *Prague Forum for Romani Histories, n.d.*).

Digital public history has changed how the Academy performs its memorial function. Earlier scholarly communication depended heavily on printed editions, specialised journals, lectures,

and physical reading rooms. These remain essential, but digital databases now allow documents, maps, correspondence, testimonies, images, and bibliographies to be explored beyond institutional buildings. The online collected writings of Masaryk give readers direct access to a corpus previously distributed across many volumes. Historical correspondence databases reveal networks that cannot be understood through isolated letters. HistoryLab teaches students to analyse sources rather than simply memorise conclusions. Interactive maps connect historical events with landscapes, streets, monuments, and surviving architecture. Projects on the democratic revolution of 1989, the Prague Spring, memorial sites, and dissent place research materials within publicly accessible thematic environments. Digitisation also makes Czech evidence more available to international scholarship. Yet digital access does not eliminate the need for interpretation. Searchable fragments can be removed from provenance and circulated as apparently self-explanatory proof. The Academy's digital responsibility therefore includes metadata, contextual essays, transparent editorial principles, and long-term preservation (*Masaryk Institute and Archives, n.d.*; *Kopeček, n.d.*).

The Academy's critical role becomes most visible when memory enters direct political conflict. After 1989, the condemnation of communist dictatorship provided an essential source of democratic legitimacy. Lustration, rehabilitation, restitution, archival access, and recognition of political prisoners required engagement with the recent past. At the same time, political actors often preferred narratives with clear heroes, victims, perpetrators, and moments of moral rebirth. Michal Kopeček examined how antitotalitarian memory moved from legitimising democracy towards becoming a language of political identity and cultural conflict. His research distinguished condemnation of dictatorship from the assumption that one historical model could explain the entire period between 1948 and 1989. Vítězslav Sommer and other younger historians investigated communist historiography, expertise, everyday governance, and the changing scholarly construction of the regime. Veronika Pehe's work on postsocialist memory further examined how interpretations of transformation became embedded in popular culture and generational experience. These approaches were sometimes labelled revisionist by critics who feared that complexity weakened moral judgement. Their actual importance lay in separating historical explanation from political absolution. A democratic research institution must be able to investigate consent, adaptation, social mobility, welfare, and ordinary life without denying repression. Critical reflection begins where moral seriousness no longer depends upon historical simplification (*Kopeček, 2010*; *Institute of Contemporary History, n.d.*).

The Academy occupies a different institutional position from museums, courts, ministries, commemorative associations, and the Institute for the Study of Totalitarian Regimes. Each of these organisations has a legitimate but distinct relationship to the past. Courts establish legal responsibility, archives preserve records, museums construct public representation, and victim associations seek recognition and redress. The Institute for the Study of Totalitarian Regimes was created by law with a specific mandate concerning Nazi occupation and communist rule. Academy institutes, by contrast, operate within a broader system of autonomous basic research. They may cooperate with state and commemorative institutions, but their scholarly agendas are not confined to an official theory of national memory. This distance allows researchers to compare dictatorships without treating them as identical. It also permits investigation of democracy's failures, post-war violence, minority exclusion, and the political uses of anticommunism. Autonomy does not guarantee neutrality or remove personal values from scholarship. It creates procedures through which arguments can be

criticised, evidence checked, and interpretations revised. The Academy serves democratic memory most effectively when it refuses to become either a national tribunal or a sanctuary from public responsibility (*Institute of Contemporary History, n.d.*; *Institute for the Study of Totalitarian Regimes, n.d.*).

Thus, the Academy became a place of national memory not by producing a definitive Czech story but by preserving the institutions through which national stories could be tested and reconsidered. Its archives connected contemporary research with learned societies, ČAVU, ČSAV, scientific communities, and suppressed intellectual traditions. Restored institutes returned Masaryk, Beneš, exile, dissent, and democratic statehood to scholarship without placing them beyond criticism. The Institute of Contemporary History created a durable environment for investigating occupation, communism, reform, normalisation, revolution, and post-socialist change. Prečan, Kaplan, Křen, Tůma, Vaněk, Opat, Broklová, Hájková, Čapková, Kopeček, and their colleagues represented different methods and biographical relationships to the past. Documentary editions, oral histories, international commissions, minority-history projects, and digital platforms enlarged both the evidence and the community of remembrance. Czech–German and Czech–Slovak cooperation moved historical reflection beyond nationally self-contained narratives. Jewish and Romani history exposed exclusions that older concepts of national memory had left at the margins. Research on the politics of memory showed that democratic commemoration could itself become selective, defensive, or politically instrumental. The Academy's autonomy allowed moral judgement to coexist with methodological doubt and historical complexity. Its most important contribution was therefore not remembrance alone but the institutionalisation of responsible disagreement about what should be remembered and how. In that capacity, the Academy became one of the places where Czech society could confront its achievements, traumas, compromises, and exclusions without surrendering either historical identity or critical freedom.

Exile, Repression, Rehabilitation, and Return

1. Scientists Removed from Institutions after Political Ruptures

The removal of a scholar from an institution is never merely a biographical episode. It is also an intervention in the production, transmission, and public recognition of knowledge. When political authorities dismiss a scientist, they separate that person from laboratories, archives, students, colleagues, publishing opportunities, and international networks. They simultaneously alter the institution that remains behind. Its disciplinary priorities change, its informal hierarchies are rearranged, and its members learn which forms of speech or intellectual initiative have become dangerous. The history of Czech and Czechoslovak science therefore cannot treat exclusion as a marginal story concerning a few unfortunate individuals. Political removals repeatedly affected the very conditions under which research communities reproduced themselves. They also helped determine which personalities could become visible representatives of national science and which were condemned to silence or retrospective

obscurity. In the Czech lands, these processes occurred under different regimes and were justified through sharply contrasting political vocabularies. Nazi occupation invoked race, imperial domination, and collective punishment, whereas communist purges appealed to class, ideological reliability, and loyalty to the socialist state. Post-war measures against German-speaking scholars were connected with retribution, national reconstruction, and the enforced ethnic transformation of Czechoslovakia. Despite these differences, every rupture revealed how easily institutional membership could be converted from a scholarly status into a politically revocable privilege (*Míšková et al., 2018*; *Míšková et al., 1998*).

Removal itself must be understood as a spectrum rather than a single administrative act. At one extreme stood arrest, imprisonment, deportation, and physical destruction. At another stood apparently routine decisions not to renew a contract, approve a promotion, or permit university teaching. Between these poles were compulsory retirement, demotion, transfer to an unsuitable position, exclusion from professional societies, withdrawal of research funding, and prohibition from travelling abroad. A scholar could retain an office while losing the right to supervise students or communicate with foreign colleagues. Another might remain formally employed but be denied access to equipment, archives, current literature, or meaningful research assignments. Publication bans were particularly effective because they severed the relationship between intellectual work and public authorship. Under normalisation, some dismissed scholars could not publish even translations, while their access to foreign books and journals was deliberately restricted (*Payne, 1972*). Political exclusion could also extend to relatives, students, and collaborators whose careers were judged through association rather than their own conduct. The regime thus converted professional isolation into a social environment that encouraged colleagues to maintain a protective distance. A comprehensive institutional history must consequently examine not only who disappeared from official staff lists, but also who remained under conditions that made independent scholarship nearly impossible.

The principal 20th-century ruptures did not follow an identical pattern, yet they formed a cumulative history of interrupted intellectual lives. The Munich crisis of 1938 and the occupation beginning in March 1939 drove Jewish scholars, political opponents, and many democratic German-speaking academics from their positions. The closure of the Czech universities in November 1939 then removed an entire national system of higher education from legal existence. Liberation in 1945 restored Czech institutions but was accompanied by the destruction of most remaining German scholarly structures and the expulsion of much of the German-speaking population. The Communist seizure of power in February 1948 introduced political screening, action committees, ideological reconstruction, and a new system of advancement based partly on class and party criteria. Stalinist persecution added imprisonment and fabricated trials to administrative dismissal. De-Stalinisation and the intellectual revival of the 1960s allowed some excluded scholars to return, although often belatedly and incompletely. The Warsaw Pact invasion of August 1968 initiated another rupture, whose largest institutional consequences unfolded during 1969–1972 rather than immediately. Normalisation used employment law, party screening, reorganisation, and controlled appointments to eliminate the leading personalities of the reform era. Each rupture inherited some unresolved injuries from its predecessors. Consequently, several scholars experienced exclusion more than once, under regimes that described one another as mortal enemies but shared a willingness to subordinate professional life to political classification (*Kostlán, 2018*; *Devátá et al., 2010*).

Nazi occupation attacked Czech scholarly life both as an institutional system and as a bearer of national identity. The demonstrations of autumn 1939 provided the occupying authorities with an opportunity to suppress the universities, execute student leaders, and deport more than a thousand students to Sachsenhausen. On 17 November, Czech higher education was closed by force and was not permitted to resume until the end of the war (*Charles University, 2020*). Professors lost their classrooms, younger researchers lost their supervisors, and students lost the ordinary sequence through which scholarly generations are formed. Some academics found temporary work in industry, secondary education, museums, or technically tolerated research establishments. Others participated in resistance networks, taught clandestinely, or attempted to preserve libraries and collections until institutional life could be restored. The Czech Academy of Sciences and Arts and other learned bodies continued in restricted forms, but they operated within an environment of censorship, surveillance, and national subordination. The removal of universities also shifted the relative importance of non-university institutions, because these became some of the few remaining places where fragments of Czech research could survive. Survival, however, did not mean autonomy. Research agendas could be redirected towards German wartime needs, while access to materials and professional communication remained precarious. The occupation therefore removed not only individual scholars but also the institutional ecology that connected universities, academies, societies, journals, and professional associations.

Racial persecution produced an even more absolute form of scholarly disappearance. Jewish academics were expelled from posts, deprived of civil rights, dispossessed, forced into emigration, deported, and murdered. Their exclusion cannot be reduced to a chapter in university administration because it formed part of the genocidal reconstruction of European society. The biographical dictionary *Disappeared Science* identifies forty-six Jewish scholars from Bohemia and Moravia whose careers and lives were destroyed by Nazi persecution. Its subjects include historians, physicians, natural scientists, philologists, and other researchers who had worked within both Czech- and German-language environments. Their stories reveal the inadequacy of later narratives that represented interwar science as two neatly separated national traditions. Many belonged simultaneously to Prague, German-speaking Central Europe, Czechoslovak public life, Jewish intellectual networks, and international disciplinary communities. Once these people were removed, their institutes lost knowledge that could not be replaced merely by appointing new personnel. Personal libraries were dispersed, manuscripts disappeared, research schools lost mentors, and international correspondence was broken. The professional identities of those murdered were then frequently overshadowed by the enormity of their fate as Holocaust victims. Recovering their scientific work does not diminish the history of persecution but restores a dimension that persecution itself sought to erase. The category of “disappeared science” therefore describes both destroyed human lives and an intellectual landscape violently deprived of some of its most productive participants (*Šimůnek & Kostlán, 2014*).

The individual cases of Emil Starkenstein, František Záviška, and Viktor Felber demonstrate the different routes from exclusion to death. Starkenstein was a pioneering clinical pharmacologist and director of the Institute of Pharmacology at the German Medical Faculty in Prague. He published more than 240 studies and three textbooks, combining experimental work with an unusually early conception of clinical pharmacology. Nazi agitation forced him to abandon teaching and his directorship in 1938, after which he escaped with part of his family to the Netherlands. The German occupation of the Netherlands exposed him once again to

persecution, and he was eventually deported and murdered at Mauthausen in November 1942 (*Jezdinský, 2006*). Záviška, a theoretical physicist and leading organiser of Czech mathematical and physical life, was arrested by the Gestapo in January 1944. He passed through prisons and concentration camps before dying from exhaustion during a death march in April 1945 (*Historical Institute of the Czech Academy of Sciences, n.d.*). Felber, a professor of technical mechanics and former rector of the Czech Technical University, participated in anti-Nazi resistance. He and his son Julius were executed on 1 June 1942 (*Czech Technical University in Prague, 2023*). These men represented German-Jewish medical science, Czech theoretical physics, and Czech technical education respectively. Their removal shows that Nazi repression attacked the scholarly world through racial legislation, national suppression, and punishment of resistance. It also demonstrates why institutional history must follow people beyond the moment when their names vanish from an annual report.

Wartime exclusion created consequences that survived liberation. Six years without Czech universities produced missing cohorts of graduates, delayed qualifications, and careers begun under improvised conditions. Scholars returning in 1945 entered institutions burdened by destroyed equipment, depleted libraries, and the absence of colleagues who had been murdered or remained abroad. Senior academics were expected simultaneously to rebuild teaching, renew research, and train a generation whose education had been interrupted. The scarcity of experienced personnel could accelerate the promotion of some younger researchers, but it could also leave entire specialisms without recognised leadership. Wartime experience affected political expectations as well. Resistance participation conferred prestige, while accusations of collaboration could end a career or lead to criminal prosecution. Exile, forced labour, clandestine teaching, and industrial research also changed the professional formation of individual scientists. Some acquired international contacts or applied experience that later benefited Czechoslovak science. Others returned physically weakened, professionally isolated, or unable to recover lost years. Institutional restoration after 1945 was therefore not a simple return to the arrangements of 1938. It was a reconstruction conducted by a scholarly community whose composition, memory, and moral hierarchies had been permanently altered (*Míšková et al., 2018*).

The end of Nazi rule was followed by a different and morally complex process of exclusion. The post-war Czechoslovak state dismantled the institutional world of German science that had existed in Bohemia and Moravia for generations. The German University in Prague and German learned organisations did not re-emerge, while most German-speaking inhabitants were expelled or forced to leave. Some scholars had supported Nazism, benefited from occupation, or participated in institutions subordinated to the Reich. Others had been anti-fascists, political opponents, or professionals whose careers could not be reduced to collective national guilt. In practice, individual distinctions were frequently overwhelmed by the programme of national homogenisation and the broader expulsion of the German population. By the end of 1946, this transformation had removed the social foundations on which German-language scholarship in the Czech lands had rested (*Glassheim, 2000*). Its intellectual consequences included the loss of disciplinary traditions, regional expertise, libraries, professional associations, and connections with German-speaking universities. This process must not be equated with the racial persecution and genocide carried out by the Nazi regime. Nevertheless, it belongs to the history of institutional rupture because citizenship and national classification again determined who could remain within Czechoslovak scholarly life. The nationalisation of the academic landscape after 1945 thus combined legitimate institutional

restoration with a profound contraction of the country's earlier linguistic and cultural plurality (*Míšková et al., 2018*).

The Communist seizure of power in February 1948 introduced another language of exclusion. Universities, academies, ministries, and research organisations were subjected to action committees that evaluated personnel according to political reliability. Formal qualifications remained important, but they no longer provided protection against dismissal. Party affiliation, class origin, pre-war political activity, religious commitment, contacts abroad, and attitudes towards the new regime became components of professional judgement. Some established scholars were portrayed as representatives of a discredited bourgeois order. Others were retained because their expertise was indispensable, although their teaching, travel, or institutional authority could still be restricted. Younger people from working-class backgrounds received new opportunities, which gave the transformation a genuine dimension of social mobility. Yet expanded access was inseparable from the political determination of acceptable knowledge. Institutions devoted to training a new political and administrative elite were established, while Marxism-Leninism became the compulsory framework for interpreting society and history. Party historiography sought to define authoritative narratives of national and labour history. The removal of individuals therefore accompanied a more ambitious attempt to reconstruct scholarship as an instrument of socialist transformation (*Devátá et al., 2010*).

Karel Engliš illustrates how rapidly academic distinction could be converted into political liability. He was an economist, former finance minister, governor of the Czechoslovak National Bank, and member of the Czech Academy of Sciences and Arts. His teleological approach to economics differed from both liberal market orthodoxy and the Marxist framework imposed after 1948. In 1947–1948 he served as the last freely elected rector of Charles University before communist control transformed university government. Following the February coup, he was forced to leave the university. Persecution continued after his dismissal, demonstrating that removal from office did not necessarily satisfy the new authorities. In 1952 he was expelled from Prague and compelled to spend his final years in Hrabyně. The punishment deprived students of direct contact with one of the most influential Czech economic thinkers of the interwar period. It also helped narrow the legitimate history of Czech economics by making non-Marxist traditions difficult to teach or develop. Engliš did not become insignificant because his scholarship had suddenly lost intellectual value. He became institutionally invisible because the regime associated theoretical pluralism, republican public service, and personal independence with political unreliability. His fate exemplifies the replacement of academic authority by a political hierarchy that claimed the power to decide which intellectual legacies could remain publicly usable (*Czech Academy of Sciences, n.d.*).

The humanities supplied many equally revealing cases. Zdeněk Kalista, a historian of Czech Baroque culture and a pupil of Josef Pekař, had already seen his projected professorship interrupted by the Nazi closure of the universities. He returned to Charles University after the war but was among the first scholars forced to leave after February 1948. Arrested in 1951, he received a fifteen-year sentence in a fabricated political trial and remained imprisoned until 1960. His partial rehabilitation in 1966 and brief return to the university in 1968 could not restore the decades removed from his teaching career (*Dictionary of Czech Philosophers, n.d.*). Jan Patočka experienced a different sequence of exclusions that was scarcely less destructive institutionally. The Nazi closure of Czech universities stopped his teaching between 1939 and 1945. After the communist takeover, he was again denied a normal university career and

worked for periods within research environments connected with Comenius studies. The liberalisation of 1968 allowed him to teach again, but normalisation removed him from the university once more after 1972. Patočka's repeated marginalisation shows how a scholar could pass between university and Academy-related work without ever gaining stable intellectual freedom. In both lives, political rupture did not merely interrupt employment; it repeatedly broke the relationship between an original thinker and the students who might have formed a continuing school.

Natural science was sometimes better protected by its practical usefulness, but it was never immune from ideological punishment. Jaroslav Kříženecký's career demonstrates the direct impact of Soviet ideological doctrine on biological research. A specialist in animal breeding and heredity, he defended Mendelian genetics when official science was being reorganised around Trofim Lysenko's claims. He was dismissed from the agricultural university in 1949 for refusing to accept Lysenkoism. His exclusion weakened the institutional position of genetics at precisely the moment when molecular approaches were beginning to transform biology elsewhere. Kříženecký continued to collect materials connected with Mendel and the history of heredity, thereby preserving an intellectual tradition officially treated as suspect. In 1958 he was imprisoned after a fabricated political prosecution. Although he later participated in the development of the Mendelianum in Brno, the damage to his career and field could not be measured simply by the years he spent outside the university. Students lost access to a knowledgeable opponent of biological dogmatism. Agricultural and genetic research lost an advocate of internationally recognised methods. The case reveals how an enforced doctrine could remove a scientist, distort a discipline, and then present the resulting intellectual impoverishment as scientific progress (*Orel, 1992*).

The creation of the Czechoslovak Academy of Sciences in 1952 institutionalised both expansion and exclusion. The new Academy absorbed the Czech Academy of Sciences and Arts, the Royal Czech Society of Sciences, central research institutes, and other specialised establishments. It provided full-time research positions, laboratories, and coordinated national programmes on a scale that its predecessors had never possessed. At the same time, the transition determined which people, disciplines, and traditions would enter the new structure. Membership in the older learned bodies did not automatically guarantee authority within the socialist Academy. The new institution was expected to embody the leading role of Marxism-Leninism and to support state economic and cultural planning. Some established scholars found valuable positions within its institutes after being pushed away from universities. Others were marginalised because their methods, political biographies, or scholarly reputations did not fit the new hierarchy. The institutional rupture was therefore selective rather than total. Expertise could be transferred while its earlier civic and philosophical context was suppressed. The Academy preserved important capacities, yet it also became an instrument for redistributing professional legitimacy. Its birth consequently cannot be understood solely as either the destruction of an old academy or the triumphant foundation of a modern research organisation (*Czech Academy of Sciences, n.d.*; *Devátá et al., 2010*).

The intellectual thaw of the 1960s revealed how much excluded knowledge had survived outside official visibility. Rehabilitations, renewed publication, and cautious appointments brought some scholars back into universities and research institutes. Sociology re-emerged after having been condemned as a bourgeois pseudoscience. Genetics recovered from the most restrictive phase of Lysenkoist domination. Historians began examining recent political

repression, while philosophers reopened conversations with phenomenology, structuralism, and Western Marxism. International conferences and foreign travel allowed younger researchers to encounter methods from which they had long been separated. The return of individuals, however, did not erase the institutional consequences of their previous exclusion. Lost students could not be recovered, unfinished books could not always be reconstructed, and scholarly schools remained generationally uneven. Those readmitted to professional life also knew that political tolerance had been granted from above and might be withdrawn. Reform therefore produced a remarkable intellectual revival without creating secure constitutional guarantees for scholarly autonomy. The vulnerability became evident when several returned or newly prominent personalities were again removed after 1968. The trajectories of Kalista and Patočka show with particular clarity that restoration without institutional protection could remain only a temporary interval between successive exclusions.

The invasion of August 1968 did not produce an immediate and comprehensive academic purge. During the academic year that followed, institutional arrangements remained comparatively stable, and several prominent scholars initially obtained leave to work abroad. The decisive change came after Alexander Dubček's replacement by Gustáv Husák in April 1969. By September, leading academic reformers were being removed from the Communist Party's Central Committee, opening the path towards dismissal or enforced resignation. The temporal delay was important because it allowed normalisation to present itself as an administrative consolidation rather than an instantaneous act of revenge. Personnel files were reviewed, institutional resolutions from 1968 were rescinded, and public recantation became a test of future employability. Party screening classified members according to their positions during the Prague Spring and the invasion. Expulsion from the Party frequently led to dismissal, while the nominally milder sanction of being struck from the register often produced demotion or eventual exclusion. Non-party scholars were then subjected to related political assessments. The process combined centrally formulated priorities with local denunciations, rivalries, and opportunities for professional advancement. It could therefore reshape an institute without requiring a public trial or an explicit declaration that scholarly freedom was being abolished (*Payne, 1972*).

Legal and organisational changes converted political retaliation into a durable system of governance. Legal Measure Number 99 of August 1969 authorised immediate dismissal of people accused of disrupting the socialist order. In education and research, ministers and the Academy's senior leadership received powers capable of overriding the decisions of individual institutions. The 1970 legislation governing the Academy further reduced its remaining autonomy as a learned corporation. Government authorities gained decisive influence over membership, the Presidium, and the presidency. Research appointments were placed on contracts lasting no more than four years, making non-renewal an efficient instrument of political selection. An institute did not need to accuse every unwanted employee openly if it could simply decline to offer another contract. Reorganisation supplied a second mechanism. An entire institute could be dissolved, merged, or re-established under a new name, after which only approved personnel would be reappointed. Collegia that coordinated major fields were also reconstructed, with contemporary estimates suggesting that approximately four-fifths of their members were replaced. In February 1970, the memberships of the collegia for history, philosophy, and sociology were withdrawn in their entirety. These measures made political reliability a recurring condition of employment rather than a single examination passed at the beginning of normalisation (*Payne, 1972*; *Míšková et al., 1998*).

The removal of František Šorm and Ivan Málek exposed the politics of academic authority at the highest level. Šorm was an internationally respected organic chemist, founder of the Institute of Organic Chemistry and Biochemistry, and president of the Czechoslovak Academy from 1962. He was also a lifelong communist who had helped construct the socialist research system. His support for reform and opposition to the invasion nevertheless made his earlier political loyalty irrelevant. After being removed from the Party leadership, he was compelled to resign the Academy presidency on 10 October 1969. He lost his institutional authority, faced restrictions on foreign travel, and eventually became the kind of official non-person whose scientific stature could not be openly celebrated (*Garfield, 1992*). Málek, a major microbiologist and institution-builder, was likewise excluded from the Academy's new leadership. His work had helped establish Czechoslovak microbiology and an internationally influential school of continuous cultivation. Yet in 1970 he was prohibited from conducting research and from maintaining normal contacts with Western scientists (*Demain & Spizek, 2010*). These cases demonstrate that normalisation was not simply a conservative revolt against politically marginal intellectuals. It removed leading architects of the Academy when their understanding of socialist science included reform, professional autonomy, or resistance to Soviet domination.

Otto Wichterle's career reveals how exclusion could coexist with the state's dependence on an individual's discoveries. His political difficulties began well before normalisation. In 1958 he was dismissed from the university during a purge, despite his growing international reputation in polymer chemistry. The Academy then provided him with an institutional refuge by allowing him to establish the Institute of Macromolecular Chemistry. There he developed an internationally recognised research school, although some decisive experiments on soft contact lenses were performed at home because official structures obstructed applied work. During the Prague Spring, Wichterle supported reform and signed the manifesto known as the *Two Thousand Words*. He refused to withdraw his signature after the invasion. In 1971 he was removed as director of the institute he had founded and was prevented from attending international conferences. The regime did not entirely erase his presence because his expertise and reputation remained too valuable. Instead, it separated scientific work from institutional leadership and restricted his ability to shape future research. His career thus moved repeatedly between exclusion, partial protection, and renewed punishment. Wichterle's experience shows that an authoritarian state could exploit a scientist's achievements while denying him the professional autonomy normally associated with intellectual distinction (*Savelli, 2014*).

The biological and physical sciences provide further examples of research schools damaged through the removal of their organisers. Milan Hašek had created an internationally respected Czechoslovak school of immunogenetics. His investigations of immunological tolerance approached questions that were central to Nobel Prize-winning developments elsewhere. After the suppression of the Prague Spring, he was removed from the directorship of his institute. International contacts were drastically restricted, while several promising younger researchers emigrated and later succeeded abroad (*Institute of Molecular Genetics..., n.d.*). The result was not the complete end of molecular and immunological research, but the fragmentation of a productive community. Nuclear physicist František Janouch experienced a still more direct collision between professional independence and political discipline. He was expelled from the Party and dismissed from the Nuclear Physics Institute after normalisation began. His attempt to challenge the dismissal legally failed. Among the accusations against

him was his support for ending censorship in scientific publication. That charge revealed the regime's understanding that control over communication was inseparable from control over research itself. In both cases, the removal of an individual disrupted networks extending well beyond a single laboratory (*Payne, 1972*).

Sociology was particularly vulnerable because its empirical description of society could contradict official representations of socialism. Pavel Machonin led an ambitious investigation of Czechoslovak social stratification during the reform era. His team sought to describe inequality and social differentiation through empirical data rather than ideological formulae. The resulting volume became a symbol of the sociological renewal associated with the Prague Spring. After the invasion, the book was removed from libraries and the institutional base supporting the project was destroyed. Machonin was expelled from the Communist Party, classified as an enemy of socialism, and excluded from academic employment. The Institute of Sociology was dissolved, while related research structures were reorganised. Karel Kaláb and Ladislav Tondl lost directorial positions when the Institute of Sociology and the Department for the Theory and Methodology of Science were closed. These measures removed not only prominent individuals but also the organisational possibility of continuing their programmes. Data, methods, and research questions became politically suspect through association with the reform period. Young sociologists lost mentors and stable workplaces just as their discipline was recovering from its earlier prohibition. The institutional destruction of sociology therefore represented an attempt to prevent Czechoslovak society from becoming an independent object of systematic inquiry (*Institute of Sociology..., 2008*; *Payne, 1972*).

Historical research was targeted because control of the recent past was essential to the legitimacy of normalisation. The Institute of History had participated in producing *Seven Days in Prague*, commonly known as the *Black Book*, which documented the Warsaw Pact invasion. Its evidentiary character challenged the official reinterpretation of August 1968 as fraternal assistance against counter-revolution. In January 1970 the institute was dissolved and replaced by a politically reconstructed organisation. Its director, Josef Macek, lost his position, while historians connected with critical research were dismissed, demoted, or pushed abroad. Vilém Prečan, Milan Otáhal, Jan Křen, Karel Kaplan, and other researchers followed different paths after losing institutional protection. Some worked in manual or technically subordinate occupations. Some participated in private seminars, oral-history initiatives, samizdat publication, or clandestine documentation. Others eventually left Czechoslovakia, carrying archives and research projects into foreign institutions. Their later activities belong more fully to "Czech scientific exile as an international extension of national science." At the moment of removal, however, the decisive fact was the state's effort to break the connection between trained historians and the documentary record of contemporary events. By controlling employment, archives, publication, and institutional succession, normalisation attempted to determine not merely what historians could say but who could legitimately be recognised as a historian (*Míšková et al., 1998*; *Payne, 1972*).

Bedřich Loewenstein's life connected several forms of 20th-century exclusion. Because of his Czech-German-Jewish background, Nazi racial policy had already interrupted his education. He later became a historian at the Czechoslovak Academy's Institute of History and contributed to the intellectual renewal of the 1960s. On 22 April 1970, an assessment commission refused to extend his employment contract. The official language of restructuring concealed what was essentially a political dismissal. A collection of his studies that had already been printed was largely withdrawn and destroyed. He was also prevented from

publishing normally, separating his scholarship from its domestic readership. Milan Otáhal, another historian of the Institute, was dismissed during the early normalisation period and expelled from the Party. He subsequently became one of the first signatories of Charter 77 and continued historical reflection outside official structures. Vilém Prečan likewise lost his Academy position in 1970 and was exposed to further political pressure. These biographies show how non-renewal, suppression of printed work, and enforced occupational displacement formed parts of one coordinated process. They also reveal why the destruction of an institute could remain visible decades later in the uneven development of Czech contemporary history (*Pešek, 2018*; *Tůma, 2018*; *Blanton, 2023*).

Philosophy presented the regime with a related but distinct problem. Its danger lay less in empirical findings than in its capacity to question official concepts of history, responsibility, truth, and human existence. Jan Patočka's removal from university teaching after 1972 pushed one of Europe's leading phenomenologists towards private seminars and informal intellectual communities. His work circulated through manuscripts and personal instruction rather than normal academic publication. After his death in 1977, students hid his literary estate from the State Security service and secretly began preparing it for publication (*Centre for Theoretical Study, n.d.*). Karel Kosík, whose *Dialectics of the Concrete* had achieved international recognition, was expelled from public academic life in 1970. Police later searched his home and confiscated a substantial philosophical manuscript. Robert Kalivoda and other reform-oriented philosophers also lost positions or the ability to publish freely. Normalisation reorganised the Institute of Philosophy and narrowed the range of legitimate philosophical work. Yet exclusion did not eliminate intellectual activity. It displaced philosophy into apartments, private correspondence, foreign editions, and circles whose existence depended on trust rather than official appointment. The philosophical community that survived outside institutions became evidence that dismissal could suppress public authority without extinguishing the need for critical thought (*Payne, 1972*).

The impact of political removal varied significantly between disciplines. History, philosophy, sociology, law, economics, literary studies, and political analysis were exposed directly because their subject matter touched the regime's account of society. Entire institutes could be declared ideologically compromised and reconstructed under politically reliable leadership. Natural and technical sciences possessed stronger protection when their work contributed visibly to medicine, industry, defence, or international prestige. Such protection, however, was conditional rather than principled. The removals of Šorm, Málek, Wichterle, Hašek, and Janouch demonstrate that political conduct could outweigh even exceptional scientific achievement. Natural scientists could sometimes remain as laboratory researchers after losing leadership, whereas humanists were more likely to lose access to their subject altogether. A chemist might continue experiments under supervision, but a dismissed historian denied archives and publication could scarcely maintain an equivalent professional existence. International reputation occasionally restrained persecution because authorities wished to retain prestige or useful expertise. The same reputation could also increase suspicion by giving a scholar foreign contacts and an audience beyond state control. Disciplinary asymmetry therefore shaped the form of exclusion, but no field stood entirely outside the political hierarchy of normalised science (*Míšková et al., 1998*; *Payne, 1972*).

The deepest institutional damage appeared in the interruption of scholarly succession. A productive research school depends on more than the presence of a distinguished founder. It requires seminars, doctoral supervision, technical personnel, shared methods, accumulated

data, and confidence that younger members can build careers within the field. Removing a director often caused assistants to disperse, projects to be reassigned, and foreign collaborations to collapse. Restrictions on the admission of research aspirants narrowed the next generation before it could establish itself. Politically reliable replacements were not necessarily incompetent, but their appointments altered the incentives governing institutional life. Younger researchers learned that methodological originality or civic engagement might threaten employment. Senior scholars learned that protecting a colleague could endanger their laboratories and families. The resulting caution encouraged safe topics, delayed publication, and withdrawal from public debate. It also produced gaps that became visible only much later, when post-1989 institutions discovered shortages of middle-aged specialists in fields suppressed during normalisation. Scientific loss was therefore distributed across time. The dismissal of one person could influence the composition of a discipline twenty years later, long after the original administrative decision had disappeared into an archive.

A personality-centred history must nevertheless resist dividing the scholarly world into immaculate victims and uncomplicated collaborators. Some people removed after 1968 had supported the communist transformation after 1948. Šorm and Málek were prominent participants in the construction of the socialist Academy before becoming victims of normalisation. Kosík had emerged from Marxist intellectual culture, even though his later philosophy challenged dogmatic forms of Marxism. Other scholars survived by accepting compromises that protected colleagues, laboratories, or irreplaceable collections. A director who publicly adopted official language might privately retain an excluded researcher in a subordinate position. Conversely, institutional reorganisation offered ambitious academics opportunities to replace dismissed superiors. Personal rivalries could be translated into political accusations, while genuine ideological conviction could coexist with serious scholarly competence. These ambiguities do not relativise repression. They show why authoritarian control operated effectively through institutions rather than only through external police coercion. The regime made careers dependent on repeated acts of judgement, accommodation, and silence. Understanding those choices is essential for explaining how the Academy preserved significant scientific capacity while participating in the exclusion of some of its most distinguished personalities.

The Czechoslovak Academy consequently occupied a paradoxical place in the history of repression. During the 1950s, its expanding institutes sometimes offered refuge to specialists expelled from universities or regarded as socially suspect. The state valued concentrated research capacity and occasionally protected exceptional expertise from more zealous local authorities. At the same time, the Academy's centralised structure made it unusually vulnerable to a change in political command. Once its presidency, Presidium, collegia, and institute directorships had been reconstructed, decisions could affect thousands of employees across the country. At the end of 1968, the Academy contained 138 research centres and employed more than thirteen thousand people. It also supervised learned societies whose membership extended far beyond its salaried research staff. Purging such an institution meant altering the centre of gravity of Czechoslovak scholarship. The replacement of leaders did not destroy every laboratory or extinguish all creative work. It did, however, redefine the boundaries within which excellence could be pursued and publicly recognised. The Academy could therefore function simultaneously as a shelter, a resource, a disciplinary authority, and an instrument of exclusion. This institutional ambivalence explains why the later restoration of scientific memory required more than celebrating individual victims; it

demanded a critical examination of the structures that had made their removal possible (*Payne, 1972*; *Míšková, Barvíková, & Šmidák, 1998*).

Thus, scientists removed after political ruptures should be understood as actors within a damaged institutional history rather than as an isolated gallery of martyrs. Their biographies reveal how regimes converted nationality, race, class, political belief, and civic conduct into criteria of scholarly belonging. Nazi occupation destroyed lives, closed universities, and attempted to eliminate entire communities from the intellectual landscape. Post-war national reconstruction restored Czech institutions while ending most of the German-language scholarly world that had long formed part of the Czech lands. Communist rule after 1948 combined the expansion of research capacity with ideological selection and the exclusion of alternative intellectual traditions. Normalisation refined this control through party screening, employment contracts, reorganisations, publication bans, and restrictions on international communication. The cases of Starkenstein, Záviška, Felber, Engliš, Kalista, Kříženecký, Šorm, Málek, Wichterle, Hašek, Machonin, Patočka, and their colleagues demonstrate that scientific distinction offered no permanent immunity. Removal deprived institutions of leadership, weakened research schools, interrupted generational succession, and narrowed the memory of national science. Yet excluded scholars continued to work through private study, clandestine seminars, preserved archives, unofficial collaboration, and, in many cases, emigration. Their intellectual survival exposed the difference between institutional authority and scholarly legitimacy. The exile networks that grew from these removals and the post-1989 recovery of suppressed reputations form the next stages of this history. Remembering exclusion therefore means restoring both individual achievement and the institutional lessons necessary to defend academic autonomy.

2. Czech Scientific Exile as an International Extension of National Science

The expression ‘scientific exile’ conventionally evokes departure, dispossession, and loss, yet it describes only one side of the historical process. Czech and Czechoslovak scholars who settled abroad did not simply disappear from their national intellectual environment. They carried with them disciplinary knowledge, methodological habits, professional contacts, and memories of institutional life acquired in Prague, Brno, Bratislava, and other academic centres. In the 20th century, successive refugee waves transformed these portable resources into an international extension of Czechoslovak science. This extension possessed neither a single headquarters nor a stable administrative hierarchy. It consisted instead of laboratories, university departments, scholarly societies, journals, archives, correspondence networks, and informal circles distributed across Europe and North America. Its participants entered foreign institutions and generally worked according to their rules, research priorities, and systems of evaluation. Nevertheless, their achievements often retained recognisable connections with the research schools from which they had emerged. Exile therefore created a peculiar form of institutional continuity within geographical rupture. The state could dismiss a scholar, prevent a return, confiscate property, or remove a name from domestic publication, but it could not entirely erase expertise already incorporated into international science. Historians have consequently treated scholarly emigration both as a major depletion of Czechoslovak institutions and as a transfer of intellectual capital into transnational circulation (*Kostlán & Štrbáňová, 2011*; *Kostlán, 2018*). The history of that circulation reveals how national science could survive outside the political territory that claimed authority over it.

The term ‘Czech scientific exile’ requires careful interpretation because neither ‘Czech’ nor ‘scientific’ possessed an entirely stable meaning during the period under consideration. In Czech usage, the category of *věda* encompasses the natural and technical sciences, medicine, the social sciences, and the humanities. The relevant community therefore included physicists and chemists, but also historians, economists, linguists, philosophers, legal scholars, sociologists, and specialists in literature and culture. The national designation is similarly complex because many émigrés had been educated and employed within Czechoslovak rather than exclusively Czech institutions. Some were Slovaks, German-speaking citizens, Jews, or scholars whose professional identities crossed inherited linguistic and territorial boundaries. Their inclusion is not an artificial enlargement of Czech history, since the research system from which they departed had itself been multilingual and Czechoslovak. A territorial understanding of scientific culture is therefore more useful than a narrowly ethnic one. It allows the careers of German-speaking refugees from Prague, Slovak researchers trained within federal institutions, and Czech scholars attached to international schools to appear within the same analytical field. Exile also altered personal identifications, because citizenship, language, disciplinary affiliation, and political loyalty did not always travel together. A scholar could become legally American, Canadian, British, Swedish, or Swiss while continuing to write in Czech, assist colleagues at home, or represent a Czechoslovak intellectual tradition. Another might cease participating in émigré organisations while still transmitting methods first acquired in a Czechoslovak institute. National science in exile was therefore not a sealed diaspora but a changing relationship among origins, careers, institutions, and cultural memory.

Three great political ruptures determined the principal contours of this dispersed community. Nazi expansion and occupation produced the refugee wave of 1938–1939 and the war years, when racial persecution, university closures, arrests, and the destruction of democratic institutions drove hundreds of scholars abroad. The communist seizure of power in February 1948 generated a second movement that included political opponents, socially suspect academics, independent intellectuals, and people who anticipated the coming restrictions. The invasion of August 1968 and the subsequent consolidation of normalisation created a third and numerically much larger scholarly exodus. These waves differed in their political composition, available destinations, and relationship with institutions remaining at home. Refugees from Nazism could present themselves as representatives of an occupied democratic republic and frequently worked alongside the Czechoslovak government-in-exile. Those leaving after 1948 confronted a regime that claimed to embody the legitimate state and portrayed émigrés as traitors, class enemies, or agents of Western interests. The post-1968 exiles included many former reform communists and researchers who had previously pursued successful careers within ČSAV rather than opposing socialism from the outset. Their departure demonstrated that political loyalty could collapse when a regime subordinated professional security to ideological obedience. It also meant that each wave possessed its own memories of betrayal and its own vocabulary of national responsibility. Yet personal trajectories sometimes crossed more than one rupture, making repeated exile a distinctive feature of Czechoslovak intellectual history. The resulting international community was layered rather than homogeneous, and its internal differences remained visible long after departure (*Kostlán, 2018*).

Scientific knowledge could travel with refugees, but its movement depended upon material and institutional support. A theorem or linguistic concept was more portable than a laboratory,

observatory, archive, experimental population, or long-term research team. Scholars who had worked with expensive instruments therefore depended heavily upon the willingness of host institutions to provide space, equipment, and technical assistance. Humanists faced different barriers, including the loss of specialised libraries, restricted access to Czech archives, and the limited international market for scholarship written in a small language. Medical qualifications often required official recognition before a refugee could practise, while legal and administrative expertise could be rendered nearly useless by the transition to another national system. Age was equally important because a young researcher could more easily retrain than a professor whose reputation had been built within a specific linguistic or institutional world. Even distinguished academics sometimes accepted temporary clerical, technical, or manual work before finding professional employment. The success stories later celebrated in biographical dictionaries can therefore obscure a larger population whose careers were interrupted or permanently downgraded. Scientific exile was never an automatic passage from political oppression to academic freedom. It was a process of translation in which credentials, research agendas, personal identities, and family lives had to be made intelligible to unfamiliar institutions. Professional contacts accumulated before departure often determined whether that translation succeeded. International conferences, fellowships, editorial relationships, and earlier visits consequently became emergency infrastructures when political borders suddenly closed.

The first great wave reversed Czechoslovakia's earlier role as a place of refuge for intellectuals displaced by fascism elsewhere in Central Europe. The Munich crisis, the dismemberment of the republic, and the occupation of the Czech lands turned Prague from a receiving centre into a point of departure. Jewish scholars and political opponents faced the most immediate danger, but the destruction of universities and independent associations affected the academic community much more broadly. Kostlán estimates that approximately 400 to 500 scholars and researchers entered wartime exile, although the fragmentary nature of surviving evidence makes precise calculation difficult. Britain became the principal European destination, while the United States, Canada, Switzerland, Palestine, Turkey, and Latin American countries also received Czechoslovak academics. The émigrés included professors from both the Czech and German universities in Prague, physicians, engineers, natural scientists, and humanities scholars. Their departures weakened institutions already exposed to occupation policies, dismissals, imprisonment, and physical extermination. At the same time, foreign placement rescued intellectual lineages that might otherwise have been destroyed completely. Refugee scholars continued research, trained students, advised political representatives, and provided specialised knowledge for the Allied war effort. Their activities expanded the international visibility of Czechoslovak scholarship precisely when its domestic institutions had been silenced. The wartime diaspora thus represented both evidence of national catastrophe and a reserve of professional capacity for an anticipated democratic restoration. Its existence also established organisational precedents that later émigré generations would adapt to the conditions of the Cold War (*Kostlán, 2018*).

Britain offered the wartime exiles important opportunities, but it did not remove the hardships associated with displacement. Academic rescue organisations helped endangered scholars secure grants and institutional affiliations, although demand greatly exceeded the resources available. Roman Jakobson was among the Czechoslovak scholars assisted through British academic rescue structures after escaping first from Prague and then from Scandinavia. His journey illustrated the fragility of intellectual mobility in a continent where each new

occupation could transform a temporary refuge into another trap. Medical professionals constituted a particularly significant group because their knowledge could serve both refugee communities and the Allied armed forces. Hundreds of doctors and other healthcare workers from Czechoslovakia reached Britain, but licensing regulations and military requirements shaped how their expertise could be used. Some joined the Royal Army Medical Corps or Czechoslovak military formations, while others entered hospitals, laboratories, and public-health work. The graduation ceremony organised at Oxford in February 1943 for Czechoslovak medical students carried considerable symbolic significance. It asserted that a university tradition violently interrupted at home could receive legitimate continuation abroad. President Edvard Beneš's participation connected professional qualification with the political continuity claimed by the government-in-exile. Yet surveys also showed that many displaced scholars remained in ancillary or manual occupations, reminding observers that rescue did not guarantee an equivalent career. Wartime Britain therefore functioned simultaneously as a sanctuary, a testing ground, and an improvised extension of Czechoslovak academic life (*Kostlán, 2018*).

The Czechoslovak Research Institute in London most clearly embodied the idea of an academic institution operating beyond national territory. It brought together specialists whose analyses could support both immediate exile politics and preparations for post-war reconstruction. Researchers examined the economic consequences of Munich, nationality questions, nutrition, public health, and the organisation of the future state. These were not merely technical exercises, because every research programme was entangled with debates about democratic legitimacy and the lessons of the republic's collapse. The Institute published bulletins and political analyses that circulated knowledge among officials, émigré professionals, and Allied audiences. It also cooperated with the Czechoslovak Medical Association in Great Britain and other professional networks. One wartime publication challenged Nazi racial doctrines with contributions from scientists including Hans Kalmus, Václav Myslivec, and Bruno Schober. Such work defended scientific standards while contesting the ideological system responsible for the scholars' displacement. Medical émigrés, including Egon Kodíček and Julius Löwy, additionally participated in international initiatives concerned with post-war health policy. The Institute therefore performed some functions of a research council, policy centre, and learned society without possessing the permanence of any of them. It preserved habits of interdisciplinary cooperation that had been suppressed in the occupied homeland. More broadly, it demonstrated that the institutional substance of national science could temporarily be reconstructed through people, publications, and shared projects rather than buildings alone (*Kostlán, 2018*).

Individual wartime careers reveal several ways in which displaced knowledge entered global scholarship. The physicist Reinhold Fürth and the ancient historian Victor Ehrenberg continued their work in Britain, where their reputations became embedded in British university life. Egon Hynek Kodíček combined medical expertise with public engagement and contributed to debates extending beyond the immediate needs of the émigré community. In the United States, figures such as Jan Blahoslav Kozák, Otakar Odložilík, Antonín Obrdlík, and Zdeněk Kopal joined universities and professional networks with very different disciplinary cultures. Kopal's later international standing in astronomy and celestial mechanics exemplified how a Czech educational foundation could generate a career of genuinely global reach. The philosopher of science Philipp Frank, who had worked at the German University in Prague, continued the intellectual traditions of logical empiricism at Harvard. The mathematician Karl Löwner

transferred an original Prague formation into American mathematics and eventually taught at Stanford. The biochemist Felix Haurowitz found refuge first in Turkey and later in the United States, thereby participating in more than one academic migration system. The theoretical physicist Guido Beck continued his career in Argentina, showing that the geography of refuge extended beyond the familiar British and American centres. Emil Schoenbaum, an expert in actuarial science and social insurance, carried Czechoslovak administrative knowledge to Latin America. These scholars did not form a single national school abroad, yet their dispersed achievements preserved parts of the plural intellectual culture destroyed in occupied Czechoslovakia. Their careers remind us that the international extension of national science was produced through incorporation into host institutions rather than institutional isolation from them (*Kostlán, 2018*).

The liberation of 1945 confronted wartime exiles with the question of whether professional and national reconstruction required physical return. Many Czech-speaking scholars did return because they regarded the restored republic as the proper setting for their knowledge and civic commitments. Their experience abroad strengthened the international contacts available to universities and research institutions recovering from occupation. Others remained because they had established secure careers, because their families had adapted to a new country, or because the restored state did not correspond to the society they remembered. The expulsion of most German-speaking inhabitants further narrowed the possibility that the pre-war multilingual academic world could be reconstructed. Some returnees encountered a second political rupture only three years later. Otakar Odložilík, Josef Brumlík, Francis Dvorník, Zdeněk Kopal, and other scholars associated with wartime exile either remained abroad or again chose emigration after the communist takeover. Antonín Svoboda and Arnošt Kleinzeller later experienced a further departure, making exile a repeated rather than singular biographical event. Such trajectories complicate any sharp division between external and domestic scientific communities. A scholar might return with international expertise, rebuild a department, and then be forced to reconstruct a career abroad once again. Repeated displacement nevertheless carried accumulated contacts that could make a later transition somewhat less uncertain. The succession of departure, return, and renewed exile became one of the mechanisms through which Czechoslovak research traditions were repeatedly redistributed across international institutions (*Kostlán, 2018*).

The communist seizure of power in 1948 created a scientific diaspora whose relationship with the homeland differed fundamentally from that of the wartime community. Between February 1948 and the Prague Spring, several hundred prominent academic and cultural figures left Czechoslovakia, while many more departed from other professional groups. The new regime treated emigration as a political offence and attempted to sever the institutional legitimacy of those who had gone. Academic titles could be questioned, publications suppressed, and personal names removed from domestic accounts of disciplinary development. The Iron Curtain also restricted correspondence, travel, subscriptions, and the ordinary exchange of books. Yet the West European and North American expansion of universities during the post-war decades created opportunities unavailable to many earlier refugees. Scholars with strong qualifications could enter growing departments, research centres, international organisations, and government advisory bodies. Their success depended upon disciplinary portability, language competence, personal networks, and the political attitudes of receiving institutions. The post-1948 exiles gradually established durable organisations rather than the temporary bodies associated with a government expecting rapid return. They also had to decide whether

their primary task was to continue research, oppose the communist regime, preserve national culture, or combine these activities. These objectives sometimes reinforced one another, but they could also divide the exile community. Scientific exile therefore became a permanent social field whose members negotiated both professional integration and political responsibility (*Kostlán & Štrbáňová, 2011*).

Several prominent post-1948 careers demonstrate how Czechoslovak intellectual traditions acquired new institutional homes. The mathematician Václav Hlavatý became associated with Indiana University and retained a central role in organising Czechoslovak scholarly life abroad. Historian Otakar Odložilík continued research and teaching in the United States, helping make Czech history accessible to an English-speaking academic public. Francis Dvorník developed an internationally influential career in Byzantine and Slavic studies, demonstrating that exile could reposition a nationally grounded subject within broader comparative fields. Sociologist Otakar Machotka brought experience from interwar Czechoslovak social science into the American academic environment. The diplomat and political scientist Josef Korbel contributed to the study of international relations at the University of Denver. In Canada, botanist and resistance figure Vladimír Krajina linked Czechoslovak scientific formation with major work on the ecological classification of British Columbia. Jan Bělehrádek and Karel Maiwald represented different combinations of scientific, public, and political activity in British exile. These biographies crossed disciplinary boundaries and cannot be reduced to a single ideological programme. Their host universities valued them chiefly for research, teaching, and specialised knowledge rather than as symbolic representatives of a captive nation. Nevertheless, students and colleagues frequently encountered Czechoslovak intellectual experience through their courses, publications, and personal authority. The international extension of national science consequently operated even where national identification was not the declared subject of research (*Kostlán, 2018*).

The Czechoslovak Society of Arts and Sciences, usually known by the abbreviation SVU, provided the most ambitious institutional framework for this dispersed intellectual community. Established in Washington in 1958, it brought together scholars, writers, artists, professionals, and public intellectuals from Czech and Slovak backgrounds. Its first president, Václav Hlavatý, gave the organisation considerable scholarly authority. Jaroslav Němec played a decisive organisational role in transforming the original proposal into a functioning association. SVU did not reproduce the disciplinary divisions or hierarchical membership of ČSAV. Instead, it operated as a voluntary transnational learned society whose legitimacy rested upon participation, publication, and intellectual achievement. Its world congresses created occasions on which émigré researchers from different countries could meet and present their work. The newsletter *Zprávy SVU* began in 1959 and attempted to record the publications, lectures, and creative work of the diaspora. Later periodicals, bibliographical projects, directories, and books preserved information that no institution inside communist Czechoslovakia could freely collect. The volume *Czechoslovak Contribution to World Culture* explicitly placed Czech and Slovak achievements within a global history of scholarship and art. SVU thus resembled an academy without territory, although it lacked the laboratories, state funding, and full-time institutes of a conventional academy. Its significance lay in supplying recognition, communication, and cultural continuity to a community dispersed among host institutions (*Rechcígl, 2006*).

SVU formed only one part of a wider architecture of exile knowledge. The Dr Edvard Beneš Institute for Political and Social Studies, founded in London in 1950, promoted research and

documentary publication on Czechoslovak political affairs. Its series *Doklady a rozpravy* provided a forum for historical evidence and analytical argument at a time when scholarship at home was increasingly governed by Marxist-Leninist orthodoxy. The Czechoslovak Foreign Institute in Exile and its journal *Tribuna* offered another organisational setting for political and intellectual communication. Radio Free Europe employed scholars and journalists whose broadcasts combined current information with historical and cultural interpretation. Journals such as *Skutečnost*, *Svědectví*, and *Studie* connected political debate, social analysis, theology, literature, and documentary reporting. Their editorial offices were not substitutes for university departments, yet they enabled intellectual work excluded from official Czechoslovak publication. They also created audiences extending from the old exile of 1948 to later refugees and clandestine readers at home. Publications travelled more easily than people, although customs controls, censorship, and police surveillance made even textual circulation dangerous. Exile publishers preserved terminologies and debates that official academic discourse attempted to marginalise. The result was an intellectual sphere in which political analysis and scholarship often overlapped more closely than they did in ordinary university life. This overlap occasionally reduced disciplinary distance, but it also encouraged humanists and social scientists to address a public that extended beyond their professional peers. The international continuation of Czechoslovak thought therefore relied upon a mixed ecology of research, journalism, publishing, broadcasting, and political organisation (*Kostlán, 2018*).

Not every émigré scholar chose organised exile, and distance from diaspora politics did not necessarily indicate the abandonment of national connections. Many researchers devoted most of their energy to laboratories and departments in their receiving countries. They published in international languages, joined foreign professional associations, and trained students with no personal relationship to Czechoslovakia. This behaviour was often required for career survival and should not be interpreted as cultural disloyalty. A scientist's most effective contribution to the reputation of Czech or Czechoslovak scholarship could consist precisely in producing excellent work within a foreign institution. Conversely, active participation in an émigré association did not automatically generate significant research. The international extension of national science therefore rested upon two partly independent forms of activity. One preserved language, historical memory, and the organisational cohesion of the diaspora. The other transmitted concepts, methods, and disciplinary skills into the mainstream of international research. Some personalities, including Hlavatý, successfully combined both functions. Others preferred professional assimilation while maintaining private friendships and selective contacts with compatriots. The diversity of these choices prevents the exile community from being judged by a single standard of national service. It also demonstrates that scientific identity could remain transnational without requiring constant public declaration.

The invasion of August 1968 produced the largest transfer of Czechoslovak academic personnel into Western institutions. An estimated 2,500 to 3,000 scholars, researchers, and university teachers emigrated between the invasion and the end of communist rule, with most departures concentrated in 1968–1970. Academy institutes were especially exposed because their employees already possessed professional contacts established during the relative openness of the 1960s. Conferences, scholarships, joint projects, and visits abroad offered immediate points from which a temporary stay could become permanent. A quantitative study of ČSAV personnel estimates that between 760 and 790 Academy employees emigrated

between 1953 and 1989, representing approximately six to seven per cent of the institution's workforce. Most of them left during the crisis surrounding the invasion and the first years of normalisation. The core group consisted largely of researchers born between 1918 and 1941, many of whom emigrated during the professionally productive ages of twenty-six to forty. Their departure consequently removed not only established knowledge but also decades of prospective supervision and institutional leadership. Chemists were represented at a higher rate than their proportion within the Academy as a whole. Physicists, mathematicians, engineers, medical researchers, biologists, humanities scholars, and social scientists also formed substantial groups. The United States received the largest number, followed by Canada, West Germany, and several West European countries. The size and disciplinary breadth of this movement transformed scientific exile from a collection of exceptional biographies into a structural extension of the ČSAV research system (*Kostlán, 2010*; *Štrbáňová & Kostlán, 2011*).

The post-1968 exodus was facilitated by the prior internationalisation of Czechoslovak science during the reform decade. Researchers who happened to be abroad when the invasion occurred could seek an extension of a fellowship, accept an invitation, or ask a colleague to help arrange employment. Others travelled legally before border controls were fully consolidated and only later decided not to return. A receiving institution could interpret an existing publication record more readily than an immigration official could assess a displaced professional's general status. Scientific reputation thus became a form of emergency capital. Western universities were expanding, and demand in computing, engineering, chemistry, physics, and biomedical research favoured specialists trained in these areas. Canada adopted measures that enabled thousands of Czechoslovak refugees to enter rapidly after the invasion. The United States, West Germany, Britain, Switzerland, the Netherlands, Austria, Scandinavia, and Australia also became important destinations. Placement nevertheless remained uneven because prestigious contacts were distributed unequally among institutes and disciplines. Senior figures could draw upon editorial boards and conference networks, whereas junior researchers sometimes depended upon chance encounters or the recommendations of a single mentor. Families had to weigh professional opportunities against housing, schooling, language, and the uncertain possibility of return. A decision initially understood as temporary could become irreversible once normalisation authorities demanded return or threatened prosecution. The geography of exile was therefore shaped by both political compulsion and the pre-existing map of international scientific cooperation (*Kostlán & Štrbáňová, 2011*).

The loss was not distributed evenly across ČSAV, and particular institutes became involuntary exporters of specialised research traditions. The Institute of Nuclear Physics at Řež lost dozens of employees, weakening a field that depended upon expensive facilities, teamwork, and security-sensitive international contacts. The Institute for the Theoretical Foundations of Chemical Engineering was similarly affected. Significant departures also occurred from the institutes of physics, organic chemistry and biochemistry, and macromolecular chemistry. These concentrations reflected both the international quality of the institutes and the relative portability of the skills cultivated within them. A successful research school generated contacts that helped its members abroad, but those same contacts increased its vulnerability during political closure. The state consequently lost researchers whom it had educated, salaried, and equipped at considerable public expense. Receiving institutions acquired specialists who required comparatively little basic training and could enter ongoing projects rapidly. This transfer amounted to an unplanned internationalisation of Czechoslovak research

capacity. It also fragmented teams whose achievements had depended upon collaboration among theoreticians, experimentalists, technicians, and instrument designers. Domestic administrators could replace posts on an organisational chart more easily than they could reconstruct the trust and tacit knowledge of a mature laboratory. Abroad, clusters of former colleagues sometimes maintained collaboration or recommended one another for positions. The displaced research school therefore survived imperfectly as a network even when its original institute was politically and professionally transformed (*Kostlán, 2010*).

Ivo Babuška's career illustrates how an Academy-trained mathematical tradition could acquire far greater international influence after relocation. Before 1968, he had already produced important work in numerical mathematics and had established a strong professional reputation in Czechoslovakia. The invasion prompted Babuška and his family to move to the United States through an invitation from the University of Maryland. There he entered an environment in which expanding computational resources and engineering applications gave new importance to the finite element method. His research on stability, approximation, error estimation, and computational mechanics helped shape an entire international field. Results carrying his name became part of the standard conceptual equipment of applied mathematics and engineering. His later appointment at the University of Texas at Austin extended this influence across another generation of researchers. More than 350 refereed articles, numerous books, extensive collaboration, and doctoral supervision made his work institutionally reproductive rather than merely individually distinguished. Yet the foundations of this career had been laid within the Czechoslovak mathematical community. The exile phase did not replace that formation so much as release it into a larger scientific environment. Babuška consequently became a Czech-American scholar whose international authority could not be assigned exclusively to either national system. His biography demonstrates how political displacement could turn the intellectual resources of a small-country research school into a central component of global computational science (*University of Texas at Austin, 2023*).

Jan Tauc offers an equally revealing example from semiconductor physics. He had built the first point-contact transistor in Czechoslovakia and later headed the semiconductor department of a ČSAV institute. Under his leadership, the department acquired a reputation extending across the Iron Curtain. Prague's hosting of an international semiconductor conference in 1960 testified to the international standing attained by this research school. Tauc's investigations of crystalline and amorphous semiconductors produced concepts that remained influential long after his departure. The expression 'Tauc gap' entered scientific usage through work whose origins lay in the Prague period. After travelling to the United States in 1969, he was ordered by ČSAV to return and threatened with prosecution. He instead accepted a position at Brown University and was later sentenced in absentia by the Czechoslovak authorities. At Brown, he continued research for more than two decades, expanded his work on amorphous materials, edited major publications, and trained younger scientists. His career was therefore divided between two institutional settings but remained scientifically continuous. The work that secured his American position had been produced under Czechoslovak conditions, while the American university enabled its further development and dissemination. Tauc's trajectory makes the international extension of national science visible as a continuous research programme crossing a politically enforced border (*Cardona, 2011*).

Astronomy and space research provided particularly striking instances of this transformation because their modern development depended upon international facilities. Zdeněk Kopal had already shown during the wartime wave how a Czech-trained astronomer could become an

influential organiser and theorist abroad. After 1968, younger specialists entered research environments linked to satellites, solar observation, and large international data networks. Zdeněk Švestka became a major figure in solar physics in the Netherlands. Zdeněk Sekanina pursued internationally recognised research on comets and small Solar System bodies at the Smithsonian Astrophysical Observatory. Ivan Hubený's work in stellar atmospheres later became associated with NASA's Goddard Space Flight Center. Their foreign careers provided access to equipment and collaborative programmes that normalisation-era Czechoslovakia could not offer on comparable terms. The movement of these scholars did not transport complete observatories from Prague, but it transferred mathematical techniques, observational expertise, and research questions. Their publications entered international citation networks from which the political circumstances of departure were largely invisible. Nevertheless, the quality of their earlier training remained part of the institutional genealogy of their achievements. Astronomical exile also shows why national credit is difficult to allocate in modern science. Discoveries emerged from multinational facilities and teams, yet individual competence had been formed through specific schools and mentors. The global reputations of these émigrés therefore belonged simultaneously to host institutions, international astronomy, and the history of Czechoslovak science (*Štrbáňová & Kostlán, 2011*).

Chemistry produced one of the densest concentrations of successful Academy émigrés. Josef Michl completed his doctorate under Rudolf Zahradník at the ČSAV Institute of Physical Chemistry and acquired a formation combining theoretical rigour with experimental curiosity. He was attending a summer school in Norway when the Warsaw Pact invasion occurred and decided not to return. Appointments in Denmark and the United States subsequently enabled him to develop research across photochemistry, molecular electronics, theoretical chemistry, and materials science. His election to the United States National Academy of Sciences signalled the international authority attained by a scholar formed in Prague. Jiří Čížek followed a comparable route from Charles University and the ČSAV Institute of Physical Chemistry to the University of Waterloo. His work on coupled-cluster methods became foundational for the treatment of electronic correlation in quantum chemistry. At Waterloo, his cross-appointment in mathematics and chemistry reproduced the interdisciplinary character of his research while creating a new centre for its transmission. Josef Paldus, another Czechoslovak-born quantum chemist associated with Waterloo, reinforced this concentration of expertise in Canada. These careers did not constitute a formal branch of the Prague institute, yet shared intellectual origins and continued contacts gave them the characteristics of a displaced school. Their success also exposed the paradox of state investment in advanced scientific education under socialism. The same high-quality training that strengthened ČSAV made its researchers especially attractive to foreign universities when political conditions became intolerable. Czech and Czechoslovak chemistry consequently gained global prestige through achievements realised largely beyond the institutions that had initiated these careers (*Institute of Organic Chemistry and Biochemistry..., 2024*; *University of Waterloo, 2025*).

Biomedical science demonstrates even more clearly why the exile community must be understood in Czechoslovak rather than narrowly Czech terms. Jan Klein began his advanced research at the ČSAV Institute of Experimental Biology and Genetics before moving through Stanford and several American universities. In 1977, he became director of the Max Planck Institute for Biology in Tübingen, a position that gave him major influence over European immunogenetics. His research on the major histocompatibility complex linked genetics, immunology, evolution, and transplantation science. Jiří Městecký, Juraj Iványi, and Emil

Skamene likewise established important careers in North American or British biomedical institutions. Their trajectories carried Czechoslovak laboratory experience into fields undergoing rapid molecular and clinical transformation. Jan Vilček, who left Czechoslovakia in 1964, developed influential work on interferons and tumour necrosis factor at New York University. Research associated with his laboratory contributed to the development of therapies whose medical and commercial significance extended far beyond the exile community. His later philanthropy celebrated immigrants' contributions to the United States, transforming the memory of displacement into support for new generations of foreign-born scholars. These scientists rarely worked on explicitly Czech subjects, and their publications belonged fully to international biomedicine. Nevertheless, their education and early professional formation made them part of Czechoslovakia's dispersed scientific history. Their careers reveal national science not as ownership of results but as participation in the formation of people capable of producing them (*Learned Society of the Czech Republic, n.d.*; *Vilcek, 2016*).

The humanities travelled differently because their evidence, languages, and audiences remained closely connected to Central Europe. Historians such as František Graus and Bedřich Loewenstein entered German-speaking universities, where their experience of Czech and Central European history informed broader debates about medieval society, nationalism, and modern political culture. Their change of institutional setting altered the questions asked of familiar historical material. Linguist Ladislav Zgusta developed an internationally recognised career in lexicography at the University of Illinois. Kamil V. Zvelebil placed Czech expertise in linguistics and Asian studies within the academic environment of Utrecht and other international centres. Anthropologist Ladislav Holý pursued influential work in Britain, connecting a Czechoslovak intellectual formation with wider developments in social anthropology. Lubomír Doležel became one of the most prominent representatives of literary theory and helped establish Czech studies at the University of Toronto. His work on narrative semantics and possible worlds travelled far beyond the interpretation of Czech literature. At the same time, his teaching helped preserve Czech subjects as a legitimate field within a major foreign university. Humanities exile thus involved a double translation between local cultural competence and internationally intelligible theory. Scholars who achieved that translation could reshape their disciplines while continuing to represent traditions marginalised at home. Their departments became small but durable points on the international map of Czech intellectual culture (*Palacký University Archive, n.d.*; *Štrbáňová & Kostlán, 2011*).

The social sciences acquired another kind of international significance because the Czechoslovak crisis itself became an object of comparative interpretation. Ota Šik had directed the ČSAV Institute of Economics and helped formulate the economic reforms associated with the Prague Spring. In Swiss exile, he transformed practical reform experience into a broader critique of centrally planned systems and a search for alternatives between unregulated capitalism and bureaucratic socialism. Jiří Jindřich Kosta continued economic research at Goethe University Frankfurt, bringing knowledge of Czechoslovak industrial and reform problems into West German debates. Jaroslav Krejčí worked in Britain on political sociology, comparative revolutions, and civilisational analysis. Zdeněk Mlynář converted his experience within the communist political system and the 1968 reform movement into comparative research on Soviet-type regimes. His international projects connected Czechoslovak analysis with scholars from Poland, Hungary, the Soviet Union, and other East European societies. These careers demonstrate that exile could transform political defeat into

analytical knowledge. Personal participation provided insight unavailable to many outside observers, although it could also generate controversy over responsibility and retrospective interpretation. Western universities offered methodological and institutional distance, while émigré networks supplied documents, witnesses, and knowledge of political languages. The interpretation of Czechoslovak reform consequently became part of international political science rather than remaining a suppressed domestic debate. Exile scholars served as translators between the internal logic of state socialism and the conceptual vocabularies of Western social research. Their work preserved the intellectual content of the Prague Spring after its institutional supporters had been removed from ČSAV and the universities (*Kostlán, 2018*).

Teaching constituted one of the most enduring forms through which the diaspora extended national science. An émigré professor did not merely publish individual research but selected curricula, supervised theses, recommended books, and defined fields for students. Programmes in Czech, Slovak, Slavic, and Central European studies emerged or expanded at universities in Toronto, London, Munich, Cologne, New York, and other centres. Some students had family connections with Czechoslovakia, while others encountered its history and culture without any diasporic background. This broadened the audience for subjects that the émigré press alone could not sustain. Publishers also performed a quasi-academic function by preserving texts, editions, bibliographies, and works of interpretation excluded from official circulation. The Toronto-based Sixty-Eight Publishers, founded by Josef Škvorecký and Zdena Salivarová, became especially important for banned Czech literature. Although primarily literary, its list sustained the language and documentary environment required by historians and cultural scholars. Books issued abroad could become teaching material, archival evidence, and objects of scholarly criticism. Publication in exile also prevented the normalisation authorities from exercising complete control over which authors constituted modern Czech culture. The university seminar and the émigré publishing house therefore formed complementary institutions of intellectual preservation. Together they ensured that Czech topics remained internationally teachable even when their free investigation at home was restricted (*McMaster University Library, n.d.*).

The nuclear physicist František Janouch demonstrates how scientific authority could be converted into civic infrastructure. Before his exclusion, he held a senior position at the ČSAV Nuclear Physics Institute and taught at Charles University. Normalisation removed him from research and lecturing after the suppression of the Prague Spring. An invitation connected with the Royal Swedish Academy of Sciences enabled him to leave for Sweden in 1974. His case shows how international scientific recognition could provide a route out when domestic institutions had been closed. In Stockholm, Janouch did not restrict himself to rebuilding a personal scientific career. He established the Charter 77 Foundation in 1978 to provide material and moral assistance to persecuted signatories and their families. The Foundation channelled money, books, publishing equipment, medicines, and other forms of practical support into Czechoslovakia. Its activities connected Scandinavian public opinion, Western donors, émigré networks, and domestic dissent. Janouch's scientific background supplied contacts, credibility, and organisational competence that could be redirected towards defence of intellectual freedom. The border between scholarly exile and political activism consequently became highly permeable. His work turned a position acquired through international science into a platform from which the conditions of independent culture at home could be sustained (*Associated Press, 2024*).

Vilém Prečan's work carried this institutional logic into the preservation of historical evidence. As a historian at a ČSAV institute, he had participated in documenting the 1968 invasion and became one of the victims of normalisation. After being forced into exile, he continued gathering samizdat, correspondence, testimony, underground periodicals, and publications produced by the diaspora. In 1986, these activities acquired a formal base through the Czechoslovak Documentation Centre for Independent Literature in West Germany. The Centre's founders included scholars, writers, publishers, and organisers from several branches of the exile community. Karel Schwarzenberg provided premises, while international foundations and private supporters contributed resources. Prečan's collections protected materials that remained vulnerable to confiscation and destruction inside Czechoslovakia. They also gave foreign researchers access to evidence about Charter 77, independent culture, political repression, and unofficial thought. The archive was not merely a passive storehouse, because documents, information, and publications circulated in both directions across the Iron Curtain. Domestic dissidents supplied evidence, while exile institutions returned books, copies, publicity, and international protection. The Centre therefore functioned as a transnational research institution before it could acquire a recognised place within the Czech academic system. Its history reveals how archival preservation itself became a form of scientific and civic resistance (*Czechoslovak Documentation Centre, n.d.*; *Blanton, 2023*).

Communication with colleagues at home ensured that the exile community was more than a detached overseas branch of national culture. Letters, conference encounters, personal visits, broadcasts, and smuggled publications maintained selective connections even during periods of severe restriction. Official institutions portrayed émigré scholars as ideologically contaminated, but individual researchers continued to read their work whenever access was possible. Foreign colleagues sometimes served as intermediaries by carrying messages, manuscripts, medicines, or books. Citations offered another quiet form of connection, since an exiled researcher's result could remain scientifically indispensable even when the author's biography was politically suppressed. Editors outside Czechoslovakia helped publish work that could not pass domestic censorship. Émigré academics also recommended younger Czechoslovak scholars for invitations, fellowships, and conference participation. These relationships were unequal because the person abroad usually possessed greater freedom of movement and access to material resources. They could also expose domestic partners to surveillance and accusations of unauthorised foreign contact. For that reason, much of the network remained informal and left only fragmentary documentary traces. Nevertheless, its cumulative effect was to prevent the complete provincialisation of research under normalisation. The national scientific community survived as a partially connected field divided by state borders but joined through professional memory, intellectual exchange, and personal trust.

The international achievements of exiles should not be romanticised into a story in which persecution automatically produced creativity. Many displaced scholars lost years of work, professional status, accumulated data, and the possibility of collaborating with their closest colleagues. Spouses frequently sacrificed their own careers to support the family's migration and adaptation. Women scholars could encounter the combined disadvantages of political displacement, unequal academic employment, and expectations surrounding domestic labour. Younger children adapted linguistically more quickly than their parents, while older family members often experienced lasting social isolation. Refugees working in culturally specific disciplines faced narrower employment markets than physicists, chemists, or

engineers. Even successful researchers could experience divided loyalties and anxiety about relatives who remained behind. Host institutions sometimes treated political refugees sympathetically, but sympathy did not eliminate competition, credential barriers, or prejudice. Participation in émigré politics could consume time needed for research and occasionally intensified conflicts within already fragmented communities. Conversely, complete professional assimilation could weaken the transmission of language and national memory to a second generation. The most visible biographies therefore represent only part of a much broader and more ambiguous historical experience. Recognition of these costs is essential if international extension is not to become a euphemism for the coercive transfer of human lives.

By the 1980s, Czech and Slovak scholars abroad occupied positions within universities, laboratories, professional societies, editorial boards, broadcasting organisations, foundations, and archives across several continents. No central authority coordinated these dispersed institutions, yet they collectively preserved knowledge excluded or neglected within normalised Czechoslovakia. Their members interpreted the Prague Spring, developed globally significant scientific methods, taught Czech history and language, and documented the activities of domestic dissent. They also accumulated knowledge of competitive funding, peer review, university governance, interdisciplinary research, and international academic standards. Such experience would later become relevant when communication with the homeland reopened, although the process of return and institutional reconciliation remained far from automatic. Differences between those who had stayed and those who had left could not be dissolved by a shared opposition to dictatorship. Domestic researchers had survived through accommodation, limited resistance, professional compromise, or withdrawal into specialised work. Exiles had developed careers in systems whose resources and expectations differed substantially from those of ČSAV. Their potential contribution therefore lay not in replacing the internal community but in reconnecting it with networks from which political closure had separated it. The diaspora's greatest institutional resource was its capacity to act as an intermediary. It could translate between Czech intellectual traditions and international systems of publication, evaluation, funding, and collaboration. In this respect, exile prepared channels of reintegration even before political circumstances allowed them to be used openly.

Thus, Czech scientific exile should be understood not only as an outward movement of individuals but as a changing international dimension of national science. Nazi occupation, communist seizure of power, and normalisation each removed scholars from their institutions, but none succeeded in rendering their knowledge entirely foreign to Czechoslovak history. Wartime research bodies, SVU, university departments, laboratories, journals, publishers, foundations, and documentary archives gave dispersed expertise new organisational forms. Individual careers from Jakobson, Hlavatý, and Kopal to Babuška, Tauc, Michl, Klein, Doležel, Janouch, and Prečan demonstrate the variety of those forms. Some scholars extended Czechoslovak traditions through discoveries whose national origins became almost invisible within global science. Others preserved language, cultural memory, historical documentation, or critical reflection explicitly directed towards the homeland. The most consequential figures frequently combined professional achievement with teaching, organisation, and mediation. Their host institutions were not passive shelters, since they supplied the resources and recognition through which displaced talent could become internationally productive. At the same time, the success of émigré scholars exposed the intellectual cost imposed upon ČSAV, the universities, and Czechoslovak society by political control. Exile transformed national scientific capital without cancelling the trauma through which that transformation occurred. It

created continuity, but a continuity divided among different states, languages, generations, and institutional loyalties. The dispersed community consequently belonged both to the countries that enabled its work and to the Czechoslovak scientific history from which it had emerged. Its experience shows that a national research tradition can survive beyond state territory when people, methods, records, and relationships remain capable of forming institutions across borders.

3. Post-1989 Rehabilitation and the Restoration of Scientific Memory

The restoration of scientific memory after 1989 was one of the most difficult tasks inherited by democratic Czechoslovakia and, subsequently, by the Czech Republic. The fall of the communist regime removed the political barriers that had prevented open discussion of persecution, exclusion, exile, and institutional complicity. Some scholars could return to former workplaces, recover academic titles, or resume publication in their own country. Others were already too old to rebuild interrupted careers or had died before their contributions could be publicly acknowledged. Many émigrés had established families, laboratories, and professional identities abroad and therefore could not be expected to reverse several decades of displacement. Rehabilitation consequently meant much more than physical return. It required the correction of personnel files, disciplinary histories, bibliographies, institutional narratives, and public systems of academic honour. It also demanded recognition that the damage caused by political repression extended from individuals to research schools, editorial cultures, international networks, and relations between generations. For ČSAV and the later AV ČR, the challenge was especially sensitive because the Academy had been both a victim of external political control and an institutional instrument through which control had sometimes been exercised. Scientific memory could not be reconstructed through a simple story of innocent scholars confronting an entirely external regime. It had to include resistance, adaptation, compromise, professional survival, ideological enforcement, and the unequal consequences of each. Rehabilitation thus became a continuing process of historical inquiry rather than a single act completed during the revolutionary transition.

Rehabilitation developed in several related but distinct forms. Judicial rehabilitation annulled criminal convictions and other penalties imposed through politically motivated proceedings. Administrative rehabilitation corrected dismissals, demotions, expulsions, and decisions recorded in personnel files. Professional rehabilitation restored academic positions, memberships, qualifications, possibilities of publication, and access to scientific institutions. Intellectual rehabilitation returned forbidden authors, theories, research questions, and schools of thought to legitimate scholarly discussion. Symbolic rehabilitation expressed recognition through elections, awards, commemorations, obituaries, exhibitions, and the naming of prizes or institutions. Biographical rehabilitation reconstructed lives that had been reduced to accusations such as ‘bourgeois nationalist’, ‘revisionist’, ‘cosmopolitan’, ‘Zionist’, or ‘politically unreliable’. Archival rehabilitation made documents accessible and placed decisions within evidential rather than propagandistic narratives. These processes could proceed at very different speeds. A court might annul a sentence while an institute remained reluctant to confront the role of former directors or personnel committees. An academic title could be restored without recovering the lost students, research time, or international opportunities that had once given the title practical meaning. A famous scientist might receive public recognition while less visible colleagues remained absent from disciplinary histories.

The restoration of scientific memory therefore required interaction among law, institutional reform, historical research, and cultural commemoration.

The first phase unfolded with exceptional speed during the months following the Velvet Revolution. Civic Forums appeared within Academy institutes, researchers demanded the resignation of compromised leaders, and elected workplace representatives began to replace inherited structures of authority. Committees reviewed personnel decisions and questioned whether exclusions presented as organisational necessities had actually been political punishments. Formerly marginalised scholars were invited to participate in debates about the future structure of ČSAV. Open competitions for directorships made it possible to challenge leadership arrangements created during normalisation. Researchers removed from scientific councils, editorial boards, or senior positions could again be considered according to professional rather than party criteria. Yet institutional transformation and personal rehabilitation were never identical. A new director could reform a workplace without possessing the resources needed to restore every interrupted career. Budget reductions and the restructuring of institutes sometimes occurred at the same moment as demands for justice. Scholars who had been excluded in 1970 could therefore return to an institution that was itself shrinking or being evaluated for closure. The democratisation of governance created necessary conditions for rehabilitation but did not guarantee complete restitution. Post-1989 reform consequently combined moral reversal with severe organisational uncertainty (*Pačes, 1995*).

Otto Wichterle became the most powerful personal symbol of this reversal. His scientific achievements in polymer chemistry and soft contact lenses had given him international authority long before the end of communist rule. His support for the reform movement and the manifesto *Two Thousand Words* led to renewed political punishment after 1968. He was removed from institutional authority, restricted in his teaching, and subjected to obstacles in maintaining foreign scientific contacts. After November 1989, his election as President of ČSAV transformed an individual rehabilitation into a public statement about the desired hierarchy of academic values. A scholar marginalised by normalisation now represented the institution that had failed to protect his autonomy. His presidency signalled that scientific distinction, civic courage, and international reputation should replace political conformity as sources of authority. Wichterle did not return simply to the laboratory position from which he had been excluded. He became responsible for guiding a large and compromised organisation through democratic transformation. The symbolic force of this appointment was therefore greater than any correction entered into a personnel file. It connected the reform aspirations of the 1960s with the institutional reconstruction initiated after 1989. At the same time, Wichterle's exceptional fame demonstrated the need to extend rehabilitation beyond celebrated personalities to those whose names lacked comparable public recognition (*Optica, 2023*).

The rehabilitation of less prominent researchers depended largely upon the willingness of individual institutes to investigate their own histories. Political punishment had assumed many forms, ranging from dismissal and forced retirement to blocked promotion, laboratory reassignment, and exclusion from foreign travel. Some scholars had been transferred to technical or auxiliary posts while officially remaining within the Academy. Others continued research but were prevented from supervising students, leading teams, or publishing under normal conditions. These forms of institutional damage were harder to reverse than a formally documented expulsion. A personnel commission could restore seniority, but it could not recreate a research group dispersed twenty years earlier. An institute could invite a former

employee back, but the person might no longer possess the health or specialised skills required by a rapidly changing field. Younger colleagues who had inherited positions during normalisation sometimes perceived rehabilitation as a threat to their own professional security. Workplace communities also differed in their readiness to acknowledge who had enforced political decisions and who had attempted to protect colleagues. Consequently, the local process could be collegial in one institute and deeply conflictual in another. The credibility of rehabilitation depended upon clear evidence, transparent procedures, and recognition that political responsibility was not distributed equally. Institutional memory began to recover only when workplaces moved beyond general declarations and examined the specific mechanisms through which exclusion had occurred.

The legal framework of transitional justice offered essential assistance but could address only part of this professional history. Act No. 119/1990 on Judicial Rehabilitation annulled or reopened numerous convictions imposed for acts that democratic law no longer regarded as criminal. Other legislation concerned restitution, extrajudicial rehabilitation, and the consequences of confiscation or forced emigration. These measures mattered for scholars convicted of illegal departure, anti-state activity, or politically constructed offences. They could restore legal innocence, citizenship rights, property claims, and eligibility for compensation. Yet many academic victims had never appeared before a criminal court. Their careers had been damaged through apparently lawful administrative decisions made by directors, party organisations, review commissions, or ministries. Lustration legislation, conversely, sought to limit the continued authority of people connected with communist security and political structures. Its logic concerned the democratic reliability of post-communist officeholders rather than compensation for every person harmed by the old system. Legal and academic rehabilitation therefore overlapped without becoming interchangeable. The former could invalidate a sentence, whereas the latter had to reconsider authorship, priority, mentorship, reputation, and membership in a scholarly community. The broader Czech experience of transitional justice consequently revealed both the necessity and the limitations of legal remedies when confronting institutionalised historical injustice (*David, 2012*; *Institute for the Study of Totalitarian Regimes, n.d.*).

The relationship with émigré scholars created another fundamental test. Democratic change removed the official designation of emigrants as traitors and reopened correspondence, travel, publication, and institutional cooperation. Invitations to conferences and lectures allowed exiles to appear publicly before Czech and Slovak audiences after decades of absence. Foreign publications could be acquired without censorship and incorporated into domestic libraries and university courses. Researchers abroad were offered renewed membership in professional societies, honorary distinctions, editorial positions, and opportunities to supervise younger colleagues. Some contributed equipment, books, subscriptions, research funding, or introductions to foreign institutions. Others advised governments and academic bodies on reform, evaluation, and the establishment of competitive grant systems. These activities restored relationships rather than simply correcting biographies. They also demonstrated that exiled scholars had become part of several scientific communities and could not be reclaimed as the exclusive property of the homeland. The most productive post-1989 connections were generally based on partnership rather than expectations of patriotic return. Scientific memory was restored when work produced abroad entered Czech disciplinary history as a continuation of national science rather than as an external appendix.

This reintegration challenged the artificial division between domestic and exile scholarship maintained under communism (*Kostlán & Štrbáňová, 2011*).

Permanent physical return was less common than symbolic language sometimes suggested. An émigré who had spent twenty years at an American, Canadian, British, German, or Swiss university possessed obligations that could not simply be abandoned in 1990. Laboratories, doctoral students, pension systems, family relationships, and citizenship anchored scholars in their receiving countries. The Czech research system, meanwhile, entered a period of budgetary austerity and could rarely reproduce Western salaries or facilities. Many exiles therefore adopted patterns of circular rather than permanent return. They visited Prague or Brno for lectures, joined scientific councils, co-supervised dissertations, established joint projects, and spent limited periods at Czech institutes. Some accepted adjunct or honorary appointments while retaining their principal employment abroad. Such arrangements were not failed repatriations. They represented a mature transnational form of reintegration suited to the biographies created by long exile. The return of knowledge could occur without a complete return of residence. Indeed, scholars embedded in foreign institutions often served Czech science most effectively by maintaining access to both environments. Post-1989 rehabilitation therefore replaced the communist border with a network of recurring movement, collaboration, and shared professional recognition.

Jaroslav Koutecký illustrates how an émigré could contribute directly to the reconstruction of research governance. He had worked at the ČSAV Institute of Physical Chemistry and was elected a corresponding member of the Academy in 1962. After leaving Czechoslovakia and establishing an internationally prominent career, he was expelled from Academy membership in 1972. His rehabilitation in 1989 restored a status that political authority had illegitimately removed. Koutecký subsequently participated in the rebuilding of Czech science while continuing his association with the Free University of Berlin. His international experience proved particularly valuable in discussions about competitive funding and peer evaluation. He helped establish grant structures intended to replace administrative allocation and political patronage with project-based scientific judgement. This contribution transformed rehabilitation from retrospective recognition into institutional design. Koutecký's return was therefore neither purely ceremonial nor a conventional resumption of his pre-exile post. It connected a research career developed abroad with the creation of new rules for science at home. His biography also demonstrated that the restored Academy could acknowledge its own earlier injustice by inviting an expelled member to help define its future. In this case, recovered scientific memory became an operational resource for democratic reform (*International Academy of Quantum Molecular Science, n.d.*).

Other émigré scientists developed similarly flexible relationships with Czech institutions. Josef Michl, trained under Rudolf Zahradník at a ČSAV institute, built his principal career in Denmark and the United States after 1968. From the 1990s onward, and especially through his later work at the Institute of Organic Chemistry and Biochemistry, he again participated directly in Czech research. His presence connected younger Prague chemists with a scientific culture shaped by decades of international work. Jan Klein retained strong links with Czech biology and immunology while holding senior appointments in the United States and Germany. His foreign membership in the Learned Society and participation in Czech editorial life provided institutional forms for recognising a career that could not be reduced to permanent repatriation. Jan Tauc likewise received Czech distinctions after his semiconductor research had achieved global authority in the United States. Jiří Čížek combined his Waterloo career with

later adjunct association at Charles University. These relationships restored mentorship, citation, and professional belonging without denying the decisive contribution of host institutions. They also allowed younger Czech researchers to encounter émigré scientists as active colleagues rather than remote names from a prohibited past. The post-1989 Academy thus learned to treat multiple affiliation as an advantage rather than evidence of divided loyalty (*Cardona, 2011*; *Institute of Organic Chemistry and Biochemistry..., 2024*; *Learned Society of the Czech Republic, n.d.*).

Vilém Prečan's return gave the restoration of scientific memory an unusually concrete institutional form. Normalisation had removed him from the Institute of History after his involvement in documenting the invasion of 1968. In exile, he preserved documents, maintained contacts with dissidents, and developed the Czechoslovak Documentation Centre in West Germany. After 1989, his expertise became central to the establishment of the Institute of Contemporary History. Founded in 1990, the new institute was intended to investigate Czechoslovak history from 1938 to 1989 without the censorship and ideological supervision that had distorted earlier research. Prečan became its first director and brought experience acquired through exile documentation into the construction of a domestic academic institution. The institute developed a library, documentary editions, bibliographical work, and the journal *Soudobé dějiny*. It also employed researchers whose careers had been interrupted or displaced after 1968. In this way, the restoration of memory created a new workplace rather than merely altering the interpretation of an existing one. Exile expertise helped determine standards of source criticism, international cooperation, and institutional independence. Prečan's trajectory from dismissed historian to founder of an Academy institute demonstrated how rehabilitation could reconnect biography, archive, and organisational innovation (*Institute of Contemporary History..., n.d.*).

The early Institute of Contemporary History also became a meeting point for several categories of previously excluded scholar. Some of its researchers had lived abroad, while others had remained in Czechoslovakia but worked in manual employment, unofficial seminars, samizdat, or private research. Historians such as Karel Kaplan, Milan Otáhal, and other specialists returned to professional environments from which normalisation had displaced them. Their accumulated knowledge of the communist system could now be combined with newly accessible party, state, and security archives. Younger researchers entered the institute without having experienced the purges directly and brought different methodological assumptions. The resulting institution joined personal testimony with professional historical criticism. It also faced the risk that the experiences of founders might predetermine the interpretation of the period they studied. Scholarly credibility therefore required movement from morally necessary exposure towards comparative, social, cultural, and transnational analysis. Over time, the institute's generational succession allowed the memory of exclusion to become a research programme rather than a permanent monopoly of witnesses. Recognition of emeritus researchers later provided a formal way of honouring those who had rebuilt the field. This development shows that rehabilitation becomes sustainable when recovered experience is transmitted to scholars who can investigate it independently. Scientific memory thereby moves from personal possession into an institution capable of critical renewal (*Institute of Contemporary History..., n.d.*).

The Czechoslovak Documentation Centre represented a complementary movement in which an exile institution and its collections were gradually reintegrated into the country. Founded in West Germany in 1986, the Centre had preserved samizdat, exile publications,

correspondence, photographs, recordings, and organisational documents threatened by confiscation at home. After the revolution, these materials could circulate openly and become sources for research, exhibitions, editions, and public education. Their return did not erase the Centre's transnational history. On the contrary, the archival structure revealed how domestic dissent, Czech and Slovak exile, foreign broadcasters, publishers, and human-rights organisations had formed a connected field. In 2003, the collections were transferred to the National Museum through a donation agreement. Their later administration by the National Museum Archives secured a permanent public repository. Personal fonds and organisational records that had once represented political danger became recognised elements of national cultural heritage. This transfer altered the meaning of the documents themselves. A samizdat copy ceased to be only evidence of resistance and became an object through which historians could reconstruct production, readership, distribution, and intellectual exchange. The exile archive thus returned not as a trophy of victory but as a research infrastructure. Its institutionalisation showed that the restoration of scientific memory depended upon preserving the material traces through which suppressed networks could be studied (*National Museum, n.d.*).

The re-establishment of the Masaryk Institute expressed another dimension of restored intellectual continuity. The original institution, founded in 1932, had been closed in 1954 during the communist campaign against Tomáš Garrigue Masaryk and the democratic traditions associated with him. On 4 January 1990, President Václav Havel approved its restoration following an initiative from the Masaryk Society. The renewed institute recovered the task of caring for Masaryk's archive, library, writings, and wider intellectual legacy. In 1995, an Academy-based Masaryk Institute provided a more stable scholarly setting for research, editions, and access to collections. Its later union with the Archives of the Academy connected political and intellectual history with the institutional history of Czech science. This was not merely the revival of a revered name. It reversed an earlier act of organised forgetting through which a regime had attempted to remove Masaryk from legitimate public and scholarly culture. Critical editions of his writings and correspondence made restoration dependent upon textual scholarship rather than ceremonial admiration. The institute also situated Masaryk within broader Czech, Czechoslovak, and European contexts, allowing his legacy to remain open to argument. Its history illustrates how democratic rehabilitation could combine restitution, archival care, institutional reconstruction, and critical distance. Scientific memory was restored most effectively when commemoration produced new research rather than a protected national icon (*Masaryk Institute and Archives..., n.d.*).

The Archives of the Academy supplied the evidential foundation for reconstructing the institution's own past. Their holdings include records of earlier learned societies, ČAVU, the Masaryk Academy of Labour, the Czechoslovak National Research Council, ČSAV, AV ČR, and numerous individual scientists. Presidium files, personnel materials, correspondence, reports, photographs, and records of international cooperation reveal how scientific decisions were made under changing regimes. Such evidence allows historians to distinguish institutional legend from documented practice. It can show whether a dismissal followed a party instruction, a director's initiative, a security intervention, or a combination of pressures. It also reveals cases in which administrators protected researchers, delayed punishment, or preserved work within restrictive conditions. Archival reconstruction therefore complicates both heroic and accusatory narratives. The Academy must preserve records in which it appears as a defender of science and records in which it appears as an agent of exclusion. Opening

these collections makes institutional self-knowledge available to researchers who do not depend upon official interpretations. Personal estates additionally restore unpublished manuscripts, correspondence, and intellectual relationships obscured by censorship or exile. The archive consequently functions as the moral infrastructure of scientific memory, because acknowledgement without verifiable evidence remains vulnerable to selective recollection (*Masaryk Institute and Archives..., n.d.*).

Oral history added evidence that administrative archives could not contain. Personnel files recorded decisions but rarely captured fear, humiliation, family debate, interrupted ambition, or the practical uncertainty of beginning again abroad. Between 2008 and 2011, a project devoted to Czech scientists and scholars in exile conducted interviews with former ČSAV employees who had experienced emigration. These testimonies examined the reasons for departure, adaptation to host institutions, and the gains and losses associated with exile. They also captured the emotional ambiguity of later relations with the Czech Republic. An émigré could be proud of international achievement while grieving over a research school that had been broken. Another might appreciate renewed recognition yet remain critical of colleagues or institutions that had adapted to normalisation. Memory recorded several decades after the events inevitably involved retrospective interpretation. For this reason, interviews had to be compared with correspondence, publications, personnel records, and evidence from host institutions. Their value lay not in replacing archival proof but in revealing how political rupture was experienced and narrated. Oral history also restored individuality to statistical categories such as ‘emigrant’ or ‘dismissed researcher’. By allowing scholars to interpret their own trajectories, it transformed rehabilitation from speech about victims into a documented dialogue with them (*Masaryk Institute and Archives..., 2012*).

The encyclopaedia *Sto českých vědců v exilu* represented an important outcome of this biographical turn. Its editors and contributors reconstructed one hundred careers of scholars who had worked in ČSAV institutes before entering exile. The collective format made comparison possible across disciplines, generations, destinations, and political circumstances. It showed that emigration affected mathematics, physics, chemistry, biology, medicine, technology, the social sciences, and the humanities. Biographies followed researchers beyond the moment of departure and examined how their careers developed within foreign institutions. This approach corrected the domestic tendency to treat exile as the point at which a scholar disappeared from national history. It also challenged celebratory accounts that mentioned only the most internationally famous personalities. By recording institutional affiliations, publications, professional networks, and family circumstances, the encyclopaedia made dispersed experience historically legible. Its prosopographical foundation enabled scholars to identify broader patterns that individual memoirs could not reveal. The volume therefore functioned simultaneously as reference work, memorial project, and analysis of lost scientific capital. It restored names while also demonstrating the structural consequences of political exclusion. Scientific memory became more inclusive because the émigré appeared not as an isolated hero but as a member of a damaged research community (*Štrbáňová & Kostlán, 2011*).

Post-1989 historical research also extended rehabilitation backwards beyond communist repression. The recovery of Jewish and German-speaking scholars persecuted under Nazism exposed absences that neither the post-war state nor socialist historiography had adequately repaired. The biographical dictionary *Disappeared Science* reconstructed the lives of Jewish scholars from Bohemia and Moravia whose careers and lives were destroyed by racial

persecution. Its subjects included natural scientists, physicians, mathematicians, historians, philologists, and other humanities scholars. Many had belonged simultaneously to Czech, German, Jewish, Czechoslovak, and international intellectual environments. Their restoration therefore challenged ethnically simplified accounts of national science. It also demonstrated that post-1989 memory work could not stop with people excluded by the communist regime. The Academy's predecessors had developed within a multilingual society whose destruction involved occupation, genocide, expulsion, and later ideological reinterpretation. Recovering that plural inheritance made Czech scientific history more accurate and morally demanding. Biographical reconstruction did not compensate for murdered lives or eliminated research schools. It did, however, return individuals to the histories of disciplines that had continued as though their disappearance required little explanation. The project demonstrated that restoration of scientific memory must cross the political boundary of 1948 and confront the successive ruptures of the entire 20th century (*Šimůnek & Kostlán, 2013*).

Bibliographical reconstruction formed another essential layer of rehabilitation. A scholar's place within a discipline depends not only upon biography but upon the continued visibility of publications. Censorship had removed books and articles from libraries, reading lists, indexes, reviews, and official bibliographies. Exile editions and samizdat publications often circulated without complete cataloguing information. After 1989, Academy institutes began reconnecting these fragmented bodies of literature. The Czech Literary Bibliography developed dedicated resources for exile writing, samizdat, translations, periodicals, and biographical information. Such databases allow researchers to follow a work across official, unofficial, and foreign systems of publication. They also reveal relationships between authors who remained at home and those who wrote abroad. Bibliographic restoration therefore changes interpretation rather than merely increasing the number of catalogue entries. Once excluded works are visible, accounts of intellectual development, reception, priority, and influence must be reconsidered. Similar processes occurred through critical editions, reprints, collected correspondence, and new disciplinary histories. Scientific memory becomes effective when recovered names can again be read, cited, taught, and debated (*Czech Literary Bibliography, n.d.*).

The Biographical Dictionary of the Czech Lands extended this work beyond any single discipline or period. Its general database, compiled from 1990 onward, aimed to provide verified information about significant personalities from Bohemia, Moravia, and Silesia. Scientists, engineers, physicians, humanists, public intellectuals, and organisers appear alongside political, cultural, and economic figures. The territorial scope makes it possible to include personalities whose languages, ethnic identities, or later citizenships do not fit a narrow national category. This is particularly important for scholars displaced by Nazism, post-war population transfers, communist persecution, or exile. A biographical dictionary also corrects the inequalities of public memory by recording people who never acquired the symbolic fame of Nobel laureates or Academy presidents. Its entries connect birth, education, employment, publications, political rupture, and later reputation. Such verified summaries provide starting points for more extensive archival and institutional research. They also enable comparisons among generations that experienced very different regimes. The dictionary cannot eliminate interpretative disagreement, but it establishes a factual framework within which disagreement becomes more precise. In this sense, encyclopaedic scholarship is not peripheral to rehabilitation. It creates the durable reference system through which restored personalities can remain visible to later researchers (*Institute of History of the Czech Academy of Sciences, n.d.*).

The foundation of the Learned Society of the Czech Republic in 1994 added a new institutional language of scientific honour. Its organisers explicitly referred to the traditions of the Royal Bohemian Society of Sciences and the Czech Academy for Sciences, Literature and Arts. Otto Wichterle and Rudolf Zahradník were among the figures who promoted its establishment. Thirty-six personalities signed the founding declaration at the Karolinum in May 1994, and the Society formally adopted its statutes in June. The new body did not replace AV ČR or assume responsibility for its research institutes. It restored instead the function of a freely constituted, multidisciplinary learned community that had been lost when the earlier societies disappeared in 1952. Membership was intended to express scholarly distinction rather than political appointment or administrative control. Foreign members allowed internationally established émigrés to be included within Czech learned representation without abandoning their host institutions. Public statements connected the defence of science with the defence of democratic freedom. The Learned Society therefore transformed historical continuity into a civic principle. It also separated honorary scholarly recognition from the governance of the Academy's institute system. This distinction helped rehabilitate the idea of an academic elite while avoiding a simple revival of the hierarchical membership structure inherited from ČSAV (*Grubhoffer, 2024*).

Awards and commemorative naming translated restored memory into the everyday symbolic life of the Academy. The Otto Wichterle Award, granted to outstanding early-career researchers, links the biography of a politically marginalised scientist with support for future generations. Its meaning lies not only in honouring Wichterle's inventions. The prize associates scientific excellence with independence, creativity, and resistance to the subordination of research. Young chemists, physicists, biologists, mathematicians, and humanities scholars receive recognition under the name of someone whose institutional authority had once been removed. This creates a bridge between historical memory and career policy. Medals bearing the names of figures such as František Palacký, Jan Evangelista Purkyně, and Jaroslav Heyrovský perform related commemorative functions. Institute lecture series, prizes, rooms, and anniversary events similarly inscribe selected predecessors into institutional space. Such practices can become empty ritual if they are detached from critical biography. When accompanied by exhibitions, archival publications, and discussion of political context, however, they keep historical experience present within scientific culture. The symbolic repertoire of AV ČR consequently expresses which forms of achievement and conduct the institution wishes to transmit. Rehabilitation becomes durable when memory is incorporated into recurring practices rather than confined to a single anniversary (*Czech Academy of Sciences, n.d.*).

Obituaries, exhibitions, memoirs, and institutional anniversaries have further expanded the public restoration of scientific memory. An obituary can reconnect a foreign career with the Czech school in which it began. An exhibition can place laboratory instruments, private correspondence, political documents, and published discoveries within a single biographical narrative. Memoirs reveal the relationship between scientific work and the everyday experience of occupation, Stalinism, reform, invasion, and exile. Anniversary volumes allow institutes to reconsider former directors, forgotten research teams, and changes in disciplinary priorities. Documentary films and public lectures bring these narratives beyond specialised histories of science. Digital media have increased the audience but also encouraged simplified stories built around invention, persecution, and eventual triumph. The Academy therefore faces a tension between accessibility and historical complexity. Wichterle's improvised contact-lens

apparatus, for example, is an exceptionally effective public symbol, but it cannot by itself explain the institutional and collective character of polymer research. Likewise, the story of a persecuted genius can overshadow technicians, collaborators, spouses, and less celebrated colleagues. Responsible commemoration must use attractive personal narratives without reducing science to solitary heroism. The restoration of memory becomes intellectually valuable when public recognition leads audiences towards the structures, communities, and political conditions in which discovery occurred.

The dissolution of Czechoslovakia in 1992–1993 added a national complication to this process. Many scholars selected for rehabilitation had worked within federal institutions and understood themselves as Czechoslovak rather than exclusively Czech or Slovak. ČSAV institutes, universities, professional societies, and journals had connected research communities across the two republics. Exile organisations had likewise represented Czechs and Slovaks within common institutions. After the creation of independent states, archives, commemorations, and disciplinary narratives increasingly developed within separate national frameworks. This division made administrative sense but could distort biographies that crossed Prague, Brno, Bratislava, and foreign centres. The restoration of scientific memory therefore required cooperation between AV ČR, the Slovak Academy of Sciences, universities, archives, and learned societies. Joint conferences and publications helped preserve a Czechoslovak level of interpretation without denying the later national development of either academy. The same principle applied to Carpathian Ruthenian, German-speaking, Jewish, and other personalities whose lives exceeded current borders. A historically accurate national memory must be capable of recognising identities and institutions that no longer correspond to the contemporary state. Czech scientific history is strengthened rather than weakened when it acknowledges that much of its 20th-century inheritance was shared. Rehabilitation consequently involves protecting the Czechoslovak dimension from retrospective national fragmentation (*Kostlán, 2018*).

Restoration also required difficult dialogue between those who had left and those who had remained. Émigrés could reasonably feel that their former institutions had abandoned them, appropriated their work, or remained silent about political injustice. Researchers who stayed sometimes felt that foreign colleagues underestimated the compromises necessary to preserve laboratories, archives, and research groups. Some had protected younger colleagues or continued valuable science within narrow limits. Others had benefited from vacancies created by dismissal and emigration. After 1989, the distinction between victim, bystander, beneficiary, and participant could therefore become personally painful. General accusations against everyone who had remained were as misleading as narratives that reduced repression to impersonal state pressure. Institutional history had to examine concrete decisions, available alternatives, and differences in authority. Directors, party officials, ordinary employees, and junior researchers did not possess equal power. Nor did formal party membership always reveal whether a person enforced repression, accommodated it, or attempted to limit its effects. Reconciliation could not be built upon compulsory forgetting, but neither could scientific cooperation be rebuilt through indiscriminate moral judgement. The restoration of memory required a language capable of distinguishing guilt, compromise, survival, solidarity, and later willingness to acknowledge harm.

This difficulty explains why rehabilitation remained contested even after its most obvious cases had been accepted. Revolutionary moments favour clear moral contrasts, whereas institutional history reveals mixed motives and uneven behaviour. A scholar excluded after

1968 might also have participated in earlier ideological campaigns. A researcher who adapted during normalisation might have produced outstanding science and quietly helped colleagues. An émigré could become a defender of intellectual freedom while remaining involved in bitter disputes within the exile community. Former reform communists, lifelong anti-communists, politically disengaged scientists, and younger scholars did not share a single interpretation of the past. Post-1989 memory politics sometimes rewarded biographies that fitted a simple movement from oppression to democratic restoration. More complicated trajectories were harder to commemorate. The danger was that rehabilitation might create a new canonical narrative rather than restore plural historical inquiry. Academic institutions therefore needed procedures that separated evidence-based evaluation from political fashion. This did not require moral neutrality towards repression. It required sufficient precision to recognise that scientific personality and political biography rarely formed an entirely consistent whole. Mature scientific memory preserves disagreement while refusing to conceal documented injustice.

Women and other less visible groups exposed further limits of the first post-1989 narratives. Public rehabilitation initially concentrated heavily on senior male intellectuals, dissidents, institute directors, and internationally famous émigrés. Women researchers often appeared as spouses, assistants, translators, or unnamed members of research teams even when they possessed substantial scientific careers of their own. The pressures of exile also affected dual-career families unequally, since childcare and adaptation frequently limited women's professional opportunities. Technicians, laboratory assistants, librarians, archivists, and administrative workers could suffer political exclusion without qualifying for conventional biographies of great scientists. German-speaking scholars, Jewish victims, Slovak colleagues, and researchers from minority backgrounds were likewise vulnerable to omission from nationally simplified narratives. The absence of gender analysis in much post-1989 Czech historiography has itself been identified as a significant blind spot in the reconstruction of state-socialist experience. Restoring scientific memory therefore requires attention to how hierarchy determines which lives leave accessible archives and which forms of work receive authorship. Oral history, collective biography, personnel databases, and the study of research teams can partly correct these inequalities. Such methods shift attention from exceptional personalities towards the social organisation of knowledge. They also reveal that institutional continuity was frequently maintained by people who received little formal honour. A complete rehabilitation must restore not only celebrated voices but the structure of labour that made scientific achievement possible (*Oates-Indruchová, 2022*).

Generational change gradually transformed rehabilitation from personal settlement into professional history. During the early 1990s, witnesses and participants necessarily dominated discussions because documents were only beginning to open and institutional decisions required immediate action. Their testimony supplied urgency, moral vocabulary, and knowledge of hidden events. As these figures retired or died, younger historians inherited collections rather than direct memories. This transition reduced personal immediacy but increased the possibility of comparative and critical distance. Researchers could examine Nazi occupation, Stalinism, the Prague Spring, normalisation, exile, and post-socialist transformation within longer analytical frameworks. They could compare Czech developments with other academies and research systems in Central and Eastern Europe. International collaboration further challenged national stories that portrayed persecution or reform as uniquely Czech experiences. The professionalisation of memory did not make moral questions

disappear. It changed the way those questions were supported, tested, and connected with institutional evidence. A later generation could revise the interpretations of founders without denying their rehabilitative importance. Scientific memory thereby became capable of self-correction, which is one of the essential differences between historical scholarship and official commemoration.

Digitisation has given this restored memory a new form of accessibility. Catalogues, biographical databases, digitised periodicals, archival finding aids, oral-history recordings, and electronic editions allow dispersed evidence to be studied together. A researcher no longer needs to know in advance whether a particular name belongs to an official publication, an exile journal, a samizdat edition, or an institutional file. Searchable resources can reveal citations and relationships concealed by earlier divisions among repositories. Digital access also enables descendants and foreign scholars to participate in the reconstruction of Czech and Czechoslovak scientific lives. Yet digitisation does not automatically eliminate absence. Collections that were never preserved cannot be recovered simply by creating better databases. Poor metadata can reproduce earlier exclusions, while copyright, privacy, and personal-data restrictions may limit access to sensitive 20th-century records. Digital projects therefore require sustained archival expertise, funding, and critical description. They must identify pseudonyms, alternative spellings, changes of citizenship, and institutional reorganisations if dispersed biographies are to be connected accurately. The technical infrastructure of memory is consequently also an interpretative infrastructure. By investing in durable and searchable collections, the Academy turns rehabilitation into a resource available beyond the generation that initiated it.

The restoration of scientific memory has ultimately become part of the democratic ethics of AV ČR. Knowledge of past dismissals, censorship, political vetting, and forced exile reminds the institution that autonomy cannot be treated as permanently secured. Historical experience gives practical meaning to transparent competitions, elected representation, peer evaluation, archival openness, and protection of scholarly expression. It also strengthens the Academy's capacity to recognise contemporary threats to researchers displaced by war or authoritarian government. Memory of Czech exile creates an ethical argument for international solidarity with scholars who now confront comparable disruption elsewhere. This connection should not turn historical suffering into institutional self-congratulation. Its value lies in transforming remembered vulnerability into responsible conduct. The Academy's credibility depends upon its willingness to preserve evidence of both achievement and failure. A democratic research institution must honour persecuted scholars while allowing historians to investigate its own compromises. It must celebrate returning connections without pretending that lost careers and destroyed communities were fully restored. Scientific memory therefore remains an unfinished responsibility rather than a completed monument. Its preservation links institutional identity with the continuing defence of intellectual freedom.

Thus, post-1989 rehabilitation restored Czech and Czechoslovak scientific memory through a combination of personal recognition, institutional reform, archival recovery, biographical research, and renewed international connection. Wichterle's presidency symbolised the reversal of normalisation-era values, but the deeper process extended far beyond a single celebrated figure. Koutecký, Prečan, Michl, Klein, Tauc, Čížek, and numerous other scholars re-entered Czech academic life through different combinations of return, collaboration, honour, publication, and mentorship. The Institute of Contemporary History, the Masaryk Institute and Archives, the Learned Society, and recovered exile collections gave restored

memory durable organisational forms. Encyclopaedias, oral histories, databases, critical editions, exhibitions, and commemorative awards returned suppressed personalities to professional and public visibility. This recovery also expanded the meaning of national science by including exile careers, Jewish and German-speaking scholars, Slovak connections, and research conducted beyond state territory. It revealed that rehabilitation could annul injustice but could not recreate lost time, destroyed teams, or unrealised discoveries. It also exposed tensions between witnesses and later historians, émigrés and those who remained, symbolic heroes and forgotten workers, national narratives and transnational biographies. The most credible memory therefore emerged where acknowledgement was joined with documentary evidence and critical interpretation. AV ČR inherited not only the achievements of its predecessors but their exclusions, silences, and interrupted continuities. By preserving this complex inheritance, the Academy strengthened the connection between historical self-knowledge and contemporary scientific autonomy. The restoration of scientific memory completed neither the past nor its moral reckoning, but it made both available for continuing scholarly and civic reflection.

References

Act No. 52/1952 Coll. on the Czechoslovak Academy of Sciences [Zákon č. 52/1952 Sb., o Československé akademii věd]. (1952). *Sbírka zákonů Republiky československé*.

American Philosophical Society. (2022). *Nobel Prize biochemist Gerty T. Cori*. https://www.amphilsoc.org/blog/nobel-prize-biochemist-gerty-t-cori

American Society for Cell Biology. (2012). *San Francisco Declaration on Research Assessment*.

Andrade, R. de O. (2020). Eva Zažímalová: Eyes on the world. *Pesquisa FAPESP*.

Ash, M. G., & Surman, J. (Eds.). (2012). *The nationalisation of scientific knowledge in the Habsburg Empire, 1848–1918*. Palgrave Macmillan.

Associated Press. (2024, January 12). *František Janouch, a Czech nuclear physicist who supported dissidents from Sweden, dies at age 92*.

Austrian Science Fund. (2024). *2024 Jiří Friml*.

Bahenská, M. (2021). Věda s ženskou tváří: Ženy-vědkyně v ČSAV a jejich osobní fondy [Science with a female face: Women scientists in the Czechoslovak Academy of Sciences and their personal fonds]. *Acta Musei Nationalis Pragae – Historia, 75*(3–4), 34–38.

Barek, J., Fogg, A. G., & Muck, A. (2010). The long way to success: Jaroslav Heyrovský and the Nobel Prize. *Electroanalysis, 22*(17–18), 2007–2014.

Bártová, E., Kozubek, S., & Kovařík, A. (2025). Biophysics in the Czech Republic: 70th anniversary of the Institute of Biophysics. *European Biophysics Journal*, *54*, 529–535.

Benáček, V. (2017). *Mlčoch Lubomír*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Beran, J. (2005). Vytváření členské základny ČSAV v roce 1952 [The formation of the membership base of the Czechoslovak Academy of Sciences in 1952]. *Soudobé dějiny, 12*(1), 102–139.

Beránek, O. (2014). *Oriental Institute*. Oriental Institute of the Academy of Sciences of the Czech Republic.

Blanton, T. S. (2023, January 9). *Vilém Prečan at 90*. National Security Archive.

Blažka, M., et al. (2014). *1989 + 25 = Výzkum užitečný pro společnost: Nástin historie státní podpory výzkumu v ČR v letech 1989 až 2014* [1989 + 25 = Research useful for society: An outline of the history of state support for research in the Czech Republic from 1989 to 2014]. Technologická agentura České republiky.

Brádlerová, D. (2020). Milada Paulová a její působení v mimouniverzitních vědeckých institucích [Milada Paulová and her activity in non-university scientific institutions]. *Dějiny věd a techniky, 53*(3), 120–130.

British Academy. (n.d.). *Professor Dr František Šmahel FBA*. https://www.thebritishacademy.ac.uk/fellows/profiles/frantisek-%C5%A1mahel-FBA/

Čapková, K. (2012). *Czechs, Germans, Jews? National identity and the Jews of Bohemia*. Berghahn Books.

Cardona, M. (2011, February 7). Obituary of Jan Tauc. *Physics Today*. https://doi.org/10.1063/PT.4.1932

Centre for Theoretical Study. (n.d.). *Jan Patočka Archives*. Charles University.

CERGE-EI. (2024). *Professor Jan Švejnar was awarded a state decoration for his work*.

CERGE-EI. (n.d.). *About CERGE-EI*.

Charles University. (2020, November 17). *Charles University marks 17 November*. https://cuni.cz/UKEN-1376.html

Cooper, D. L. (2023). *The Czech manuscripts: Forgery, translation, and national myth*. Northern Illinois University Press.

Crawford, E., Shinn, T., & Sörlin, S. (Eds.). (1993). *Denationalizing science: The contexts of international scientific practice*. Kluwer Academic Publishers.

Cutter, D. C. (1983). Haenke, Tadeo Peregrino. In *Dictionary of Canadian Biography* (Vol. 5). University of Toronto/Université Laval.

CVVM. (n.d.). *About us*. Public Opinion Research Centre, Institute of Sociology of the Czech Academy of Sciences.

Czech Academy of Sciences. (2015). *The Czech Academy of Sciences 2014–2015: Strategy AV21—Top research in the public interest*. CAS.

Czech Academy of Sciences. (2020, March 27). *The Czech Academy of Sciences tests samples, develops protective materials and advises with economics*. CAS.

Czech Academy of Sciences. (2021). *What's the situation of women in science in the Czech Republic today?* CAS.

Czech Academy of Sciences. (2022). *Concept for development of activities of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2022). *One hundred years of polarography*. CAS.

Czech Academy of Sciences. (2024). *2023 annual report of the Czech Academy of Sciences*.

Czech Academy of Sciences. (2024). *Annual report 2024*. CAS.

Czech Academy of Sciences. (2024). *Four CAS projects get ERC Consolidator Grants, each to receive two million euros*. CAS.

Czech Academy of Sciences. (2024). *Radomír Pánek nominated for the next President of the CAS*. CAS.

Czech Academy of Sciences. (2025). *The Czech Academy of Sciences has appointed its new leadership for 2025–2029*. CAS.

Czech Academy of Sciences. (2025). *Radomír Pánek: The Academy must be united, strong, and proactive*. CAS.
Czech Academy of Sciences. (n.d.). *History overview*. CAS.
Czech Academy of Sciences. (n.d.). *Mission of the CAS*. CAS.
Czech Academy of Sciences. (n.d.). *Otto Wichterle Award*. CAS.
Czech Academy of Sciences. (n.d.). *PhDr. Oldřich Tůma, Ph.D.* CAS.
Czech Academy of Sciences. (n.d.). *Representatives of the CAS and its predecessors*. CAS.
Czech Academy of Sciences. (n.d.). *Research areas*. CAS.
Czech Academy of Sciences. (n.d.). *Statutes of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (n.d.). *Support of research: Academic Award — Praemium Academiae*. CAS.
Czech Academy of Sciences. (n.d.). *The Jan Evangelista Purkyně Honorary Medal for Merit in the Biomedical Sciences*. CAS.
Czech Academy of Sciences. (n.d.). *The Karel Engliš Honorary Medal for Merit in the Social and Economic Sciences*. CAS.
Czech Digital Mathematics Library. (n.d.). *Eduard Čech*.
Czech Language Institute. (n.d.). *History*.
Czech Literary Bibliography. (n.d.). *Retrospective Bibliography Section*. Institute of Czech Literature of the Czech Academy of Sciences.
Czech National Council. (1992). *Act No. 283/1992 Coll., on the Czech Academy of Sciences*. CAS.
Czech Technical University in Prague. (2023, May 24). *Renovation of the memorial plaque of Professor Felber, former rector of CTU*.
Czechoslovak Documentation Centre. (n.d.). *Brief history of the ČSDS (1986–2007)*. https://csds.cz/en/csds/2146-DS.html
Daston, L., & Sibum, H. O. (2003). Introduction: Scientific personae and their histories. *Science in Context, 16*(1–2), 1–8.
David, R. (2012). Twenty years of transitional justice in the Czech lands. *Europe-Asia Studies, 64*(4), 761–784.
De Clercq, E., & Holý, A. (2005). Acyclic nucleoside phosphonates: A key class of antiviral drugs. *Nature Reviews Drug Discovery, 4*(11), 928–940.
Delong Instruments. (n.d.). *Who Is Delong Instruments*. https://www.delong.cz/about
Demain, A. L., & Spizek, J. (2010). Memories of a great man, Ivan Málek. *Journal of Industrial Microbiology & Biotechnology, 37*, 1223–1224.
Devátá, M., Olšáková, D., Sommer, V., & Dinuš, P. (2010). *Vědní koncepce KSČ a její institucionalizace po roce 1948* [The Communist Party of Czechoslovakia's conception of science and its institutionalisation after 1948]. Ústav pro soudobé dějiny AV ČR.
Dictionary of Czech Philosophers. (n.d.). *Zdeněk Kalista*. Masaryk University.
Digital Humanities Czech Academy of Sciences. (n.d.). *Database of plaques of the Czech Academy of Sciences*.
Doel, R. E. (2020). Internationalism in science after 1940. In H. R. Slotten, R. L. Numbers, & D. N. Livingstone (Eds.), *The Cambridge history of science: Vol. 8. Modern science in national, transnational, and global context* (pp. 60–74). Cambridge University Press.
Dufková, K., & Rákosník, J. (2014). *Political sociology of the Zdeněk Mlynář research team*. *West Bohemian Historical Review, 20*(2), 94–108.
Dvořáčková, V. (2024). The origins of Czech academic lexicography: From foreign inspiration to state formation potential. *Studi Slavistici, 21*(2), 101–116.

Dvořáčková, V., & Franc, M. (Eds.). (2018). *Science overcoming borders*. Masaryk Institute and Archives of the CAS.

ELI Beamlines. (n.d.). *Laser history*.

European Commission. (n.d.). *ERA history*. European Research Area Platform.

European Network Remembrance and Solidarity. (n.d.). *Dr Oldřich Tůma*.

European Research Council. (n.d.). *Eva Zažímalová*. https://erc.europa.eu/event-speaker/eva-zazimalova

Farys, R., & Wolbring, T. (2021). Matthew effects in science and the serial diffusion of ideas. *Quantitative Science Studies, 2*, 505–526.

Feinberg, J. G., Landa, I., & Mervart, J. (Eds.). (2022). *Karel Kosík and the dialectics of the concrete*. Brill.

Filáček, A. (2023). Transformation of the Academy of Sciences: From science in society to the responsible science for society. *Teorie vědy / Theory of Science, 45*(2), 253–279.

Fleck, L. (1979). *Genesis and development of a scientific fact* (F. Bradley & T. J. Trenn, Trans.; T. J. Trenn & R. K. Merton, Eds.). University of Chicago Press. (Original work published 1935)

Franc, M. (2018). Pořád chemici? Chemici v čele ČSAV, AV ČR a jiných akademií věd 1952–2000 [Still chemists? Chemists at the head of ČSAV, the CAS, and other academies of sciences, 1952–2000]. *Chemické listy, 112*(10), 693–700.

Franc, M. (2024). The showcase of Czechoslovak science: The Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Science. In R. Pichler and T. Heinze (Eds.), *Organisationsformen der Erkenntnisgewinnung* [Organisational forms of knowledge production] (pp. 349–363). Springer VS.

Franc, M., & Dvořáčková, V. (Eds.). (2019). *Dějiny Československé akademie věd I: 1952–1962* [History of the Czechoslovak Academy of Sciences I: 1952–1962]. Academia; Masaryk Institute and Archives of the CAS.

Franc, M., & Dvořáčková, V. (Eds.). (2024). *Dějiny Československé akademie věd II: 1963–1970* [History of the Czechoslovak Academy of Sciences II: 1963–1970]. Academia; Masaryk Institute and Archives of the Czech Academy of Sciences.

Franc, M., & Mádlová, V. (2014). *The history of the Czech Academy of Sciences in pictures* [Dějiny Akademie věd v obrazech]. Academia.

Franc, M., Gecko, T., Pavlíček, T. W., Šoukal, J., Bahenská, M., Jůnová Macková, A., Dvořáčková, V., & Brandejsová Tomsová, P. (2021). *Habitus českých vědců 1918–1968: Příklad dvou generací* [The habitus of Czech scientists, 1918–1968: The example of two generations]. Masaryk Institute and Archives of the CAS.

Garfield, E. (1992). The restoration of František Šorm: Prolific Czech scientist obeyed his conscience and became a nonperson. *Current Contents, 15*, 51–56.

Gecko, T., & Pavlíček, T. W. (2021). Kariérní postup vědce, vztah učitele se žákem a vytváření vědeckých škol [Scientific career advancement, the teacher–student relationship, and the formation of research schools]. In M. Franc (Ed.), *Habitus českých vědců 1918–1968: Příklad dvou generací* [The habitus of Czech scientists, 1918–1968: The example of two generations] (pp. 63–118). Masaryk Institute and Archives of the CAS.

Gender & Science. (n.d.). *Milada Paulová Award*.

Gieryn, T. F. (1983). Boundary-work and the demarcation of science from non-science: Strains and interests in professional ideologies of scientists. *American Sociological Review, 48*(6), 781–795.

Glassheim, E. (2000). National mythologies and ethnic cleansing: The expulsion of Czechoslovak Germans in 1945. *Central European History, 33*(4), 463–486.

Godin, B. (2006). The linear model of innovation: The historical construction of an analytical framework. *Science, Technology, & Human Values, 31*(6), 639–667.

Government of the Czech Republic. (2009). *Government poised to increase the Academy of Sciences budget by half a billion*.

Grubhoffer, L. (2024, May 20). *Speech at the XXXth General Assembly of the Learned Society*. Learned Society of the Czech Republic.

Hájková, D., Kokešová, H., & Vašek, R. (Eds.). (2013). *Korespondence T. G. Masaryk–Edvard Beneš, 1918–1937* [Correspondence between T. G. Masaryk and Edvard Beneš, 1918–1937]. Masaryk Institute and Archives of the Czech Academy of Sciences.

Havránek, B. (1964). The functional differentiation of the standard language. In P. L. Garvin (Ed.), *A Prague School reader on esthetics, literary structure, and style* (pp. 3–16). Georgetown University Press. (Original work published 1932).

Hejnar, J. (2017). Jan Svoboda (1934–2017): Sixty years with retroviruses. *Retrovirology, 14*, 32.

Hicks, D., Wouters, P., Waltman, L., de Rijcke, S., & Rafols, I. (2015). Bibliometrics: The Leiden Manifesto for research metrics. *Nature, 520*(7548), 429–431.

Historical Institute of the Czech Academy of Sciences. (n.d.). *Záviška František 1879–1945*. *Biografický slovník českých zemí* [Biographical dictionary of the Czech lands].

Hroch, M. (2000). *Social preconditions of national revival in Europe: A comparative analysis of the social composition of patriotic groups among the smaller European nations* (B. Fowkes, Trans.). Columbia University Press.

Hudek, A. (2022). The development of relations between the Slovak and the Czechoslovak Academy of Sciences until 1970. *Práce z dějin Akademie věd, 14*(2), 27–47.

IEEE Computer Society. (n.d.). *Antonín Svoboda*. Computer Pioneers. https://history.computer.org/pioneers/svoboda.html

Institute for the Study of Totalitarian Regimes. (n.d.). *About us*.

Institute for the Study of Totalitarian Regimes. (n.d.). *Relevant legislation*.

Institute of Contemporary History of the Czech Academy of Sciences. (2025). *ÚSD AV ČR sídlem Česko-slovenské komise historiků* [The Institute of Contemporary History becomes the seat of the Czech–Slovak Commission of Historians].

Institute of Contemporary History of the Czech Academy of Sciences. (n.d.). *About us: The Institute's history*.

Institute of Contemporary History of the Czech Academy of Sciences. (n.d.). *Database of Romani testimonies*.

Institute of Contemporary History of the Czech Academy of Sciences. (n.d.). *Research Group for Historical Transformation Studies*.

Institute of Contemporary History of the Czech Academy of Sciences. (n.d.). *Soudobé dějiny/Czech Journal of Contemporary History*.

Institute of Contemporary History of the Czech Academy of Sciences. (n.d.). *Strategy AV21*.

Institute of Czech Literature. (n.d.). *Timeline*.

Institute of History of the CAS. (n.d.). *Biographical Dictionary of the Czech Lands*.

Institute of History of the CAS. (n.d.). *History of the Institute and specialisation*.

Institute of Macromolecular Chemistry of the CAS. (n.d.). *A new generation of medicinal products derived from HemaGel*.

Institute of Molecular Genetics of the CAS. (n.d.). *History of the Institute*.

Institute of Organic Chemistry and Biochemistry of the CAS. (2024, May 13). *Josef Michl, world-renowned Czech chemist, passes away*.

Institute of Philosophy of the CAS. (n.d.). *Centre for Theoretical Study: The Jan Patočka Archive*.

Institute of Physics of the CAS. (2023). *Tomáš Jungwirth brings his second ERC Advanced Grant to FZU*. https://www.fzu.cz/en/news/tomas-jungwirth-brings-his-second-erc-advanced-grant-fzu

Institute of Physiology of the CAS. (n.d.). *Helena Illnerová, Prof., M.Sc., D.Sc.*

Institute of Scientific Instruments of the CAS. (2024). *Institute of Scientific Instruments: The Czech Academy of Sciences*.

Institute of Scientific Instruments of the CAS. (n.d.). *History*.

Institute of Sociology of the CAS. (2008). Pavel Machonin, eminent Czech sociologist, has died. *Sociologický časopis/Czech Sociological Review, 44*(3), 587–589.

Institute of Sociology of the CAS. (n.d.). *Gender & Sociology*.

Institute of Sociology of the CAS. (n.d.). *Czech Social Science Data Archive: Publications and activities*.

International Academy of Quantum Molecular Science. (n.d.). *Jaroslav Koutecký*.

International Astronomical Union. (2020). *Professor Luboš Perek (1919–2020)*.

International Union of Pure and Applied Chemistry. (1998). Chemistry in the Czech Republic. *Chemistry International, 20*(3).

IOCB Prague. (2017). *Prof. Pavel Hobza receives Schrödinger Medal for 2017*. IOCB.

IOCB Prague. (2018, July 17). *Student project leads to founding of startup DIANA Biotechnologies*. IOCB.

IOCB Prague. (2020, November 3). *Remembering Rudolf Zahradník*. https://www.uochb.cz/en/news/203/remembering-rudolf-zahradnik

IOCB Prague. (n.d.). *Azacitidine, decitabine*. IOCB.

IOCB Prague. (n.d.). *Highlights: Antonín Holý*. IOCB.

IOCB Prague. (n.d.). *History of IOCB Prague*. IOCB.

IOCB Prague. (n.d.). *Successful IOCB compounds*. IOCB.

IOCB Prague. (n.d.). *Technology transfer*. IOCB.

IOCB Prague. (n.d.). *Tony Holý Lectures*. IOCB.

Iványi, J. (2003). Milan Hašek and the discovery of immunological tolerance. *Nature Reviews Immunology, 3*(7), 591–597.

J. Heyrovský Institute of Physical Chemistry. (n.d.). *Brief history of the Institute*.

Janák, D. (2017). *Možný Ivo*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the CAS.

Jezdinský, J. (2006). Emil Starkenstein — One of the most important personalities of European continental pharmacology in the period between the two world wars. *Neuroendocrinology Letters, 27*(5), 557–561.

Kabele, J. (2005). *Z kapitalismu do socialismu a zpět: Teoretické vyšetřování přerodů Československa a České republiky* [From capitalism to socialism and back: A theoretical investigation of the transformations of Czechoslovakia and the Czech Republic]. Karolinum.

Kohák, E. (Ed. & Trans.). (1989). *Jan Patočka: Philosophy and selected writings*. University of Chicago Press.

Kopeček, M. (2001). Ve službách dějin, ve jménu národa: Historie jako součást legitimizace komunistických režimů ve střední Evropě v letech 1948–1950 [In the service of history, in

the name of the nation: History and the legitimation of communist regimes in Central Europe, 1948–1950]. *Soudobé dějiny, 8*(1), 23–43.

Kopeček, M. (2010). The Czech Republic: From democracy legitimisation to the politics of memory. *Journal of Modern European History, 8*(2), 145–148.

Kopeček, M. (n.d.). *Research profile and thematic websites*. Institute of Contemporary History of the Czech Academy of Sciences.

Kopecká, A., & Nešpor, Z. R. (2021). *Illner Michal*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Kosík, K. (1976). *Dialectics of the concrete: A study on problems of man and world* (K. Kovanda & J. Schmidt, Trans.). D. Reidel.

Kostlán, A. (2010). Vědecký exil v období komunistického režimu: Emigrace z Československé akademie věd [Scientific exile in the era of the communist regime: Emigration from the Czechoslovak Academy of Sciences]. *Dějiny věd a techniky, 43*(3), 153–181.

Kostlán, A. (2018). Czechoslovak scholars in exile and their institutions. In A. Míšková, M. Franc, & A. Kostlán (Eds.), *Bohemia docta: The historical roots of science and scholarship in the Czech lands* (pp. 440–489). Academia.

Kostlán, A., & Štrbáňová, S. (2011). Czech scholars in exile, 1948–1989. In S. Marks, P. Weindling, & L. Wintour (Eds.), *In defence of learning: The plight, persecution, and placement of academic refugees, 1933–1980s* (pp. 239–256). Oxford University Press for the British Academy.

Křížková, A., Nagy, B., & Mrčela Kanjuo, A. (2010). The gender implications of labour-market policy during transformation and European Union accession: A comparison of the Czech Republic, Hungary, and Slovenia. In C. Klenner & S. Leiber (Eds.), *Welfare states and gender inequality in Central and Eastern Europe* (pp. 329–361). European Trade Union Institute.

Kučera, R. (2016). Facing Marxist orthodoxy: Western Marxism, *The Making*, and the communist historiographies of Czechoslovakia and Poland, 1948–1990. *International Review of Social History, 61*(1), 35–50.

Kyle, R. A., & Shampo, M. A. (2016). Otto Wichterle — Inventor of the first soft contact lenses. *Mayo Clinic Proceedings, 91*(3), e45–e46.

Learned Society of the Czech Republic. (n.d.). *Klein Jan (Foreign Fellow)*.

Machonin, P. (Ed.). (1969). *Československá společnost: Sociologická analýza sociální stratifikace* [Czechoslovak society: A sociological analysis of social stratification]. Epocha.

Machonin, P., & Tuček, M. (Eds.). (1996). *Česká společnost v transformaci: K proměnám sociální struktury* [Czech society in transformation: Changes in the social structure]. Sociologické nakladatelství.

Macura, V. (2010). *The mystifications of a nation: "The potato bug" and other essays on Czech culture*. University of Wisconsin Press.

Mádlová, V. (2024). *Stálé vojsko vědecké: Česká akademie věd a umění 1891–1952* [A permanent army of science: The Czech Academy of Sciences and Arts, 1891–1952]. Academia.

Mannheim, K. (1952). The problem of generations. In P. Kecskemeti (Ed.), *Essays on the sociology of knowledge* (pp. 276–320). Routledge & Kegan Paul. (Original work published 1928)

Masaryk Institute and Archives of the CAS. (n.d.). *Fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences*. https://www.mua.cas.cz/en/fondy-ceskoslovenske-akademie-ved-csav-a-akademie-ved-cr-av-cr

Masaryk Institute and Archives of the CAS. (n.d.). *About the Institute*.

Masaryk Institute and Archives of the CAS. (n.d.). *T. G. Masaryk and his collaborators: Research and editions*.

Masaryk Institute and Archives of the CAS. (n.d.). *About the Institute*.

Masaryk Institute and Archives of the CAS. (n.d.). *Digital research resources*.

Masaryk Institute and Archives of the CAS. (2012). *Dotazník: Základní údaje o činnosti pracoviště AV ČR v roce 2012* [Questionnaire: Basic information on the activities of a Czech Academy of Sciences institute in 2012].

Masaryk Institute and Archives of the CAS. (n.d.). *For schools and the public*.

Masaryk Institute and Archives of the CAS. (n.d.). *Personal fonds*.

Max Planck Society. (2024). *Strengthening the European Research Area: The first three Dioscuri Centres open in the Czech Republic*.

McMaster University Library. (n.d.). *Sixty-Eight Publishers*.

Merton, R. K. (1968). The Matthew effect in science: The reward and communication systems of science are considered. *Science, 159*(3810), 56–63.

Michálek, J., Podešva, J., & Dušková-Smrčková, M. (2022). True story of poly(2-hydroxyethyl methacrylate)-based contact lenses: How did it really happen? *Substantia*.

Míšková, A., Barvíková, H., & Šmidák, M. (1998). *Československá akademie věd 1969–1972: Restaurace komunistické moci ve vědě* [The Czechoslovak Academy of Sciences, 1969–1972: The restoration of communist power in science]. Ústav pro soudobé dějiny AV ČR.

Míšková, A., Franc, M., & Kostlán, A. (Eds.). (2018). *Bohemia docta: The historical roots of science and scholarship in the Czech lands*. Academia.

Mlčoch, L. (1998). Czech privatisation: A criticism of misunderstood liberalism. *Journal of Business Ethics, 17*(9–10), 951–959.

Možný, I. (2023). *Why so easily? Some family reasons for the Velvet Revolution: A sociological essay* (P. Jones, Trans.). Karolinum. (Original work published 1991)

Mukařovský, J. (1970). *Aesthetic function, norm and value as social facts*. Department of Slavic Languages and Literatures, University of Michigan.

National Inventors Hall of Fame. (n.d.). *Otto Wichterle: Soft contact lens*.

National Museum. (n.d.). *Czechoslovak Documentation Centre*.

National Security Archive. (2023). *Vilém Prečan at ninety*.

Navrátil, V., Schimer, J., Tykvart, J., Knedlík, T., Vik, V., Majer, P., Konvalinka, J., & Šácha, P. (2017). DNA-linked inhibitor antibody assay (DIANA) for sensitive and selective enzyme detection and inhibitor screening. *Nucleic Acids Research, 45*(2), e10.

Nešpor, Z. R. (2017). *Večerník Jiří*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Nešpor, Z. R. (Ed.). (2014). *Dějiny české sociologie* [History of Czech sociology]. Academia.

Nisonen-Trnka, R. (2008). The Prague Spring of science: Czechoslovak natural scientists reconsidering the Iron Curtain. *Europe-Asia Studies, 60*(10), 1749–1766.

Nisonen-Trnka, R. (2012). *Science with a human face: The activity of the Czechoslovak scientists František Šorm and Otto Wichterle during the Cold War* [Doctoral dissertation, University of Tampere]. Tampere University Press.

Nobel Prize Outreach. (1960). *The Nobel Prize in Physiology or Medicine 1960*. Nobel Prize Outreach.

Nobel Prize Outreach. (n.d.). *About the Nobel Prize*. NobelPrize.org.
Nobel Prize Outreach. (n.d.). *Gerty Cori — Facts*. NobelPrize.org.
Nobel Prize Outreach. (n.d.). *Jaroslav Heyrovsky — Biographical*. NobelPrize.org.
Nobel Prize Outreach. (n.d.). *Jaroslav Heyrovsky — Facts*. NobelPrize.org.
Nobel Prize Outreach. (n.d.). *Nomination and selection of Nobel Prize laureates*. NobelPrize.org.
Nobel Prize Outreach. (n.d.). *Peter Grünberg — Facts*. NobelPrize.org.
Nobel Prize Outreach. (n.d.). *Vladimir Prelog — Biographical*. NobelPrize.org.
Oates-Indruchová, L. (2008). The limits of thought? The regulatory framework of social sciences and humanities in Czechoslovakia, 1968–1989. *Europe-Asia Studies, 60*(10), 1767–1782.
Oates-Indruchová, L. (2022). Blind spots in post-1989 Czech historiography of state socialism: Gender as a category of analysis. *East European Politics and Societies, 36*(3), 1036–1059.
OECD & Eurostat. (2018). *Oslo manual 2018: Guidelines for collecting, reporting and using data on innovation* (4th ed.). OECD Publishing.
Optica. (2023). *Otto Wichterle*. Optica.org.
Orel, V. (1992). Jaroslav Kříženecký (1896–1964), tragic victim of Lysenkoism in Czechoslovakia. *The Quarterly Review of Biology, 67*(4), 487–494.
Pačes, V. (1995). The transformation of research in the Czech Republic: The role of the Academy of Sciences. *Higher Education in Europe, 20*(4), 114–116. https://doi.org/10.1080/0379772950200423
Palacký University Archive. (n.d.). *Lubomír Doležel*.
Palacký University Olomouc. (n.d.). *Josef Freiherr von Petrasch*.
Paleček, E., & Bartošík, M. (2012). Electrochemistry of nucleic acids. *Chemical Reviews, 112*(6), 3427–3481.
Pánek, J. (2015). *The Czech Historical Institute in Rome*. Centre for Administration and Operations of the CAS.
Pánek, J. (2021). *The Czech Historical Review*. Centre for Administration and Operations of the CAS.
Parliament of the Czech Republic. (2005). *Zákon č. 341/2005 Sb., o veřejných výzkumných institucích* [Act No. 341/2005 Coll., on public research institutions].
Payne, P. (1972). Four years of “normalisation”: The academic purge in Czechoslovakia. *Index on Censorship, 1*(2), 33–52.
Pešek, J. (2018). Central European historian Bedřich Loewenstein (1929–2017). *Czech Journal of Contemporary History, 6*, 164–178.
Pešek, J. (2021). Jan Křen: Sedm desetiletí na cestách soudobých dějin [Jan Křen: Seven decades on the paths of contemporary history]. *Český časopis historický*.
Pokorná, M. (n.d.). *The Royal Bohemian Society of Learning: Its place in the state, in the nation and in the public*. Learned Society of the Czech Republic.
Polák, M. (2021). A brief history of the Kaplan turbine invention. *Energies, 14*(19), 6211.
Prague Forum for Romani Histories. (n.d.). *Projects*.
Radio Prague International. (2001, March 27). *First woman appointed to head Czech Academy of Sciences*.
Radio Prague International. (2006). *Professor Václav Pačes on Czech achievements in genomics research*.

Raj, K. (2007). *Relocating modern science: Circulation and the construction of knowledge in South Asia and Europe, 1650–1900*. Palgrave Macmillan.

Rechcígl, M., Jr. (2006). *Publications of the Czechoslovak Society of Arts and Sciences (SVU): Formative years and bibliography*. Czechoslovak Society of Arts and Sciences.

Richta, R. (Ed.). (1969). *Civilization at the crossroads: Social and human implications of the scientific and technological revolution*. International Arts and Sciences Press.

Rossiter, M. W. (1993). The Matthew Matilda effect in science. *Social Studies of Science, 23*(2), 325–341.

Savelli, M. (2014). Politically unreliable: The state v. Otto Wichterle. *Distillations*.

Sayer, D. (1998). *The coasts of Bohemia: A Czech history*. Princeton University Press.

Schwarz, H., & Friedrich, B. (2021). Obituary for Rudolf Zahradník (1928–2020): "To do what's right". *Theoretical Chemistry Accounts, 140*, 28.

Schweizer, C. R. (2004). Bohemian mineralogy in the early 19th century: The Vaterländisches Museum in Böhmen. *Scripta Geologica, Special Issue 4*, 237–248.

Šebková, H. (1994). Institutions of higher education and the Czech Academy of Sciences in the transitional period. *European Journal of Education, 29*(1), 97–107.

Shapin, S. (1989). The invisible technician. *American Scientist, 77*(6), 554–563.

Shapin, S., & Thackray, A. (1974). Prosopography as a research tool in history of science: The British scientific community, 1700–1900. *History of Science, 12*(1), 1–28.

Šik, O. (1968). *Plan and market under socialism*. International Arts and Sciences Press.

Šiklová, J. (1990). The grey zone and the future of dissent in Czechoslovakia. *Social Research, 57*(2), 347–363.

Šimůnek, M., & Kostlán, A. (Eds.). (2013). *Disappeared science: Biographical dictionary of Jewish scholars from Bohemia and Moravia—Victims of Nazism, 1939–1945*. Pavel Mervart.

Slovak Academy of Sciences. (n.d.). *Milestones in the history of the Slovak Academy of Sciences*.

Söderqvist, T. (2007). "No genre of history fell under more odium than that of biography": The delicate relations between scientific biography and the historiography of science. In T. Söderqvist (Ed.), *The history and poetics of scientific biography* (pp. 241–262). Ashgate.

STAR Cluster. (2019). *Prof. Václav Pačes*. https://www.star-cluster.cz/en/prof-vaclav-paces-2/

Statutory Measure No. 26/1970 Coll. amending Act No. 54/1963 Coll. on the Czechoslovak Academy of Sciences [Zákonné opatření č. 26/1970 Sb., kterým se mění a doplňuje zákon č. 54/1963 Sb., o Československé akademii věd]. (1970). *Sbírka zákonů Československé socialistické republiky*.

Stokes, D. E. (1997). *Pasteur's quadrant: Basic science and technological innovation*. Brookings Institution Press. https://www.brookings.edu/books/pasteurs-quadrant/

Štrbáňová, S., & Kostlán, A. (Eds.). (2011). *Sto českých vědců v exilu: Encyklopedie významných vědců z řad pracovníků Československé akademie věd v emigraci* [One hundred Czech scholars in exile: An encyclopaedia of prominent scientists from the Czechoslovak Academy of Sciences in emigration]. Academia.

Surman, J. (2019). *Universities in Imperial Austria, 1848–1918: A social history of a multilingual space*. Purdue University Press.

Toman, J. (1995). *The magic of a common language: Jakobson, Mathesius, Trubetzkoy, and the Prague Linguistic Circle*. MIT Press.

Tomášek, M. (2014). Professor Viktor Knapp (1913–1996): Juridical science in metamorphoses of time. *The Lawyer Quarterly, 4*(1), 68–72.

Tucker, A. (2000). *The philosophy and politics of Czech dissidence from Patočka to Havel*. University of Pittsburgh Press.

Tůma, O. (2018). Karel Kaplan: 90 years. *Soudobé dějiny, 25*(3–4).

Tůma, O. (2018). Unreached ninetieth birthday of Milan Otáhal. *Czech Journal of Contemporary History, 6*, 154–163.

Turchetti, S., Herran, N., & Boudia, S. (2012). Introduction: Have we ever been 'transnational'? Towards a history of science across and beyond borders. *The British Journal for the History of Science, 45*(3), 319–336.

University of Texas at Austin. (2023, April 17). *Ivo Babuška, mathematician known for finite element method breakthroughs, dies at 97*.

University of Vienna. (2025). *Max Dvořák, Prof*.

University of Waterloo. (2025, January 24). *In memoriam: Jiří Čížek*.

Vaněk, M. (2008). The development of theory and method in Czech oral history after 1989. *Oral History Forum d'histoire orale, 28*, 1–8.

Vaněk, M., & Mücke, P. (2016). *Velvet revolutions: An oral history of Czech society*. Oxford University Press.

Večerník, J. (2017). *Matějů Petr*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Večerník, J., & Matějů, P. (Eds.). (1999). *Ten years of rebuilding capitalism: Czech society after 1989*. Academia.

Vilcek, J. (2016). *Love and science: A memoir*. Seven Stories Press.

Vodáková, O. (2017). *Musil Jiří*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Vodáková, O. (2017). *Potůček Martin*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Voříšek, M. (2017). *Kabele Jiří*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Voříšek, M. (2017). *Richta Radovan*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Voříšek, M. (2017). *Šiklová Jiřina*. In Z. R. Nešpor (Ed.), *Sociologická encyklopedie* [Sociological encyclopaedia]. Institute of Sociology of the Czech Academy of Sciences.

Vybíral, J. (2015). Birnbaum's "Baroque principle" and the Czech reception of Heinrich Wölfflin. *Journal of Art Historiography, 13*.

Weiss, R. A. (2018). Remembering Jan Svoboda: A personal reflection. *Viruses, 10*(4), Article 203.

Whitley, R. (2000). *The intellectual and social organization of the sciences* (2nd ed.). Oxford University Press.

Wichterle, O., & Lím, D. (1960). Hydrophilic gels for biological use. *Nature, 185*, 117–118.

Wilson, W. E. (n.d.). *Ignaz von Born (1742–1791)*. The Mineralogical Record Biographical Archive.

Winner, T. G. (2000). Czech and Tartu–Moscow semiotics: The cultural semiotics of Vladimir Macura (1945–1999). *Sign Systems Studies, 28*, 158–180.

Žárský, V. (2023). The 150th anniversary of the birth of Prof. Bohumil Němec — Founder of *Biologia Plantarum*. *Biologia Plantarum, 67*.

Chapter 16

Scientific Schools, Institutes, and the Continuity of Research Traditions

The Institute as a Carrier of Scientific Continuity

1. Laboratories, Archives, Collections, and Research Groups

The preceding discussion of academicians and leading scientific figures approached Czech academic history through individual lives, reputations, discoveries, exclusions, and returns. The present chapter changes the scale of observation by asking what remains when a celebrated scientist retires, emigrates, is dismissed, or dies. At first sight, the answer appears to be the institute as a legally established organisation possessing a name, budget, director, staff, buildings, and formally defined research mission. Yet legal identity alone cannot explain why some research traditions survive radical political and organisational changes while others disappear despite institutional protection. The law establishing the Czech Academy of Sciences made the institutes the principal bodies through which the Academy conducts research and explicitly transferred the relevant institutes of ČSAV into the new Czech institutional framework after the dissolution of the federation (*Czech National Council, 1992*). The Academy's Statutes subsequently defined the modern system as a democratically organised network of autonomous research institutions connected with more than two centuries of Czech scholarly development (*Czech Academy of Sciences, 2006*). These formulations provide institutional legitimacy, but continuity is produced through more ordinary and less visible practices. A research tradition survives when instruments remain usable, specimens remain identifiable, field notes remain interpretable, archives remain accessible, and experienced researchers can teach younger colleagues how questions were once formulated. It persists when a library preserves the literature of a discipline, when a laboratory maintains a difficult technique, and when a research group possesses enough collective confidence to revise rather than merely repeat inherited assumptions. An institute therefore carries continuity simultaneously through material resources, documentary memory, professional relationships, habitual procedures, and shared standards of evidence. Continuity in this sense is neither passive preservation nor automatic reproduction, because every generation selects what should be retained, modernised, criticised, or abandoned. From this perspective, the institute becomes an active historical mechanism through which scientific inheritance is converted into new research rather than simply commemorated as a completed past (*Franc & Mádlová, 2013*; *Míšková et al., 2018*).

The most visible material expression of such continuity is the laboratory, although a laboratory is never merely a room containing scientific equipment. It is an organised environment in which instruments, bodies, substances, measurements, routines, conversations, and documentary practices are brought into a repeatable relationship. The arrangement of benches, storage areas, clean zones, computers, sample repositories, workshops, and meeting rooms can embody assumptions about what counts as a legitimate experiment. Older buildings may

preserve traces of techniques that have disappeared, while newly constructed facilities reorganise relations among disciplines and compel researchers to acquire different habits. A laboratory relocation can therefore be scientifically consequential even when no research programme is formally abolished. Equipment must be recalibrated, experimental organisms transferred, safety procedures rewritten, and informal paths of communication reconstructed. The spatial organisation of research also determines whether technicians, students, and senior scientists encounter one another frequently or work in isolated units. Newcomers learn a laboratory partly through written instructions, but also by observing where materials are stored, how instruments are treated, and whom colleagues consult when an unexpected result appears. The room itself becomes a map of accumulated experience, although that map remains intelligible only to people who participate in its working culture. Studies of laboratory life have shown that scientific facts emerge through organised practices of inscription, comparison, testing, and collective judgement rather than through detached observation alone (*Latour & Woolgar, 1986*). Historical epistemology has likewise demonstrated that experimental systems develop by preserving enough stability to make surprising results recognisable while remaining open to modification (*Rheinberger, 1997*). In Czech academic science, the laboratory has consequently served as both a site of discovery and a material vessel through which research problems have been transmitted across institutional generations.

Scientific instruments are especially powerful carriers of continuity because they condense theory, craftsmanship, investment, and accumulated local knowledge into material form. A spectrometer, microscope, reactor, telescope, sequencing platform, or computing cluster may appear interchangeable with equivalent equipment elsewhere, but its productive use depends upon a history of calibration and adaptation. Researchers learn which readings are reliable, which components are vulnerable, which environmental conditions affect performance, and which apparent anomalies indicate genuine phenomena. Such knowledge is rarely contained in a manufacturer’s manual, because it develops through repeated interaction between a particular instrument and a particular community. Older devices may remain scientifically valuable long after newer models arrive because they sustain comparable series of observations or permit experiments designed around established parameters. New instruments, conversely, can interrupt continuity when their acquisition is not accompanied by training, technical support, data compatibility, and a research question capable of using them. The history of high-energy physics and other instrument-intensive sciences demonstrates that apparatus can organise collaboration, authorship, and disciplinary identity as profoundly as theory does (*Galison, 1997*). Czech institutes of physics, chemistry, engineering, and biomedicine inherited substantial material capacities from ČSAV, although the value of that inheritance varied according to age, maintenance, international compatibility, and post-1989 investment. The Institute of Physics, whose direct institutional predecessor was founded within ČSAV in 1954, illustrates how laboratories can be repeatedly modernised while retaining connections with established fields and accumulated technical competence (*Institute of Physics of the CAS, 2024*). Its later expansion into new infrastructures did not erase the importance of workshops, specialist staff, experimental records, and long-established methods. Instrumental continuity therefore depends less upon preserving every machine than upon maintaining the capacity to understand, compare, replace, and creatively recombine scientific apparatus. A functioning institute remembers through equipment because people have learned how to make that equipment participate in a continuing argument about nature.

Much of the knowledge that keeps a laboratory productive is tacit, embodied, and socially distributed. A written protocol may specify quantities, temperatures, durations, or analytical settings, yet it rarely captures the complete judgement required to recognise whether an experiment is proceeding correctly. Researchers learn how rapidly to perform a manipulation, how to distinguish normal variation from contamination, and when a technically valid result should nevertheless be treated with suspicion. Such skills are transmitted through demonstration, correction, repetition, and proximity rather than through text alone. Michael Polanyi described this dimension of knowledge through the proposition that people know more than they can fully state, while later studies showed how tacit competence travels through scientific networks (*Polanyi, 1966*; *Collins, 1974*). Technicians occupy a particularly important position within this process because they often maintain instruments, materials, and routines across several generations of temporary researchers. Their contribution may remain less visible than that of principal investigators, although laboratory continuity can depend upon their ability to diagnose problems and preserve local standards. Historians of science have therefore challenged narratives that attribute experimental achievements exclusively to named authors while treating technical labour as an invisible background (*Shapin, 1989*). Czech academic institutes relied upon such labour under very different political and economic conditions, from the centralised staffing systems of ČSAV to the competitive project environment of AV ČR. Engineers, laboratory assistants, glassblowers, animal-care specialists, librarians, database managers, and instrument operators frequently protected capacities that could not have been reconstructed quickly after disruption. Their knowledge allowed research groups to survive changes of leadership, funding cycles, and disciplinary fashion. Recognising these workers does not diminish individual scientific creativity; it clarifies the institutional ecology that makes creativity reproducible.

Documents form a second material layer of laboratory continuity, extending from notebooks and protocols to correspondence, software, datasets, photographs, sample catalogues, and internal reports. Scientific memory becomes fragile when results survive only in published articles, because publication normally suppresses failed experiments, discarded interpretations, technical difficulties, and the sequence through which a conclusion emerged. Laboratory notebooks can preserve this hidden history, although their usefulness depends upon authorship, dating, annotation, and continued accessibility. Instrument logs reveal changes in calibration and maintenance, while sample registers connect objects with experiments that may have occurred decades earlier. Computer code and digital data have added new possibilities but also new vulnerabilities, since files can become unreadable when formats, hardware, software dependencies, or storage systems change. A dataset without metadata may remain physically preserved while becoming scientifically unintelligible. The same is true of a box of slides, tissue samples, excavation photographs, or magnetic tapes whose organising logic has been lost. Documentary continuity therefore requires active curation rather than simple retention. Institutes must decide which records possess long-term scientific, legal, or historical value and must provide procedures for transferring them from current work into stable repositories. Such decisions inevitably shape later historical interpretation because preservation determines which questions future researchers can ask. Laboratory documentation also protects reproducibility by allowing methods and analytical choices to be reconstructed more fully than a published summary permits. In this respect, records management links scientific integrity with institutional memory. The research institute becomes capable of learning from its own past only when the traces of research remain connected with the contexts that made them meaningful.

The archive extends this documentary process beyond the immediate needs of active research. It does not merely store obsolete administrative papers after their practical usefulness has ended. An institutional archive preserves evidence of how scientific priorities were negotiated, how appointments were made, how resources were distributed, and how relations with political authorities developed. Minutes, memoranda, evaluation reports, organisational charts, research plans, correspondence, and personnel documents reveal the Academy as a changing system of decisions. These materials permit historians to distinguish official declarations from institutional practice and to reconstruct conflicts that published histories may minimise. They also make it possible to trace the genealogy of laboratories and research groups through renaming, merger, division, and relocation. The meaning of a scientific result can change when it is placed beside the administrative and political conditions under which the work was performed. Archival evidence therefore prevents continuity from becoming a ceremonial narrative in which every predecessor appears to lead naturally towards the present institution. It exposes abandoned programmes, suppressed researchers, unsuccessful reforms, and forms of cooperation that crossed official boundaries. The archive also preserves the institutional memory of ordinary work, including procurement, maintenance, cataloguing, translation, technical training, and international correspondence. Such evidence demonstrates that scientific organisations are built through repeated administrative labour as well as intellectual ambition. Archives consequently give the institute a capacity for historical self-examination. Without them, institutional identity would depend too heavily upon commemorative recollection and the authority of surviving witnesses.

The Masaryk Institute and Archives of the Czech Academy of Sciences performs a central role in organising this documentary continuity. Its holdings cover the bodies, units, and institutes of ČSAV from 1952 to 1992 and those of AV ČR from 1993 onwards. Significantly, the archival overview lists ČSAV and AV ČR institutes together because many operated continuously despite changes in the Academy's governing structure (*Masaryk Institute and Archives of the CAS, n.d.*). This arrangement constitutes more than a convenient catalogue. It expresses an archival judgement that institutional history cannot be divided neatly at the political and constitutional boundary between 1992 and 1993. The Department of Institutional Fonds coordinates pre-archival care and supervises records management across the Academy, thereby connecting present administrative practice with future historical accessibility. It maintains approximately three hundred fonds and collections amounting to about three kilometres of archival material, including an extensive photographic collection documenting Czech scientific and cultural life (*Masaryk Institute and Archives of the CAS, n.d.*). This central oversight is important because institutes differ greatly in size, disciplinary culture, documentary habits, and technical capacity. A physics laboratory, historical institute, botanical field station, and economic research centre do not produce identical records. Uniform archival principles must therefore be applied without erasing disciplinary differences in what constitutes evidence. The archive's task is not to force all scientific work into one documentary model, but to preserve enough context for later reconstruction. Its existence gives the Academy a distributed yet coordinated memory capable of connecting central decisions with local institutional practice. In this way, archival administration becomes part of scientific continuity rather than a secondary service performed after research has concluded.

Personal fonds add another dimension because institutions remember differently from individuals. Official minutes may record a decision without revealing hesitation, informal negotiation, or alternative proposals that shaped its outcome. Private correspondence,

diaries, research notes, drafts, photographs, and unpublished manuscripts can recover those missing dimensions. The Masaryk Institute and Archives holds hundreds of personal fonds, including papers connected with major political and scientific figures and the legacies of researchers such as Jaroslav Heyrovský and Otto Wichterle (*Masaryk Institute and Archives of the CAS, n.d.*). These materials allow scientific biography to be reintegrated into institutional history after the separation between individual and organisation created by retirement, exile, dismissal, or death. They can also reveal networks that formal institutional records obscure, including international correspondence, informal mentoring, intellectual debts, and collaboration across political barriers. Personal fonds remain selective, however, because prominent scholars are more likely to preserve papers and attract archival attention than technicians, assistants, or precariously employed researchers. The archive may consequently reproduce inequalities of academic recognition unless acquisition policies deliberately seek less visible forms of scientific labour. Privacy, personal-data protection, intellectual property, and sensitive personnel information introduce additional limitations on access. Archivists must balance openness with ethical and legal obligations, particularly for 20th-century materials involving political screening, medical information, or confidential evaluation. The work of description is equally interpretative because names, institutional affiliations, and thematic categories determine whether dispersed documents can later be discovered. Digitisation can widen access, but it cannot compensate for records that were destroyed, never transferred, or stripped of context. Personal fonds therefore deepen scientific continuity while reminding historians that every preserved memory is accompanied by absences.

Libraries preserve a different but closely connected form of continuity: the accumulated conversation of a discipline. A specialised institute library does more than provide current books and journal subscriptions. Its holdings show which languages, methods, authors, and foreign centres shaped the intellectual development of a research community. Marginal annotations, offprints, conference proceedings, working papers, technical manuals, dictionaries, bibliographies, and local serials may preserve evidence unavailable in more general collections. Researchers entering an established institute often encounter its disciplinary genealogy through the literature that earlier colleagues selected and retained. Library catalogues also make dispersed holdings visible across institutional boundaries, allowing one institute to benefit from the specialisation of another. The Library of the Czech Academy of Sciences supports this system through multidisciplinary collections, electronic resources, catalogues, bibliographic services, and access for both the Academy and the wider public (*Library of the Czech Academy of Sciences, n.d.*). Its role demonstrates that centralisation and local specialisation need not be opposites. A common information infrastructure can connect highly distinctive institute libraries without dissolving their disciplinary profiles. Libraries further preserve the publication history of the Academy, including journals, monographs, proceedings, and reference works produced by its predecessors. This published record reveals how research agendas developed and how Czech science communicated with domestic and international audiences. In the humanities especially, continuity may reside as much in a sequence of critical editions, dictionaries, catalogues, and bibliographies as in a laboratory technique. The scientific library is therefore both an instrument of current research and a historical map of the intellectual routes through which an institute arrived at its present questions.

Digitalisation has transformed this library function without making material preservation obsolete. The Digital Library of the Czech Academy of Sciences brings together digitised

periodicals and monographs produced by Academy institutes and their predecessors. It also accepts born-digital publications and aims at the long-term preservation of electronic materials generated across the Academy (*Library of the Czech Academy of Sciences, n.d.*). This infrastructure changes the scale at which institutional continuity can be studied. A researcher can search across journals, institutes, years, and disciplines without knowing in advance which organisational unit produced a particular text. Formerly isolated publications can therefore re-enter active scholarship and acquire new meanings through comparison. Digital access is especially important for foreign scholars, regional researchers, and younger generations who may not be able to consult specialised Prague collections directly. Yet digitisation creates an illusion of completeness if searchable material is mistaken for the totality of the archive. Selection priorities, copyright restrictions, imperfect optical recognition, missing metadata, and uneven digitisation can all shape what appears visible. Born-digital materials also require persistent formats, migration strategies, reliable storage, and institutional responsibility extending far beyond the duration of an individual project. The preservation of a PDF is insufficient when its datasets, hyperlinks, software, or interactive elements have disappeared. Digital continuity must consequently be planned as a continuing service rather than celebrated as a completed conversion. The Academy's digital library is most valuable when it connects new forms of access with the cataloguing expertise and preservation ethics developed through older library practice.

Scientific collections occupy an intermediate position between laboratory, archive, and library because they preserve objects that can become evidence again. A herbarium sheet, microbial strain, archaeological artefact, mineral specimen, tissue sample, linguistic card, astronomical plate, or experimental replica is not simply a historical remnant. It can be re-examined through methods unavailable when it was first collected. Molecular analysis can transform the scientific value of biological specimens, while improved imaging can reveal features previously invisible to researchers. Radiocarbon dating, isotope analysis, spectroscopy, and digital modelling can similarly reopen archaeological and geological collections. The meaning of a collection therefore changes as scientific questions and technologies change. This makes preservation an investment in unknown future research rather than merely respect for completed work. Collections also stabilise comparison by allowing later investigators to return to the same material under revised classifications. Their reliability depends upon provenance, labelling, storage conditions, taxonomic expertise, and connections between objects and documentary records. An unidentified specimen or artefact may possess material integrity while losing most of its analytical value. Curators consequently perform intellectual labour, not simply custodial maintenance. Studies of scientific objects have shown that objects acquire histories through movement among laboratories, classifications, instruments, and interpretative communities (*Daston, 2000*). Within the Academy, collections embody scientific continuity precisely because they remain capable of generating questions that their original creators did not foresee.

The herbarium of the Institute of Botany offers a particularly clear example of such renewable evidence. Its holdings include more than four hundred thousand sheets, together with specialised collections of Central European synanthropic flora, dendrological materials, diaspores, and plants from geographically distinctive regions. The specimens preserve the results of fieldwork undertaken by successive generations under changing taxonomic and ecological assumptions. Their labels connect plants with places, dates, collectors, habitats, and earlier systems of classification. When these data are compared across time, the

collection can support research into changes in distribution, land use, invasive species, and environmental conditions. The herbarium is therefore not a static cabinet of dried plants but a longitudinal scientific infrastructure. Its contemporary documentation through the HERBMAN database and high-resolution photography links physical preservation with digital accessibility (*Institute of Botany of the CAS, n.d.*). Digitisation allows specimens to be compared internationally while reducing unnecessary handling of fragile originals. It also exposes inconsistencies in older labels and classifications that require expert correction rather than mechanical transcription. The collection's continuing value depends upon botanists who understand historical nomenclature as well as modern taxonomy and data standards. Their work connects field observation, curatorial judgement, digital systems, and international botanical networks. The herbarium consequently demonstrates how an institute can preserve material inherited from earlier research while transforming it into evidence for contemporary environmental science. Continuity here is achieved not by leaving the collection unchanged, but by repeatedly renewing the relationships among specimen, metadata, method, and question.

Living collections make this relationship still more demanding because their objects must remain biologically viable. The Culture Collection of Autotrophic Organisms maintained at the Institute of Botany traces part of its ancestry to Prague collections created in 1913. It now preserves hundreds of strains of cyanobacteria, algae, and non-seed plants, including organisms collected from polar regions and thermal environments (*Institute of Botany of the CAS, n.d.*). These cultures are historical materials, but they are also living research tools whose properties may change through contamination, mutation, or unsuitable maintenance. Their preservation requires continuous cultivation, verification, documentation, and technical expertise. The Institute of Microbiology similarly maintains collections whose histories reach back to the early decades of ČSAV. Its Culture Collection of Basidiomycetes was founded in 1959 and became integrated into contemporary environmental microbiology, linking taxonomic preservation with ecological and genomic research (*Institute of Microbiology of the CAS, n.d.*). Another laboratory maintains an extensive collection of *Claviceps* fungi that supports research into fungal diversity, evolution, toxicity, and metabolism (*Institute of Microbiology of the CAS, n.d.*). Such collections allow experiments to be reproduced and organisms to be exchanged through national and international networks. They also protect biological diversity whose natural habitats may be transformed or destroyed. A culture collection therefore depends upon a chain of care that cannot be suspended without irreversible loss. Its survival demonstrates with unusual clarity that scientific continuity is a living process requiring daily intervention rather than a possession secured once and for all.

Archaeological institutes reveal another way in which collections connect research generations. Excavation removes objects from their original contexts and therefore creates a permanent responsibility to document the relationships that fieldwork has disturbed. Finds, plans, photographs, soil samples, field diaries, maps, databases, and conservation records must remain linked if future interpretation is to be reliable. An archaeological collection without contextual information becomes a set of objects detached from the human activities it was intended to illuminate. Institute libraries and bibliographies help connect this primary evidence with changing interpretative traditions, while digital information systems widen access to sites and records. The Institute of Archaeology in Prague illustrates how inherited field traditions can be joined with contemporary analytical methods. Its Surface and Use-wear Research of Tools Laboratory builds upon long-term research into stone artefacts while

creating experimental reference collections for microscopic and three-dimensional comparison (*Institute of Archaeology of the CAS, Prague, n.d.*). Replicas produced under controlled conditions allow traces on prehistoric tools to be interpreted through observation of comparable wear. The reference collection therefore stands between experiment and archive. It records present-day procedures while improving the interpretation of materials excavated by earlier generations. The participation of students in constructing the collection also connects public education with the production of research infrastructure. Archaeological continuity thus depends upon the preservation of artefacts, but equally upon the preservation and renewal of methods for seeing them. The institute carries this tradition by ensuring that accumulated material can be questioned rather than simply displayed.

In linguistic research, the collection may consist primarily of words, citations, recordings, questionnaires, dialect forms, card catalogues, corpora, and editorial decisions. Such materials can appear less tangible than a botanical specimen or archaeological artefact, yet they require equally sustained institutional care. Czech lexicography developed through the accumulation of excerpts whose value depended upon provenance, usage, date, genre, and regional context. The Modern Czech Lexical Archive maintained by the Czech Language Institute exemplifies a documentary infrastructure created for long-term collective scholarship (*Czech Language Institute, n.d.*). Its cards preserve decisions and examples assembled by generations of lexicographers, including evidence that may be reclassified for new dictionaries or digital projects. The Archive of Folk Speech similarly supports the study of dialect vocabulary from Bohemia, Moravia, and Silesia through handwritten, printed, and field-research materials. Its continuing expansion and conversion into electronic resources demonstrate how an inherited archive can support both historical research and contemporary linguistic access (*Czech Language Institute, n.d.*). These collections also preserve forms of speech that may disappear from everyday use through urbanisation, education, migration, and media standardisation. The institute therefore safeguards linguistic diversity while analysing rather than romanticising it. Digital corpora can process vastly larger quantities of language, but they do not make historically curated evidence irrelevant. Instead, new computational methods increase the value of reliable metadata, editorial expertise, and awareness of how older collections were assembled. Linguistic continuity emerges through the interaction of archive, dictionary, corpus, fieldwork, and scholarly interpretation. The research institute provides the duration required for projects whose full value may become visible only after several generations.

Collections and archives would nevertheless remain inert without research groups capable of interpreting them. The group is often the most immediate social unit of scientific continuity because it brings senior researchers, junior scholars, technicians, students, and support staff into regular cooperation. Institutes provide legal and organisational frameworks, but groups translate broad missions into specific questions, methods, seminars, experiments, publications, and training practices. Their size and structure vary greatly among disciplines. A theoretical mathematician may work within a loose seminar community, while molecular genetics requires coordinated laboratory labour and archaeology may combine field teams, laboratory specialists, database managers, and historians. These differences produce what Karin Knorr Cetina described as distinct epistemic cultures: organised ways in which disciplines construct objects, evidence, instruments, and credible knowledge (*Knorr Cetina, 1999*). Research groups transmit these cultures through daily judgement rather than formal declarations. They establish what counts as a promising problem, an adequate argument, a

properly controlled experiment, or a publishable result. They also maintain informal memories of previous attempts, including knowledge of why an apparently attractive approach once failed. Such memory can prevent wasted effort, although it can also discourage productive challenges to inherited assumptions. A durable group must therefore distinguish between experience and inertia. Its continuity becomes scientifically valuable when the past functions as a resource for criticism rather than an instruction that later members must obey.

Apprenticeship is the principal mechanism through which research groups convert individual experience into collective capacity. Young researchers enter laboratories and institutes with formal education, but they still need to learn how a particular community works. They discover which questions are considered central, how evidence is presented at seminars, how collaboration is negotiated, and how disagreement can be expressed without destroying trust. Situated learning theory describes this movement from peripheral participation towards fuller membership in a community of practice (*Lave & Wenger, 1991*). In Academy institutes, doctoral candidates often participate simultaneously in university programmes and institute-based research. This dual location links teaching institutions with specialised laboratories, archives, collections, and long-term projects. Academy researchers supervise doctoral work, teach at universities, and involve students in research environments whose material resources may not exist within university departments (*Czech Academy of Sciences, 2024*). The transmission is reciprocal because younger scholars introduce new methods, computational skills, international contacts, and critical questions. Seniority therefore does not give one generation a monopoly on useful knowledge. Successful mentorship creates conditions under which inherited expertise can be challenged without being needlessly lost. Poor mentorship, by contrast, can reduce a research school to personal loyalty or leave essential knowledge concentrated in one person. The institute's responsibility is to make generational exchange structurally possible rather than dependent upon exceptional goodwill.

A scientific school is related to a research group but cannot be reduced to one. The term usually implies a durable intellectual lineage recognised through characteristic problems, methods, concepts, standards, or forms of training. Such a school may originate around a powerful founder, yet it survives only when later researchers reinterpret the programme rather than merely preserve the founder's authority. It can extend across several laboratories, universities, institutes, or countries and may continue even after the original organisational unit disappears. Conversely, an administratively stable department may fail to become a scientific school if it does not generate a recognisable intellectual tradition. The history of Czech science contains numerous examples associated with polarography, macromolecular chemistry, immunology, structural linguistics, historiography, mathematics, archaeology, and other fields. Their continuity depended upon seminars, instruments, journals, collections, doctoral supervision, international contacts, and shared styles of reasoning. Richard Whitley's analysis of scientific organisation helps explain why disciplines differ in the degree to which authority, tasks, and reputations can be coordinated (*Whitley, 2000*). Some schools form around a tightly integrated experimental system, while others depend upon interpretative debate and relatively autonomous scholarship. Political and administrative authorities often misunderstood these differences when they attempted to impose uniform organisational models upon all fields. The institute can protect a school by providing time, infrastructure, and succession, but it can also suppress one through rigid hierarchy or ideologically defined appointments. Scientific continuity therefore requires institutional support without converting intellectual lineage into hereditary privilege.

Research groups must periodically renew themselves if they are to remain carriers of living traditions. Retirement, migration, family responsibilities, changing research interests, and external appointments continually alter their composition. A group that depends entirely upon one senior scientist may collapse when that person leaves, even if its institutional title survives. Conversely, a team may remain intellectually productive after a founder's departure when methods, data, collaborations, and leadership capacities have been broadly distributed. International mobility complicates this process by moving researchers between scientific cultures. Returning scholars may introduce new laboratory standards or theoretical perspectives, while foreign researchers can challenge local assumptions that have become invisible to insiders. The J. E. Purkyně Fellowship and other Academy initiatives have sought to attract researchers from abroad and reconnect Czech institutes with international scientific experience. The Lumina Quaeruntur programme has more explicitly supported prospective researchers in establishing new teams around conceptually innovative subjects within existing institutes (*Czech Academy of Sciences, n.d.*). Such programmes show that continuity and renewal are not opposing goals. A new group can extend institutional competence into an emerging field while drawing upon shared equipment, administrative knowledge, collections, and mentoring structures. The crucial question is whether new teams become isolated grant islands or enter productive relations with the wider institute. Renewal becomes continuity when new research changes the institution without losing access to its accumulated capacities.

An institute must therefore coordinate several forms of time simultaneously. Some projects operate within short funding cycles, while collections, observatories, longitudinal surveys, dictionaries, critical editions, and environmental monitoring may require decades. Instruments can become obsolete within years, whereas a carefully preserved specimen or text may remain valuable for centuries. Doctoral researchers need visible progress within a limited period, but research schools need slower processes of mentorship and intellectual maturation. Directors and governing councils must balance these temporalities without assuming that one administrative rhythm suits every discipline. The Academy's organisation into broad research areas recognises significant differences among mathematics and physics, life and chemical sciences, and the humanities and social sciences (*Czech Academy of Sciences, n.d.*). Yet classification cannot capture every interdisciplinary dependency. A climate programme may combine atmospheric measurement, ecological collections, historical datasets, economic modelling, and public-policy analysis. A biomedical project may rely upon molecular genetics, microscopy, animal models, statistical computation, chemical synthesis, and clinical cooperation. The institute carries continuity by maintaining enough organisational depth to support these different tempos and dependencies. It also provides a scale at which expensive or slow resources can outlive individual projects. Institutional coherence should consequently be understood as coordination of diversity rather than enforced uniformity.

Joint laboratories and shared research infrastructures further complicate the location of scientific memory. Contemporary research increasingly depends upon equipment and expertise distributed among institutes, universities, hospitals, and international organisations. A facility may be hosted by one institute while serving communities whose intellectual affiliations extend far beyond it. Such arrangements can strengthen continuity because maintenance, training, and data standards become collective responsibilities rather than burdens placed upon a single group. They can also create uncertainty about ownership,

authorship, access, and long-term funding. The modern Institute of Molecular Genetics illustrates how historical research directions can coexist with large infrastructures and multi-institutional centres. Its origins lie in experimental biology and genetics within ČSAV, while later reorganisations joined those traditions with biochemical laboratories and established molecular genetics as the principal orientation. Immunogenetics, retrovirology, and tumour immunology continued, but they were progressively reconstructed through molecular approaches rather than preserved in their earlier methodological form (*Institute of Molecular Genetics of the CAS, 2022*). Contemporary research groups now work within an environment that includes shared imaging, screening, phenogenomics, and bioinformatics infrastructures. This development shows how an inherited scientific school can enter a new technological regime without losing all connection with earlier problems. Shared infrastructures become carriers of continuity when they preserve expertise, documentation, and access across project cycles. They become sources of discontinuity when investment concentrates on equipment while neglecting the people required to operate, interpret, and renew it.

Evaluation and competitive funding influence which forms of continuity remain institutionally visible. Modern assessment systems understandably ask institutes to demonstrate originality, international quality, productivity, and social relevance. These criteria can stimulate renewal by exposing stagnant structures and rewarding ambitious research. They can also undervalue maintenance work whose results are cumulative, infrastructural, or difficult to attribute to a short evaluation period. Curating a collection, preserving a long data series, maintaining a specialised library, developing software, or training instrument users may support hundreds of publications without appearing as a conventional individual output. Peer evaluation is therefore important because informed reviewers can recognise disciplinary differences and the long-term value of research infrastructure. The Academy's evaluation methodologies combine assessment of research quality with attention to vitality, sustainability, strategy, cooperation, and societal relevance (*Czech Academy of Sciences, n.d.*). This broader approach makes it possible to ask whether an institute possesses the human and material conditions required for future research. Nevertheless, evaluation inevitably changes behaviour by influencing recruitment, internal resources, publication strategy, and the survival of teams. Institutes may protect inherited programmes because they remain scientifically productive, or they may preserve them primarily because organisational identities have formed around them. Distinguishing these motives requires historical understanding as well as contemporary performance evidence. Evaluation contributes to continuity when it tests inherited capacity without assuming that either age or novelty is a sufficient measure of value.

The fragility of continuity becomes most apparent when maintenance fails. Instruments deteriorate, collections suffer from unsuitable storage, digital files become unreadable, and experienced employees depart without successors. Organisational mergers can separate objects from documentation or dissolve the teams able to interpret inherited records. Funding interruptions may stop longitudinal observations whose scientific value depended precisely upon an uninterrupted series. Short-term employment can weaken institutional loyalty and discourage researchers from investing in services whose rewards will appear only after their contracts end. Excessive dependence upon individual grant holders may leave equipment and staff without support when a project closes. Archives may receive records too late, after undocumented selection or technological obsolescence has already destroyed context. Digital abundance can intensify the problem because institutes generate more data than they can consistently describe, curate, and preserve. Scientific continuity therefore has costs that

are easily hidden within budgets labelled as administration or infrastructure. These costs are not opposed to discovery; they make cumulative discovery possible. A research system that rewards only visible novelty consumes inherited capital without reliably replacing it. The institute's durability must consequently be judged partly by its capacity to care for resources whose future value cannot yet be calculated.

Material continuity does not guarantee moral or intellectual continuity, and preservation can never be treated as politically innocent. Laboratories and archives may carry evidence of productive research conducted under authoritarian conditions, but they may also contain traces of exclusion, ideological surveillance, unequal recognition, and coerced institutional change. A collection can preserve the work of a dismissed scholar while official catalogues erase that person's role. A laboratory technique may survive through colleagues who remained silent about the political removal of its creator. Institutional records can therefore sustain both scientific knowledge and uncomfortable evidence about the conditions of its production. The responsibility of the democratic Academy is not to purify this inheritance retrospectively. It is to preserve enough documentation for achievement, compromise, injustice, and adaptation to be studied together. This principle connects the present chapter with "Post-1989 Rehabilitation and the Restoration of Scientific Memory." Rehabilitation restored names and careers, while institutional history must also recover the laboratories, collections, teams, and documentary chains through which suppressed work survived. Archives become ethically significant when they permit the institution to investigate its own conduct rather than merely celebrate prestigious predecessors. Collections become ethically significant when provenance includes the labour and circumstances through which materials were acquired. Research groups become ethically significant when credit is distributed beyond the most visible author. Scientific continuity acquires democratic value when memory supports accountability as well as pride.

The institute also transforms specialised continuity into public scientific capacity. Laboratories maintain abilities that may become urgently important during environmental, health, technological, or security crises. Archives and libraries preserve evidence needed for legal, historical, linguistic, and cultural interpretation. Biological and archaeological collections establish baselines against which ecological or social change can be measured. Research groups retain expertise that cannot be created immediately in response to a government request or sudden emergency. This reservoir of competence explains why long-term public funding serves more than the current interests of individual disciplines. The Academy's mission combines internationally significant research with education, cultural development, public welfare, and responses to contemporary social problems (*Czech Academy of Sciences, 2006*). The institute is the level at which this mission acquires material form. A state may adopt a science strategy, but only durable communities can maintain instruments, languages, organisms, archives, and methods until they are needed. Such capacity may remain politically inconspicuous during ordinary periods because maintenance rarely produces dramatic public narratives. Its absence becomes visible only when knowledge, evidence, or technical capability must be reconstructed under pressure. Institutional continuity is therefore part of scientific sovereignty: the ability of a society to understand problems through capacities it has cultivated and critically governed over time. Czech academic institutes contribute to that sovereignty by preserving not a fixed national science, but the practical means through which Czech society can participate independently in international knowledge.

Thus, laboratories, archives, collections, and research groups form the interdependent material and social foundations through which Czech academic science acquires historical duration. Laboratories preserve experimental systems, instrumental competence, technical routines, and tacit judgement, while archives preserve the documentary contexts that allow institutional decisions and scientific practices to be reconstructed. Libraries maintain the accumulated conversations of disciplines and connect contemporary researchers with publications produced by the Academy and its predecessors. Botanical specimens, living cultures, archaeological artefacts, lexical archives, datasets, images, and experimental reference collections remain valuable because later methods can ask new questions of inherited evidence. Research groups animate these resources by transmitting standards, skills, doubts, and intellectual ambitions between generations. Technicians, curators, archivists, librarians, programmers, students, and administrative specialists participate in this continuity alongside recognised scientific leaders. The institute brings these forms of labour together and gives them a duration longer than that of an individual project or career. Its continuity cannot be measured solely by an unchanged name, building, or research programme. It must instead be assessed through the continuing ability to preserve evidence, renew methods, train successors, sustain critical discussion, and connect inherited capacities with emerging problems. Legal succession from ČSAV to AV ČR provided an essential framework, but the deeper continuity of Czech science was produced through everyday acts of maintenance, interpretation, cooperation, and selective transformation. Preservation without renewal would reduce the institute to a museum, while innovation without memory would repeatedly destroy the conditions that make cumulative knowledge possible. The institute carries scientific continuity most successfully when it enables the past to remain available for examination without allowing inherited authority to determine the future.

2. Institutional Memory across Political Regimes

Institutional memory is often imagined as a storehouse in which an organisation deposits documents and later retrieves an authoritative account of itself. Scientific institutions, however, remember through a much wider ensemble of arrangements, including professional routines, disciplinary standards, appointments, buildings, names, anniversaries, instruments, informal loyalties, and shared stories about exemplary predecessors. Some of these memories are deliberately recorded, whereas others persist because experienced researchers teach younger colleagues how work is actually done. Still others survive negatively, as cautionary knowledge about questions that should not be asked, names that should not be mentioned, or administrative formulas that conceal political danger. The memory of an academy is consequently distributed between material repositories, organisational procedures, and the embodied experience of its personnel (*Walsh & Ungson, 1991*). It is also cultural, because institutions stabilise selected interpretations of the past and use them to define legitimate conduct in the present (*Assmann, 2011*). This complexity becomes especially visible when the political regime changes but laboratories, institutes, and scholarly communities do not disappear at the same moment. A legal rupture may coexist with methodological continuity, just as an unchanged institutional title may conceal a radical alteration of personnel and purpose. The history of Czech and Czechoslovak academic science repeatedly produced precisely these combinations. Learned corporations passed through imperial, republican, occupation, communist, federal, and democratic settings, each of which imposed a different

vocabulary of legitimacy. Their memories were therefore never merely inherited; they were selected, translated, and sometimes forcibly rewritten. To trace institutional memory across these regimes is to examine not a smooth chain of succession, but an argument conducted through people, records, organisational forms, and silences.

Every political order seeks usable predecessors, and every scientific institution develops strategies for presenting those predecessors as evidence of its own necessity. Regimes commemorate discoveries that support their preferred image of progress, elevate scholars whose biographies can be reconciled with official values, and neglect traditions that complicate the prevailing story. Such selection does not mean that institutional memory is simply false. Rather, it means that remembrance is an active social practice shaped by authority, access, and the changing needs of the present (*Olick & Robbins, 1998*). In the Czech lands, one genealogy could emphasise Enlightenment sociability, another national emancipation, another socialist planning, and still another democratic European integration. Each genealogy drew upon genuine episodes, yet none exhausted the institution's historical experience. Political change consequently altered not only administration and funding but also the temporal horizon within which scientists understood their work. A regime might declare a predecessor obsolete while continuing to use its library, employ its specialists, and inherit its unfinished projects. Conversely, it might proclaim venerable continuity while replacing the norms that had once given an institution intellectual coherence. Institutional memory thus possesses both declarative and practical layers. The declarative layer appears in statutes, speeches, official histories, and commemorations, while the practical layer resides in decisions, routines, and professional judgements. Their agreement can strengthen institutional identity, but their divergence often reveals the deepest effects of political power.

The earliest learned societies in the Czech lands already demonstrate that scientific memory preceded the modern nation-state and cannot be reduced to a single national narrative. Enlightenment scholars worked within the composite Habsburg monarchy, communicated in several languages, and participated in networks that crossed later political borders. The Private Society of Learned Men and the Royal Bohemian Society of Sciences created durable forms of correspondence, publication, election, and collective validation. Their members did not foresee the later Academy, yet subsequent institutions treated these societies as ancestral stages in an expanding academic tradition (*Míšková et al., 2018*). This retrospective linkage preserved valuable continuities, including respect for organised inquiry and the conviction that scholarship required institutions beyond the university classroom. It also simplified a multilingual and socially heterogeneous world by reading it through later Czech national categories. During the 19th century, the growth of nationally differentiated public life made language an increasingly consequential marker of scholarly affiliation. Libraries, journals, terminologies, and learned associations became instruments through which intellectual communities defined both scientific competence and cultural belonging. The memory of Enlightenment cosmopolitanism was not erased, but it was reinterpreted within a narrative of national maturation. German-speaking, Czech-speaking, Jewish, aristocratic, clerical, and bourgeois contributions could receive markedly different visibility in later commemorations. What later appeared to be a continuous national institution had therefore emerged from overlapping communities whose boundaries remained historically unstable. The result was an inherited past whose contents remained available but whose meaning changed with the political language used to describe it.

The Czech Academy of Sciences and Arts, founded at the end of the 19th century and active from 1891, gave this nationalised memory an especially powerful institutional form. Its establishment represented both the achievement of Czech cultural mobilisation and the adoption of a European model in which learned elites sought permanent corporate support for science, letters, and the arts. Patronage, membership, prizes, publications, and ceremonial practices transformed earlier aspirations into routines that could outlive their founders. The Academy's very name joined scientific authority to cultural representation, making it a guardian of both specialised knowledge and national distinction. Josef Hlávka's patronage became part of this self-understanding, repeatedly recalled as evidence that public-minded benefaction could create lasting intellectual infrastructure. Yet the Academy was not merely a monument to national success. It contained disciplinary divisions, personal rivalries, unequal access, and continuing negotiations over the relative prestige of scholarship, science, and artistic production (*Mádlová, 2024*). Its records reveal that institutional identity was assembled through ordinary administrative labour as much as through celebrated speeches. Membership files, correspondence, grant decisions, and publication programmes preserved judgements about what counted as worthy knowledge. Later regimes could reject the Academy's social composition or ideological associations while still inheriting these classificatory habits. The Czech Academy of Sciences and Arts therefore transmitted more than possessions to its successors. It bequeathed a repertoire of academic corporatism that could be criticised, reorganised, or appropriated, but not simply ignored.

The creation of Czechoslovakia in 1918 changed the political frame within which this older academic inheritance was interpreted. Institutions that had developed under imperial rule now operated in a republic whose legitimacy rested partly on the cultural and scientific maturity of its constituent peoples. Czech scholarship could be narrated as a contributor to state-building rather than as a movement seeking recognition within an empire. At the same time, the new state did not begin with an empty intellectual landscape. It inherited universities, learned societies, museums, archives, professional associations, and patterns of regional inequality formed during the Habsburg period (*Surman, 2019*). The Czech Academy of Sciences and Arts retained corporate prestige, but it shared the public sphere with other institutions and with a growing university system. Republican language added democracy, citizenship, and Czechoslovak statehood to older national and scholarly vocabularies. This enlargement created opportunities for cooperation, yet it also raised unresolved questions about Czech, Slovak, German, Hungarian, Jewish, and Ruthenian participation. Institutional memory tended to celebrate the republic as fulfilment, while the actual academic landscape remained linguistically and politically plural. Continuity therefore took the form of adaptation rather than unaltered survival. Scholars preserved networks, collections, and methods while learning to justify them within new ministries, budgets, and state priorities. The interwar period consequently became a powerful later reference point, remembered alternately as a democratic norm, a socially exclusive order, or a reservoir of expertise preceding totalitarian rupture.

The German occupation produced a more violent disruption than any earlier constitutional change. The closure of Czech universities in November 1939 severed teaching, research, recruitment, and certification at a single administrative stroke. Scientific property was confiscated or redirected, collections were endangered, and institutions were subordinated to the needs of occupation and war. Scholars and students faced dismissal, imprisonment, forced labour, exile, and death, while Jewish intellectual life was targeted for destruction. The

damage was therefore simultaneously organisational, material, demographic, and moral (*Šimůnek, 2025*). Some research continued in restricted institutes, industrial settings, private networks, or forms acceptable to the occupying authorities, but continuation under coercion cannot be equated with institutional normality. Skills survived in individuals even when the organisations that had sustained them were closed. Manuscripts, specimens, correspondence, and equipment sometimes endured because librarians, technicians, families, or colleagues protected them without public recognition. Other losses proved irrecoverable, particularly where persecution destroyed entire scholarly milieus and the intergenerational chains through which knowledge had been transmitted (*Šimůnek & Kostlán, 2014*). After liberation, the occupation became an unavoidable point of reference in Czech academic memory. Yet commemoration of national victimhood could also obscure the diversity of victims and the compromises through which certain institutions had survived. The occupation thus taught later generations that an institute could remain nominally present while its intellectual community was fragmented beyond repair.

Liberation in 1945 brought restoration, but restoration did not mean a return to the institutional world of 1938. Universities reopened, scholarly organisations resumed activities, and surviving researchers attempted to reconstruct interrupted careers and projects. They also worked amid bereavement, damaged infrastructure, political radicalisation, and profound changes in the population of Czechoslovakia. The destruction of Jewish scholarly communities could not be reversed, while the expulsion of most German speakers removed another major component of the pre-war intellectual landscape. These processes narrowed the social and linguistic plurality from which earlier institutions had drawn, even as national science was publicly celebrated as renewed. Post-war memory therefore combined justified remembrance of occupation with selective silence about the full scale and complexity of cultural loss. Plans for coordinating research, expanding state support, and creating new institutes acquired urgency in this atmosphere. Many scientists regarded stronger public organisation as a necessary response to the vulnerabilities exposed by depression, occupation, and war. Such ambitions did not originate exclusively with the Communist Party, although the party would later incorporate them into its own programme. The immediate post-war years consequently formed a bridge between republican traditions and the centralised system established after 1948. Personal expertise, unfinished investigations, and institutional proposals crossed that bridge, even when later official narratives described socialist science as an entirely new beginning. Memory of reconstruction was thus absorbed into competing accounts of who had rescued Czech and Slovak science and for what social purpose.

The communist seizure of power in February 1948 altered both the governance of science and the criteria by which its past was judged. Party leaders treated research as a strategic resource whose institutional organisation should serve economic planning, ideological education, and geopolitical alignment with the Soviet Union. Universities, academies, publishing houses, and professional bodies were subjected to political screening and increasingly centralised supervision. Earlier traditions were divided into progressive elements that could be claimed and bourgeois residues that were to be overcome. This classificatory operation was not external to scholarship, because appointments, curricula, citation practices, and access to publication all depended upon it (*Devátá et al., 2010*). Biographies were rewritten according to class origin, party loyalty, wartime conduct, and attitudes towards the new order. Some established scholars accommodated themselves to the regime, some attempted to defend disciplinary standards from within, and others were dismissed, marginalised, imprisoned, or

driven abroad. Younger researchers entered institutions whose official history began with liberation and socialist reconstruction, even though much of their training still depended on pre-war expertise. The past consequently became both a resource and a risk. Invoking a respected predecessor could legitimise a research programme, but it could also expose politically suspect affiliations. Institutional memory was compressed into approved narratives while surviving in fuller form within private recollection and disciplinary practice. The contradiction between these layers would shape the new Czechoslovak Academy of Sciences from its creation.

The establishment of the Czechoslovak Academy of Sciences in 1952 was presented as a foundational break, yet it was also a massive act of institutional concentration and inheritance. Act No. 52/1952 defined the Academy as the highest scientific institution and linked its work explicitly to the construction of socialism (*Czechoslovak Republic, 1952*). The new body received institutes, personnel, premises, libraries, collections, and research tasks from organisations that had developed under earlier regimes. The Czech Academy of Sciences and Arts ceased to exist as an autonomous corporation, while its patrimony entered a structure governed through state planning and party oversight. Membership was reconstituted, and government approval became central to the appointment of academicians and leaders. These measures transformed who could speak for science and which forms of authority possessed public validity (*Beran, 2005*). Nevertheless, institutional time did not restart in 1952. Researchers carried earlier methods into the new institutes, librarians preserved older catalogues, and technical personnel-maintained equipment acquired before the reorganisation. Even newly created workplaces often depended on disciplines, collections, or informal schools whose origins preceded the socialist state. The founding of ČSAV was therefore simultaneously constitutive and appropriative. It created a new legal and political order for research while gathering older scientific capital beneath a new ideological roof. Understanding this duality prevents both the official myth of complete socialist novelty and the later democratic temptation to portray ČSAV as nothing more than an alien imposition.

During the Stalinist phase, official institutional memory was organised around a teleology of progressive science culminating in socialist planning. Earlier scholars were praised when they could be represented as materialists, popular educators, patriots, or precursors of friendship with the Soviet peoples. Intellectual currents associated with liberalism, religious thought, cosmopolitanism, or Western institutional models were criticised or omitted. Zdeněk Nejedlý's authority symbolised the fusion of cultural genealogy, political orthodoxy, and administrative power during the Academy's first years. Ceremonial speeches and institutional histories placed ČSAV within a narrative in which the working people, guided by the party, finally received control over knowledge. This narrative supplied the new organisation with historical legitimacy, but it also narrowed the permissible meanings of earlier Czech scientific development. In some fields, imported ideological doctrines attempted to determine substantive truth as well as institutional loyalty. In others, political conformity operated more through staffing, thematic priorities, travel restrictions, and the language of project justification. The first decade of ČSAV cannot therefore be described by a single degree of ideological penetration (*Franc et al., 2020*). Institutes differed according to their leadership, international dependence, strategic value, and capacity to translate disciplinary aims into the vocabulary of state priorities. Scientists learned to distinguish between public formulas and the narrower professional reasoning used within trusted circles. That distinction became a

durable component of institutional memory, teaching generations how to navigate an organisation whose official self-description did not fully coincide with its scientific life.

Beneath the language of rupture, practical continuities remained indispensable to the functioning of the new Academy. State planners could reorganise institutions quickly, but they could not manufacture experienced microscopists, philologists, field archaeologists, instrument makers, or archive specialists by decree. Senior scholars trained before 1948 often transmitted methods to younger colleagues even when their public authority had been reduced. Manuals, card indexes, specimen labels, unpublished translations, and laboratory notebooks preserved lineages that official histories did not acknowledge. The very success of centralised institute-building depended upon knowledge accumulated in universities, museums, learned societies, and industrial laboratories. This dependence gave some specialists limited bargaining power, particularly in fields valued for economic or military purposes. It also encouraged directors to protect politically vulnerable personnel by redefining their tasks, obscuring their contributions, or placing them in less visible posts. Such protective strategies should not be romanticised, because they remained selective and could coexist with accommodation or opportunism. They nevertheless reveal how organisational memory operates through judgement rather than through records alone. A research group remembered who could solve a technical problem even when formal personnel files described that person in diminished terms. A library remembered the location and significance of an older corpus even when new ideological classifications surrounded it. The survival of scientific competence under Stalinism was thus neither automatic resistance nor simple collaboration, but an uneven practice of custodianship within coercive institutions.

The coexistence of official and practical memory created what may be called a dual institutional archive. One archive was produced deliberately for superiors, auditors, party committees, and public commemoration. It recorded plans, fulfilment reports, resolutions, political training, personnel assessments, and carefully framed accounts of scientific achievement. The other archive was dispersed among private letters, oral recollections, annotated offprints, laboratory habits, and the tacit knowledge of what decisions actually meant. These archives were not wholly separate, since attentive readers could often detect conflict in delays, euphemisms, missing signatures, or sudden changes of topic. Yet their divergence makes retrospective interpretation difficult. Administrative abundance does not necessarily yield transparent truth when the actors who produced records anticipated surveillance. Nor does personal testimony provide an unmediated alternative, because memories change with later experiences and opportunities for public vindication. The historian must therefore compare genres, trace inconsistencies, and ask which institution had the power to preserve its version of events. This methodological caution is especially important for the Academy, whose bureaucratic scale generated extensive documentation while encouraging strategic language. Institutional memory under dictatorship is often richest precisely where it is least literal. Silences, formulaic praise, and apparently technical reorganisations can disclose pressures that no surviving document names openly. The archive consequently records both the operation of power and the professional techniques through which scholars sought room to manoeuvre.

The political and cultural thaw of the 1960s allowed previously compressed layers of memory to re-enter academic discussion. De-Stalinisation weakened the authority of certain dogmas and made limited criticism of earlier abuses possible. Institutes reassessed research priorities, restored international contacts, and debated forms of professional self-government.

Scholars who had been marginalised could sometimes regain influence, although rehabilitation remained incomplete and politically bounded. Younger researchers encountered pre-war and Western literature that complicated the official chronology of socialist intellectual progress. The retrieval of these sources did more than correct bibliographies. It restored awareness that Czech and Slovak disciplines possessed several possible genealogies and had participated in wider European conversations. Under František Šorm, ČSAV became an important setting for reformist thinking about the relationship between expertise, planning, and public responsibility (*Franc et al., 2025*). Natural scientists pursued international collaboration, while interdisciplinary teams investigated economic, social, and technological problems that the rigid structures of the previous decade had handled poorly. Institutional memory now served a prospective function: recalling suppressed alternatives helped scientists imagine a reformed socialist order. This was not a simple return to the First Republic, because the scale, infrastructure, and social role of ČSAV had changed substantially since 1952. The reform era instead recombined older professional norms with the organisational capacities created by the socialist Academy.

The Prague Spring made this recombination unusually visible and thereby transformed the reform experience into a lasting institutional reference point. Scientists discussed autonomy not as withdrawal from society but as a condition for responsible expertise. Criticism of bureaucratic direction was accompanied by proposals for open debate, more credible evaluation, freer travel, and greater authority for scholarly communities. International contacts expanded the repertoire of organisational models available to reformers, while domestic experience supplied evidence of the costs of excessive centralisation. ČSAV researchers did not speak with one voice, and enthusiasm for reform varied between generations, disciplines, and institutes. Even so, the Academy became one of the arenas in which a socialism capable of intellectual freedom appeared temporarily conceivable (*Nisonen-Trnka, 2008*). The Warsaw Pact invasion of August 1968 destroyed that political horizon without immediately erasing the practices and expectations it had created. For participants, the months of reform became a measure against which subsequent conformity could be judged. For the incoming leadership, the same period became proof that uncontrolled academic autonomy threatened the political order. The memory of 1968 was therefore institutionalised twice: privately as an experience of possibility and officially as a warning against deviation. This opposition shaped appointments, research agendas, and personal relationships throughout the following two decades. Later democratic reformers would return to 1968 not as a complete blueprint, but as evidence that demands for scientific self-government had roots within the Academy itself.

Normalisation after 1969 sought to reverse the reforms by transforming the Academy's personnel and its authorised recollection of the recent past. Political vetting distinguished those who accepted the official interpretation of the invasion from those labelled unreliable, opportunistic, or hostile. Directors were replaced, scientific councils were reconstituted, party organisations regained authority, and career prospects became tied to demonstrated loyalty. Researchers lost posts, were transferred to subordinate work, or found their publication and travel opportunities severely restricted. The institutional purge was not a single event but a sequence of decisions extending through the early 1970s (*Míšková et al., 1998*). Its effect on memory was profound because removing individuals also removed witnesses, mentors, and custodians of alternative programmes. Official documents recast reform as political failure and described renewed control as the restoration of order. Institutes revised their recent histories, often presenting continuity where colleagues remembered abrupt dismissals and

abandoned initiatives. The resulting silence was socially enforced as much as administratively prescribed. Remaining staff understood that open commemoration of expelled colleagues could endanger their own teams and projects. Normalisation therefore reorganised the Academy's past by making some biographies institutionally unmentionable while retaining the knowledge those biographies had helped to create. The apparent stability of the 1970s rested partly on this unequal settlement between preserved scientific capacity and amputated public memory.

The impact of normalisation varied substantially among disciplines, and these differences shaped the form in which memory survived. Social sciences and humanities were directly exposed because their concepts, periodisations, and interpretations touched the legitimacy of the regime. Historical research, sociology, philosophy, economics, law, and literary scholarship faced close supervision, restricted archives, and strong pressure to adopt authorised frameworks. In these fields, the exclusion of a scholar could require the reclassification of an entire school or the disappearance of its vocabulary from legitimate publication (*Oates-Indruchová, 2008*). Natural sciences and technical disciplines often possessed greater room to defend professional criteria, particularly when their work had economic, medical, or strategic value. Yet their relative protection should not be mistaken for autonomy. Access to foreign journals, instruments, conferences, and collaborators remained politically filtered, while promotion and leadership still depended upon institutional trust. Some natural scientists used the presumed neutrality of their fields to shelter colleagues or maintain Western contacts. Others benefited from the removal of competitors or accepted the compromises required by the system. Disciplinary cultures thus stored different memories of the same regime. A historian might remember normalisation primarily through forbidden questions and censored names, whereas a chemist might recall shortages, travel permissions, and the informal defence of laboratory standards. These contrasting experiences later complicated any single moral judgement of ČSAV's institutional past.

Censorship and bureaucratic supervision did not merely suppress memory; they also generated peculiar documentary traces through which the system can now be reconstructed. Editorial reports, travel applications, personnel evaluations, institute plans, and minutes of party meetings translated political judgement into routine administrative language. A rejected article might be described as methodologically immature rather than ideologically unacceptable. A denied journey could appear as a budgetary decision even when security considerations were decisive. A research programme might preserve its substantive core by adopting a title better aligned with the current plan. Such practices trained scholars to write on several semantic levels and to recognise signals that an outside reader would miss. In the humanities, allusion, strategic quotation, and carefully limited claims sometimes allowed arguments to pass through regulatory frameworks (*Oates-Indruchová, 2018*). In the sciences, apparently technical reports could conceal negotiations over equipment, contacts, and institutional protection. This language became part of professional socialisation, but it also burdened later historians with records whose literal wording cannot be accepted without contextual reading. The post-1989 opening of archives revealed how extensively political control had been routinised. It also showed that bureaucratic files preserve the perspective of the controlling institution more consistently than the experience of those controlled. Institutional memory must therefore be reconstructed from the grain of the archive as well as against it.

Scholars expelled from the Academy did not cease to belong to its intellectual history, even when official records treated their departure as closure. Some continued research in minor posts, private seminars, translation work, or informal circles within Czechoslovakia. Others signed Charter 77, contributed to samizdat, or joined networks in which scholarly discussion acquired an explicitly civic meaning. Emigrants rebuilt careers abroad and carried with them training, problems, and personal connections formed in ČSAV institutes. Their publications entered international scholarship even when colleagues at home could not cite them openly. Scientific exile thus externalised part of the Academy's institutional memory rather than simply terminating it (*Kostlán, 2010*). Letters, conference encounters, privately circulated texts, and family contacts maintained fragile connections across the Iron Curtain. These links were uneven and dangerous, but they preserved awareness that the official institutional community was not the whole community. Exiled scientists also remembered ČSAV ambivalently, as a place of formative opportunity, political betrayal, professional achievement, and compelled departure. After 1989, their return as visitors, collaborators, advisers, or symbolic figures helped restore broken genealogies without cancelling the intervening separation. Biographical research has made visible the scale and diversity of this dispersed scholarly population (*Štrbáňová & Kostlán, 2011*). Counter-memory therefore survived not in a single clandestine archive but in a transnational constellation of people, texts, and interrupted affiliations.

By the 1980s, ČSAV combined substantial institutional capacity with an increasingly evident exhaustion of its political and economic environment. Many institutes possessed mature research schools, specialised facilities, extensive data, and experienced technical staff. Long service created stable communities in which practical knowledge could pass between generations. At the same time, ageing equipment, restricted travel, currency shortages, and bureaucratic planning limited the renewal of that capital. Official rhetoric continued to celebrate socialist scientific progress, but staff increasingly compared these claims with the conditions they encountered abroad or in imported literature. Institutional memory could encourage resilience by reminding teams that they had survived earlier campaigns and reorganisations. It could also reproduce caution, hierarchy, and the habit of waiting for signals from above. Younger researchers inherited both sophisticated disciplinary skills and behavioural adaptations to a system in which initiative entailed political risk. Directors often acted as brokers, translating central demands into tolerable local arrangements while controlling scarce opportunities. This brokerage preserved some research but made institutional fortunes depend heavily on personal authority and informal negotiation. The late socialist Academy was consequently neither a static bureaucracy nor a hidden liberal institution. It was an organisation whose accumulated competence and accumulated compromises had become inseparable by the eve of the Velvet Revolution.

The collapse of communist rule in November 1989 confronted the Academy with an immediate crisis of historical judgement. Researchers had to decide which inherited structures represented valuable scientific capacity and which embodied unacceptable political control. Calls for democratisation included the replacement of compromised leaders, free elections to scientific councils, transparent appointments, and rehabilitation of those previously excluded. Yet reformers could not simply suspend research while every institutional biography was adjudicated. Laboratories needed salaries and supplies, long-term experiments continued, and archives required protection during administrative change. The Academy therefore entered a period of accelerated selection in which moral, scientific, legal, and economic criteria overlapped. The question was not whether ČSAV would change, but whether change

would occur through internal renewal, wholesale dissolution, or some combination of continuity and re-foundation. Memories of 1968 encouraged the recovery of self-government, while knowledge of normalisation sharpened suspicion towards merely cosmetic reform. At the same time, the transformation took place amid wider arguments about the legitimacy of large non-university research organisations inherited from socialism. Scientists had to explain that an institution shaped by communist governance could nevertheless contain work, people, and infrastructure that did not belong to the communist regime. This distinction between political form and scientific capital became essential to the Academy's survival (*Pačes, 1995*). The revolution consequently made institutional memory operational, because decisions about budgets, leadership, and organisational boundaries depended upon competing readings of the past.

Post-1989 rehabilitation restored names and careers to public view, but its deeper effect was to change the ownership of institutional memory. Previously closed documents became accessible, suppressed works could be republished, and witnesses could describe mechanisms that official accounts had concealed. The creation of the Institute of Contemporary History gave systematic research into communist Czechoslovakia an institutional home within the Academy. The renewal of the Masaryk tradition and the later development of the Masaryk Institute and Archives strengthened the connection between historical scholarship and the custodianship of academic records. Oral history added experiences that could not be recovered from personnel files or official minutes. Biographical dictionaries and critical editions reconnected institutions with scholars erased by Nazism, communism, or exile. As discussed in "Post-1989 Rehabilitation and the Restoration of Scientific Memory", this work was a form of institutional repair rather than a ceremonial supplement to reform. It altered the evidence available for judging past conduct and widened the community recognised as part of Czech science. Nevertheless, rehabilitation could not restore lost years, abandoned projects, or mentoring relationships that had never been allowed to develop. Nor did the opening of archives automatically remove conflicts over complicity, accommodation, and responsibility. Democratic memory had to remain plural enough to include both victims and the ambiguous everyday choices of those who stayed. The Academy's recovery of its past was therefore credible only when it accepted that evidence might unsettle consoling narratives of either uninterrupted excellence or universal resistance.

The legal transition from ČSAV to the Academy of Sciences of the Czech Republic made selective continuity unusually explicit. Act No. 283/1992 established the new Czech Academy while transferring to it institutes that had belonged to the Czechoslovak Academy and were assigned to the Czech Republic (*Czech National Council, 1992*). The law also allowed incumbent directors and scientific councils to continue, thereby preventing a legal vacuum at the level where research was conducted. This arrangement did not endorse the previous political system. It recognised that democratic legitimacy could be created through new law and self-government without dissolving every working institution. The division of Czechoslovakia added a national dimension, since the federal academic inheritance now had to be allocated between Czech and Slovak institutional frameworks. Personal and disciplinary relations did not end at the new state border, although funding, property, and administrative responsibility were separated. The date 1 January 1993 therefore marked a constitutional beginning more clearly than an intellectual one. Projects, collections, research groups, and publication series often continued across the change of name. At the same time, new statutes and representative bodies redefined who governed that continuity and to whom the Academy

was publicly accountable. Legal succession transformed memory into an institutional asset subject to democratic rules rather than an automatic claim to authority. The birth of AV ČR was consequently both a break with the command system and a deliberate refusal to squander the scientific capital accumulated within it.

The evaluations and reorganisations of the 1990s tested whether this distinction could survive economic scarcity and political scepticism. Institutes were assessed, merged, renamed, reduced, or closed, while researchers encountered competitive grants and new expectations of international publication. These measures aimed to replace administrative entitlement with demonstrable scientific quality. They also revealed that democratic reform could endanger memory through mechanisms different from censorship. A team dismissed as outdated might contain unique longitudinal data, technical competence, or linguistic knowledge whose value was not visible in short evaluation cycles. Conversely, an appeal to tradition could protect weak structures and obscure the need for genuine renewal. Reform therefore required judgement about which inherited capacities remained fertile and which had become path-dependent constraints (*Mahoney, 2000*). Comparisons with universities and Western research systems intensified debate over whether the Academy itself was a necessary organisational form (*Šebková, 1994*). Its defenders argued that institutes sustained concentrated, long-term research and infrastructure that universities under simultaneous transformation could not easily absorb. Its critics questioned size, duplication, accountability, and the survival of habits formed under central planning. The resulting institutional map represented neither unqualified preservation nor a clean neoliberal redesign. It was a negotiated settlement in which scientific communities repeatedly had to convert remembered achievement into credible plans for future work.

In the contemporary Czech Academy, institutional memory has become more self-conscious, professionalised, and publicly accessible. The Masaryk Institute and Archives preserves records of both ČSAV and AV ČR, and its arrangement of institutional fonds often places predecessor and successor workplaces within the same descriptive lineage. This archival practice acknowledges operational continuity without pretending that governance remained unchanged (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). Official histories and annual reports similarly connect the present Academy to learned societies, the Czech Academy of Sciences and Arts, and the Czechoslovak Academy, presenting a tradition extending over more than two centuries (*Czech Academy of Sciences, 2023*). Such a genealogy supplies depth and public legitimacy, but it should be treated as an invitation to inquiry rather than a claim of institutional identity across all periods. Contemporary remembrance must include the multilingual worlds of the monarchy, the democratic aspirations and exclusions of the First Republic, the devastation of occupation, the achievements and coercions of ČSAV, and the contested reforms after 1989. It must also recover groups who appeared less often in official narratives, including women, technicians, librarians, regional collaborators, persecuted Jewish scholars, German-speaking scholars, Slovak partners, and exiles. Digitisation expands access to records and permits connections between collections that were once institutionally separated. Yet digital visibility can reproduce old hierarchies when well-catalogued official documents overshadow fragile personal archives or undocumented practical knowledge. Critical curation is consequently as important as technical access, because metadata and selection already guide what future researchers are likely to find. Anniversaries, exhibitions, interviews, and institute histories are therefore not decorative activities but occasions on which the boundaries of the remembered community are

renegotiated. A democratic Academy proves its maturity not by possessing an immaculate past, but by sustaining the means through which that past can be investigated critically.

Thus, institutional memory across political regimes was neither an unbroken inheritance nor a sequence of complete destructions. Each regime altered the categories through which scientific legitimacy, institutional ancestry, and professional belonging were understood. The Habsburg and national settings created learned traditions that the First Republic adapted to democratic statehood. Occupation shattered communities and left absences that later restoration could never fully repair. Communist reorganisation concentrated substantial scientific resources within ČSAV while subordinating their public meaning and governance to a party-state. The reforms of the 1960s reopened suppressed genealogies, and normalisation attempted to close them again through purges, censorship, and managed silence. Researchers nevertheless preserved methods, relationships, and counter-memories in workplaces, private circles, and exile. The Velvet Revolution transformed these dispersed memories into evidence for democratisation, rehabilitation, and institutional redesign. The foundation of AV ČR then gave legal form to a carefully chosen combination of succession and rupture. Subsequent evaluation showed that memory remained valuable only when it could support renewal rather than demand immunity from judgement. Archives, histories, and commemorations now allow the Academy to recognise plural inheritances without collapsing their political differences. Institutional continuity should therefore be understood as the sustained capacity to examine, transmit, and revise a scientific past whose conflicts remain part of its meaning.

3. The Role of Directors, Teams, and Disciplinary Cultures

Scientific continuity is never produced by an institute in the abstract. It is created by people who interpret the institution’s mission, distribute resources, select successors, defend particular standards, and decide which unfinished questions deserve another generation of work. Directors possess unusual visibility in this process because their signatures appear on appointments, budgets, organisational charts, and official programmes. Research teams, however, turn those decisions into experiments, editions, surveys, calculations, and fieldwork. Disciplinary cultures supply the less visible rules through which both leaders and teams judge whether those results are credible. The institute consequently operates through a triangle of formal authority, collective practice, and epistemic convention. None of the three can sustain continuity alone. A powerful director without a competent team produces administration rather than science. A productive team without institutional support may disperse when funding, political protection, or laboratory space disappears. A disciplinary culture without renewal can preserve high standards but also harden into exclusion and routine. Czech and Czechoslovak academic history offers repeated examples of these alignments and failures. Its institutes endured when leadership, teamwork, and disciplinary identity could be recombined after political or organisational disruption. Their continuity was therefore a negotiated achievement rather than an automatic property of institutional age.

The director of a research institute occupies a structurally ambiguous position. From above, the director represents the workplace to the Academy leadership, government, funders, evaluators, and international partners. From below, the same person appears as the allocator of opportunities, guardian of working conditions, and arbiter of internal conflict. Scientific reputation may help a director command trust, but administrative office demands skills that

research excellence does not automatically provide. The director must translate between the long temporal horizon of inquiry and the shorter rhythms of budgets, political directives, and evaluation cycles. This translation can protect research by presenting specialised aims in language intelligible to external authorities. It can also deform research when institutional survival becomes more important than intellectual judgement. Directors decide which emerging field receives a new group, which senior scholar retains support, and which technical service remains part of the institute's core. Such decisions accumulate until they shape the disciplinary profile inherited by successors. Leadership is therefore not merely the implementation of a previously settled scientific programme. It is a continuous selection among possible futures under conditions of incomplete knowledge. The historical significance of a director lies as much in the capacities preserved for others as in the work published under the director's own name.

Yet a history organised entirely around directors would reproduce the heroic model that modern research institutions themselves have made inadequate. Scientific discoveries are often associated with a recognisable individual because names provide convenient symbols for complex collective processes. Behind the named scholar stand colleagues who challenged an interpretation, technicians who stabilised an instrument, librarians who identified a source, administrators who secured materials, and junior researchers who performed much of the daily work. Their contributions may disappear from commemorative narratives because institutional hierarchies and conventions of authorship distribute credit unevenly. The "invisible technician" is not a marginal curiosity but a reminder that experimental reliability often depends on labour excluded from the published account (*Shapin, 1989*). Similar invisibility can affect research assistants, translators, cataloguers, draughtspeople, programmers, and field workers. Recovering this hidden labour changes not only attribution but also the explanation of institutional survival. Directors can either reinforce this inequality or make collective competence visible and sustainable. A strong institute is not one in which every success is attributed to its head. It is one in which responsibility is clear, criticism can travel upwards, and expertise is recognised wherever it resides. This distinction becomes especially important under authoritarian regimes, where public praise of a leader may conceal both the work of a team and the vulnerability of its members. Institutional continuity should consequently be reconstructed from patterns of cooperation, not merely from sequences of officeholders.

The term disciplinary culture describes the shared but historically changeable assumptions through which a field organises inquiry. These assumptions concern what counts as an interesting problem, an adequate proof, a reliable observation, a meaningful source, or an acceptable degree of uncertainty. They are learned through practice more often than through explicit regulation. A chemist, archaeologist, linguist, and sociologist may work within the same Academy while inhabiting different regimes of evidence, authorship, time, and collaboration. Laboratory sciences often depend on tightly coordinated tasks and expensive shared apparatus. Textual disciplines may centre on individual interpretation while relying on long collective enterprises such as dictionaries, editions, and catalogues. Field sciences create seasonal rhythms and place-based knowledge that cannot be reproduced through documents alone. These differences are not secondary details of institutional administration. They shape team size, leadership style, recruitment, publication, and the meaning of continuity itself (*Knorr Cetina, 1999*; *Whitley, 2000*). An institute that ignores its disciplinary culture may impose formally uniform procedures that damage substantively different kinds of work.

Conversely, a discipline that treats its inherited customs as untouchable may resist necessary methodological and ethical change. Directors therefore govern most successfully when they understand culture as both a resource and an object of reflection.

Before the age of permanent research institutes, learned societies already connected leadership with collective norms. Presidents and secretaries convened meetings, organised correspondence, supervised publications, and mediated between scholars and patrons. Their authority depended less on command over salaried employees than on reputation and the capacity to sustain voluntary cooperation. Committees and disciplinary classes gradually created more specialised settings in which judgements could be delegated to recognised experts. These arrangements established enduring habits of election, peer recognition, and corporate representation. They also reflected the social hierarchies of their time, limiting participation through language, gender, status, and access to educational institutions. A society could celebrate intellectual universality while remaining socially narrow. Its disciplinary culture was therefore inseparable from its membership culture. When later academies claimed descent from these bodies, they inherited both the ideal of scholarly self-government and the problem of defining who qualified to exercise it (*Míšková et al., 2018*). The transition from voluntary society to professional institute expanded the administrative power of scientific leaders. It did not eliminate the older dependence of authority on collegial recognition. Throughout the subsequent history of Czech academic science, stable leadership required some workable balance between appointment from above and legitimacy among peers.

The Czech Academy of Sciences and Arts gave this balance a more durable corporate framework after 1891. Its leadership coordinated disciplinary classes whose members represented different forms of scholarship, science, literature, and art. Presidents and senior officers embodied the Academy publicly, yet much of its substantive work occurred through committees, referees, editors, and networks of correspondents. Decisions about grants, prizes, membership, and publication helped consolidate emerging disciplinary hierarchies. These decisions could nurture fields lacking strong university support or reinforce the authority of already established elites. Personal patronage remained important because financial resources and professional opportunities were limited. At the same time, written procedures gradually made institutional judgement less dependent on a single relationship. The archives of the Academy show leadership acting through repeated acts of classification rather than through grand declarations alone (*Mádlová, 2024*). Which manuscript deserved publication, which expedition merited funding, and which scholar should enter a class were decisions about the future shape of knowledge. Teams were usually smaller and less formally structured than they would become under ČSAV. Nevertheless, editorial projects and collective scholarly enterprises already required coordination across generations. The later institute system enlarged these functions while preserving the fundamental connection between organisational choice and disciplinary reproduction.

The creation of ČSAV in 1952 greatly increased the formal power of scientific management. Institutes became components of a state-organised research system with approved plans, hierarchical reporting, and leadership accountable to the Academy presidium and political authorities. The position of director was consequently both scientific and governmental. Directors were expected to guarantee fulfilment of research plans, personnel discipline, ideological reliability, and the practical operation of increasingly large workplaces. Appointment from above could override local scholarly preferences, particularly during the

formative Stalinist years. At the same time, central authorities depended on directors to interpret fields they did not themselves master. This dependence created room for negotiation within an otherwise strongly controlled structure. A director able to connect a programme with economic, medical, or strategic priorities could secure staff and equipment for research whose intellectual value exceeded the official justification. Another director might use the same discretion to reward loyalty, suppress criticism, or build a personal clientele. The organisational design therefore concentrated both protective and coercive capacities in the same office. Institute histories cannot be understood without examining how particular directors exercised this intermediate power (*Franc et al., 2020*). Nor can their actions be judged without considering the teams that enabled, contested, or endured them.

Founding directors exercised an especially consequential form of authority because they created organisational paths that later became difficult to reverse. They recruited the initial cohort, selected research themes, divided laboratories or departments, and established relations with universities and industry. Their preferences influenced which instruments were purchased, which foreign literatures were followed, and which younger researchers obtained early responsibility. A successful founding director often combined an intellectually coherent programme with the ability to obtain resources from the new Academy. This combination could produce rapid disciplinary growth. It could also identify the institute too closely with one school, narrowing succession when the founding generation retired. Early appointments possessed long afterlives because the recruited researchers later became group leaders, referees, and mentors. Initial organisational boundaries similarly shaped which questions appeared central and which fell between institutes. Path dependence therefore arose through ordinary staffing and infrastructure decisions rather than through statutes alone. Political authorities imagined that creating a new institute meant beginning afresh, but the director usually assembled it from pre-existing people, techniques, and relationships. The founding moment was thus an act of recombination disguised by the rhetoric of novelty. Its durability depended on whether the first team could transform a personal vision into a culture capable of surviving its author.

František Šorm provides a particularly revealing example of the founding director as scientific organiser. After the Second World War, he gathered a group of chemists whose work became the basis of the Institute of Organic Chemistry, formally established within ČSAV in 1953. The institute later developed into the Institute of Organic Chemistry and Biochemistry, preserving a research identity that crossed the political and legal transition of 1993 (*Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences, n.d.*). Šorm combined laboratory distinction with exceptional institutional ambition. As general scientific secretary and later president of ČSAV, he influenced the Academy far beyond his own institute. His authority helped chemistry secure personnel, buildings, equipment, and international visibility. It also demonstrated how a productive discipline could expand within the structures of socialist science. Šorm's communist commitments belonged to this trajectory, but they did not prevent his later support for reform or protect him after 1968. His career therefore resists a simple opposition between political insider and autonomous scientist. The institute he helped create outlasted both his presidency and his forced marginalisation. The founder's authority had been converted into an organisational repertoire that other leaders and teams could reinterpret. Its continuity arose because the original leadership had formed teams and research programmes that could no longer be reduced to the founder's political position (*Franc et al., 2025*).

Directorial protection under state socialism operated through compromises that were rarely visible in official organisational charts. A director might retain a politically suspect specialist because the institute depended on that person's expertise. Protection could involve assigning a neutral title, limiting public exposure, relocating the scholar within a different unit, or presenting the work as necessary to a recognised plan. Such arrangements preserved careers and knowledge, but they also required discretion from the protected individual and loyalty from colleagues. The director became a broker of unequal security. This role could foster gratitude and solidarity, yet it could also create dependency and silence criticism. Protective leadership therefore should not be idealised as institutional resistance. The same director might defend one researcher while excluding another, protect laboratory standards while endorsing public conformity, or exchange political compliance for professional latitude. Teams learned to read these bargains through patterns of travel, authorship, promotion, and access to scarce resources. What appeared from outside as a stable disciplinary culture could contain sharp internal gradations of privilege. Leadership under constraint was consequently judged not only by declared principles but by the distribution of risks. The moral memory of a director often remained contested because different members of the same institute experienced that distribution differently.

Research teams transformed directorial strategy into reproducible scientific work. A team was more than a list of employees assigned to the same organisational unit. It contained a division of cognitive labour, expectations of mutual assistance, routines for identifying error, and conventions for resolving disagreement. These arrangements made it possible to pursue problems too extensive for a single researcher. They also preserved knowledge when one member retired, emigrated, or was removed. The resilience of a team depended on some redundancy, because expertise concentrated in only one person could disappear abruptly. Yet excessive duplication was difficult in institutes facing limited staff and equipment. Effective groups therefore distributed overlapping competences while allowing individual specialisation. Their seminars, laboratory meetings, shared notebooks, and informal discussions functioned as mechanisms of collective memory. The published article or monograph represented only the visible outcome of this continuous internal exchange. Studies of scientific organisation have shown that knowledge production increasingly depends on collaborative structures even when reward systems remain centred on individuals (*Wuchty et al., 2007*). In the Academy context, team continuity often proved more durable than the official programme names under which the work was reported.

Technical and supporting staff were particularly important carriers of this team memory. An instrument maker knew how a device behaved beyond the specifications supplied by its manufacturer. A laboratory technician recognised contamination from changes that might escape an inexperienced researcher. A photographer or draughtsperson converted transient observations into stable scientific evidence. Librarians and documentalists maintained access to cumulative literatures, while editors enforced terminological and bibliographical consistency. Field assistants knew local terrain, suppliers, communities, and the practical limits of a planned expedition. These competences were often learned through apprenticeship and could not be fully captured in formal job descriptions. Their institutional value became most evident during disruption, when teams had to repair old equipment, improvise materials, or reconstruct interrupted procedures. Nevertheless, academic prestige and authorship conventions frequently rendered such work secondary or invisible (*Shapin, 1989*). Gender and occupational hierarchy intensified this unequal distribution of recognition. Directors

influenced whether support staff were treated as replaceable labour or as participants in a knowledge community. Institutes that acknowledged their expertise were better equipped to transmit methods across generational change.

The interdisciplinary teams of the 1960s expanded the meaning of collective research within ČSAV. Reform-minded scholars believed that complex economic, technological, environmental, and social problems could not be addressed within rigid departmental boundaries. Teams brought together economists, sociologists, philosophers, engineers, natural scientists, and other specialists around questions of modernisation and social reform. Their effectiveness depended on leaders capable of negotiating different vocabularies and standards of evidence. Interdisciplinarity did not dissolve disciplines, because participants required strong home traditions from which to contribute. It instead created temporary zones in which concepts could be translated and jointly tested. Such teams also challenged bureaucratic planning by proposing research questions that crossed the jurisdiction of established institutes. Their work connected institutional reform with broader efforts to construct a new Czechoslovak model of socialism. Political liberalisation made this experimentation possible, while the authority of respected organisers supplied partial protection. The research process thereby became a school of democratic professional interaction before political democracy itself had become attainable. After 1968, the teams' institutional vulnerability revealed the limits of arrangements that depended on a reformist political opening. Even when programmes were dissolved, participants retained habits of interdisciplinary communication that resurfaced in later research and public debate (*Hoppe et al., 2015*).

Otto Wichterle's career demonstrates both the creative power and the vulnerability of leadership centred on a strong research vision. His work in macromolecular chemistry linked fundamental inquiry with technological application and ultimately with the development of soft contact lenses. Yet the famous improvisation associated with this invention should not obscure the preceding labour of research groups, industrial connections, material testing, and accumulated polymer expertise. Wichterle helped establish an institutional environment in which macromolecular chemistry could become a recognised field. His authority rested on the ability to move between theory, experiment, invention, and organisational advocacy. Political conflict repeatedly interrupted that authority. After supporting the reform movement, he was removed from the leadership of the Institute of Macromolecular Chemistry during normalisation. The institute continued, but the removal altered access, priorities, contacts, and the public memory of its founder. The case warns against treating a successful invention as evidence that its political environment was institutionally benign. Wichterle's later election as president of ČSAV in 1990 transformed personal rehabilitation into an emblem of institutional re-foundation (*Czech Academy of Sciences, n.d.*). His biography thus reveals that scientific leadership can survive outside office while remaining dependent on teams and organisations for its wider effects. It also shows why restoration of a director's name does not automatically reconstruct the working community that political intervention had changed.

The reform movement of the 1960s also showed that leadership could be distributed rather than concentrated in a single office. Institute directors, Academy officers, group leaders, journal editors, and respected researchers formed overlapping networks of initiative. A proposal could acquire authority through discussion across several workplaces before receiving formal approval. This circulation of ideas weakened the monopoly of administrative hierarchy without abolishing the need for coordination. Scientific councils gained significance

when their deliberations reflected genuine professional disagreement rather than predetermined political conclusions. Teams became constituencies capable of evaluating leaders as well as receiving instructions from them. Such participation encouraged researchers to see institutional policy as part of their professional responsibility. František Šorm's presidency provided important space for this development, but the movement exceeded his personal programme (*Nisonen-Trnka, 2008*). Its breadth explains why normalisation required intervention at multiple levels rather than the simple replacement of one president. It also explains why memories of the Prague Spring persisted in seminar cultures, expectations of collegiality, and later demands for self-government. Democratic habits within science had been practised incompletely before they could be codified legally. Leadership at its most generative therefore created communities capable of acting beyond the leader's immediate control.

Normalisation reversed this trajectory by treating control over leadership as the principal means of reshaping institutes. František Šorm left the presidency in 1969, and Jaroslav Kožešník led the Academy through the consolidation of the new order. Across ČSAV, directors and scientific council members associated with reform were replaced, demoted, or pressured to confirm the official interpretation of 1968. These personnel changes transmitted political authority down to the level of departments, teams, and individual careers. A new director could cancel travel, alter publication plans, redistribute laboratory space, and signal which questions had become dangerous. Leadership replacement therefore produced effects far beyond the biographies of those immediately removed. It interrupted mentorship, changed the balance between competing schools, and rewarded those willing to participate in political vetting. The sequence of ČSAV presidents from Šorm through Kožešník, Bohumil Kvasil, and Josef Říman reflected broader phases of consolidation and late socialist management (*Czech Academy of Sciences, n.d.*). Yet presidential chronology alone cannot show how normalisation was implemented locally. Some institutes experienced severe intellectual rupture, whereas others preserved substantial continuity under new public formulas. The variation depended partly on disciplinary value and partly on the character of directors appointed to administer the settlement. The politics of leadership thus became embedded in the everyday ecology of research.

A normalisation-era director could function as ideological enforcer, pragmatic broker, scientific patron, or some unstable combination of all three. The office required upward compliance, but local effectiveness still depended on the cooperation of skilled staff. Directors who relied entirely on coercion risked damaging the output for which they were administratively responsible. Those who defended every local preference risked removal or loss of resources. Many therefore developed double languages, presenting conformity to superiors while negotiating exceptions inside the institute. This strategy sometimes preserved research groups and foreign contacts. It could equally conceal arbitrary privilege and make protection dependent on personal loyalty. Younger scholars learned that professional advancement involved judgements about networks and political reliability as well as scientific merit. Group leaders became intermediaries within this system, distributing tasks and information between the directorate and researchers. The resulting institutional culture was neither simply imposed from above nor freely generated below. It emerged from repeated bargains whose terms differed among workplaces (*Míšková et al., 1998*). The long-term cost was a weakened capacity for open criticism, because even benevolent protection taught researchers to treat disagreement as a private matter.

Disciplinary culture strongly influenced how these pressures were experienced and remembered. In ideologically sensitive humanities and social sciences, directors frequently exercised authority over interpretative boundaries as well as employment. A historical periodisation, sociological concept, or philosophical vocabulary could become evidence of political unreliability. Group identity therefore formed around authorised schools, suppressed alternatives, or guarded attempts to preserve methodological plurality. In chemistry, physics, mathematics, and parts of biology, international standards offered stronger external criteria against which local work could be judged. These fields were not free from ideological or security control, but directors could sometimes defend them through claims of technical necessity and measurable performance. Large apparatus created interdependence and encouraged hierarchical coordination. Archival, linguistic, and historical projects often required long-duration collective labour while granting individual scholars greater autonomy over interpretation. Different authorship traditions then shaped whose contribution became visible. What counted as a successful director consequently varied between fields. A laboratory might value rapid acquisition of equipment and stable group funding, while a humanities institute might place greater weight on protecting archival access, editorial independence, and intellectual diversity. Uniform administrative rules could never fully capture these differences because scientific authority remained embedded in distinct epistemic cultures (*Knorr Cetina, 1999*).

Publication practices reveal how teams and disciplines converted internal labour into public credit. In some experimental sciences, multi-authored articles became the normal record of collaboration. The order of names communicated contribution, seniority, group ownership, or disciplinary convention, although its meaning was not always transparent outside the field. In historical and philological scholarship, the single-authored monograph retained high prestige even when it depended on extensive collective infrastructure. Dictionaries, source editions, bibliographies, atlases, and archaeological reports complicated this contrast because their production could require decades of coordinated work. Directors and editorial boards influenced which outputs counted in promotion and institutional evaluation. A culture that rewarded only the final named author could discourage the maintenance of shared datasets, collections, and reference works. A culture that attributed every result automatically to a senior head could suppress intellectual independence. The problem became sharper under political regimes that used publication permission as a means of control. Removing a name, adding an approved co-author, or preventing citation could rewrite both credit and genealogy. Democratic reform changed formal restrictions but did not eliminate asymmetries of status and visibility. Responsible leadership must therefore treat authorship as an ethical practice through which a team records its own history.

Generational succession is the point at which leadership, teamwork, and disciplinary culture most clearly converge. Directors appoint or recommend younger researchers, but teams determine whether newcomers gain access to meaningful problems and practical knowledge. A formal vacancy alone does not create a successor. The future scholar must learn how evidence is produced, how criticism is voiced, and which unresolved problems matter to the field. Mentoring can make these norms explicit, yet much is communicated through participation in ordinary work. Senior researchers demonstrate how to design an experiment, read an ambiguous source, repair a failed procedure, or abandon a cherished hypothesis. This transmission creates intellectual lineage without requiring doctrinal imitation. Its success depends on allowing younger scholars eventually to challenge the assumptions they inherited.

Political purges damaged succession because they removed mentors and taught juniors that conformity could be safer than originality. Organisational austerity can produce a different but comparable rupture when an institute cannot maintain intermediate career positions. In both cases, a gap between generations threatens continuity even if the institutional name survives. Directors therefore act as custodians of temporal depth when they balance immediate output with the slow formation of independent researchers.

Scientific schools emerge when this succession extends beyond a single mentor and becomes a recognisable style of collective inquiry. A school may share preferred problems, characteristic techniques, theoretical commitments, or standards of exposition. It can provide intellectual confidence by locating younger researchers within a lineage of achievement. It can also facilitate cooperation because members understand one another's assumptions and working habits. Yet a strong school carries risks of closure. Recruitment from the same network may exclude alternative approaches, while reverence for a founder may convert a research tradition into orthodoxy. Directors influence whether schools coexist competitively, dominate an institute, or renew themselves through external contact. Political regimes can exploit school rivalries by promoting one group as ideologically reliable. Conversely, threatened scholars may use the solidarity of a school to preserve methods under hostile conditions. The most durable traditions combine a stable core of problems with permeability to new evidence and collaborators. They remember their founders without turning every historical choice into a permanent command. Institutional continuity depends on precisely this capacity to distinguish fidelity to standards from loyalty to inherited conclusions (*Fleck, 1979*).

During late socialism, mature ČSAV institutes frequently relied on established group leaders who possessed more practical authority than their formal titles suggested. They controlled access to specialised methods, international correspondence, datasets, or instrumentation accumulated over many years. Directors needed these figures because administrative plans could not substitute for operative expertise. At the same time, long-established groups could become protective enclaves that limited mobility and concentrated scarce opportunities. Informal authority sometimes moderated political interference, but it could also perpetuate patronage. Junior scholars navigated a layered hierarchy of director, department head, party organisation, principal investigator, and senior specialist. The stability of this arrangement helped institutes continue working despite economic stagnation and political fatigue. It also made reform difficult because institutional routines had become embedded in personal dependencies. By the 1980s, scientific renewal increasingly required travel, computing, new equipment, and contact with rapidly changing international fields. Teams with strong external networks adapted more readily than those confined to domestic hierarchies. Disciplinary culture could sustain quality, yet it could not by itself overcome structural isolation. The Velvet Revolution therefore released considerable professional energy while exposing inequalities accumulated within apparently stable workplaces.

The events of 1989 transformed the legitimate basis of academic leadership. Party approval could no longer serve as a qualification for office, and scientific communities demanded elected councils, open discussion, and review of compromised appointments. Institutes organised meetings in which previously unspoken histories of exclusion and accommodation entered collective judgement. These discussions were necessary but difficult because colleagues who had shared workplaces for decades possessed sharply different memories of the same directors and decisions. Democratic procedure offered a way to act without requiring complete agreement about the past. Otto Wichterle's election as president of ČSAV in June

1990 symbolised the reversal of normalisation-era authority (*Czech Academy of Sciences, n.d.*). His prestige joined scientific accomplishment, civic independence, and personal rehabilitation. Yet the reconstruction of institutional legitimacy could not rest on symbolic leadership alone. Scientific councils and institute communities had to assume responsibility for appointments, programmes, and evaluation. The change therefore shifted authority from political nomination towards accountable collegial governance. It also made leadership temporary and contestable in a way incompatible with the older culture of indefinite personal rule. Post-1989 continuity became credible because teams participated in deciding who would represent and reorganise them.

The establishment of AV ČR in 1993 placed directors within a redesigned system of institutional autonomy and central coordination. Institutes retained distinct scientific identities while participating in the self-governing structure of the Academy. Directors represented their workplaces in the Academy Assembly, connecting local needs with collective decisions about budgets, policy, and institutional development. This arrangement gave them substantial influence but embedded that influence within elected and supervisory bodies. Scientific councils at institute level provided a forum in which research direction could be debated rather than simply announced. Selection procedures made directorial authority time-bound and subjected candidates to professional scrutiny. The Academy president formally appointed institute directors, but the process depended on institutional nomination and evaluation. Such arrangements were intended to prevent both political appointment and unchecked local oligarchy. They also recognised that autonomy requires procedures for accountability rather than freedom from all oversight. The democratic institute was not leaderless; it redistributed the sources from which leadership derived legitimacy. Scientific achievement, managerial competence, peer confidence, and conformity with legal duties all became relevant. The resulting balance remained imperfect, but it converted directorship from an instrument of party hierarchy into an office held within a plural system of scientific self-government (*Pačes, 1995*; *Šebková, 1994*).

The public research institution framework introduced in the following decade clarified this balance further. Under the Academy's statutes, each institute possesses a director, an institute board, and a supervisory board. The director manages the workplace, but the institute board represents an internal collective authority and the supervisory board monitors important aspects of governance. Directors are appointed through selection procedures and remain subject to evaluation and possible recall. Recruitment of university-educated researchers is likewise expected to proceed through publicly announced competition. These rules do not guarantee fair leadership by themselves. They create channels through which decisions can be examined, challenged, and recorded. The Academy president retains the power to appoint and recall directors, while the Academy Council participates in evaluation and oversight. Directors also sit within a wider representative order because institute leaders and elected researchers form part of the Academy Assembly. The statutory design therefore joins vertical responsibility to horizontal participation. It attempts to preserve the decisiveness necessary for managing a research organisation without restoring the personal and political dependencies inherited from ČSAV. Modern institutional continuity rests increasingly on the reliability of these procedures rather than on the longevity of any particular officeholder (*Czech Academy of Sciences, 2006*).

Post-socialist directors acquired responsibilities that earlier scientific leaders had handled only partially. They had to compete for grants, manage diverse funding streams, oversee intellectual property, modernise infrastructure, and negotiate partnerships with universities,

firms, regions, and international organisations. English-language communication and international recruitment became increasingly important. Legal and financial accountability grew more complex, while public expectations of research impact expanded. A director could no longer rely primarily on disciplinary eminence or relations with central Academy officials. Effective leadership required professional administration capable of supporting rather than displacing research. This managerial expansion created a risk that institutes would evaluate every activity through short-term projects and measurable outputs. It also created opportunities to protect long-term scholarship through better planning, diversified resources, and transparent strategy. Teams increasingly depended on grant leaders who might command budgets larger than those of traditional departments. The relationship between project authority and institute authority therefore required careful negotiation. Directors had to prevent successful groups from becoming isolated organisations within the organisation. Their central task became the construction of a shared institutional horizon broad enough to connect competitive projects with cumulative scientific purpose.

Evaluation has become one of the principal mechanisms through which contemporary leadership and disciplinary culture meet. The Czech Academy assesses institutes and research teams through procedures that combine evidence about outputs with expert judgement. This combination matters because citation counts, patents, monographs, critical editions, databases, and public expertise have different meanings across fields. A uniform numerical scale would privilege some disciplinary cultures while misrepresenting others. Peer review, however, also carries the biases and network inequalities of the scientific community. Directors must prepare teams for scrutiny without turning evaluation into the sole purpose of research. They must decide whether disappointing results reveal weak performance, necessary risk, or the long gestation of important work. The Academy's recently completed evaluation involved 408 teams in 52 institutes and nearly two thousand international experts, illustrating both the scale of team-based assessment and the effort to move beyond simple metrics (*Czech Academy of Sciences, 2026*). Such evaluation can strengthen continuity when it identifies promising capacities and encourages credible renewal. It can weaken continuity when groups learn to choose only safe, rapidly publishable questions. Disciplinary panels and foreign reviewers are therefore not neutral additions to management but participants in defining what the institution will remember as valuable. Responsible leadership uses evaluation as informed feedback while preserving space for inquiry whose significance cannot yet be demonstrated.

Internationalisation has further altered the relationship between directors, teams, and disciplinary cultures. Contemporary groups may include researchers trained in several national systems and employed through projects of different duration. Their common scientific language cannot be assumed, even when they communicate in English. Expectations concerning authorship, supervision, working hours, data ownership, and criticism vary among disciplines and institutions. Directors and group leaders must make these expectations explicit enough to prevent informal hierarchy from deciding every conflict. International recruitment can renew an institute by bringing new methods and weakening closed local patronage. It can also produce a divided workplace if foreign researchers remain temporary guests without influence over institutional decisions. Participation in European infrastructures and multinational collaborations distributes leadership across organisations. No single director controls the complete research process, yet local decisions about staff, equipment, and recognition still determine whether a team can contribute effectively. Scientific continuity

therefore becomes transnational without ceasing to be institutional. Czech research traditions survive not by remaining culturally sealed but by entering collaborations from a position of recognised competence. The institute acts as the durable home that allows mobile researchers and temporary projects to leave cumulative knowledge behind.

Team-based science also changes the ethical meaning of leadership. Large and interdisciplinary groups create more opportunities for misunderstanding, diffusion of responsibility, and unequal dependency. Junior researchers may hesitate to challenge a principal investigator who controls authorship, contracts, and recommendations. Technical staff may observe methodological problems without possessing formal authority to stop a project. Directors must therefore establish procedures through which concerns can be raised outside the immediate chain of command. Scientific integrity cannot be delegated entirely to individual virtue because the organisation structures both temptation and vulnerability. Transparent data practices, clear authorship rules, conflict-of-interest policies, and independent review protect the team's capacity to correct itself. They also preserve institutional memory by recording how decisions were made and how errors were addressed. A culture that hides failure teaches each generation to repeat it. A culture that punishes every honest mistake encourages secrecy rather than rigour. The strongest disciplinary traditions distinguish misconduct from uncertainty and negligence from legitimate risk. Leadership preserves continuity when it makes correction a normal scientific practice rather than a threat to institutional prestige.

Directors inevitably leave symbolic as well as administrative legacies. Their names attach to buildings, medals, lectures, research programmes, and stories told to new employees. Such commemoration can express gratitude and offer concrete models of scientific service. It can also simplify collective history by concentrating institutional achievement in an exemplary figure. The case of Šorm illustrates this ambiguity particularly clearly, because his scientific institution-building, communist authority, reformism, and subsequent persecution belong to the same biography. Wichterle's commemoration similarly joins inventive brilliance with the political meaning of dismissal and rehabilitation. Democratic memory does not require the removal of such figures from institutional narratives. It requires their placement within the teams, conflicts, and structures that made their actions consequential. Directors should be remembered for the environments they created, including the opportunities they distributed and the dissent they permitted. Teams should be remembered as internally differentiated communities rather than anonymous supporters of a leader. Disciplinary cultures should be examined for exclusions as well as achievements. Only this wider frame prevents commemoration from becoming another method of institutional forgetting.

The continuity of an institute ultimately depends on succession that is planned but not predetermined. A departing director should leave procedures, capable colleagues, and an intelligible strategy rather than a vacuum organised around personal loyalty. Teams require enough stability to preserve cumulative work and enough openness to revise priorities. Disciplinary cultures require institutions that can distinguish foundational competence from inherited habit. These conditions are difficult to maintain because the timescales of office, grants, careers, and research problems rarely coincide. Political pressure may demand immediate conformity, while economic pressure may demand immediate return. Scientific leadership must nevertheless defend the temporal pluralism on which discovery and scholarship depend. Some questions yield results within months, whereas dictionaries, longitudinal studies, excavations, observatories, and experimental platforms may require

decades. Directors connect these timescales when they explain long-term value to funders and short-term constraints to researchers. Teams connect them when senior experience becomes usable by younger colleagues. Disciplines connect them when new methods are tested against accumulated standards rather than accepted or rejected solely because they are new. Institutional continuity is strongest when these negotiations remain visible, revisable, and shared.

Thus, directors, teams, and disciplinary cultures formed three interdependent carriers of scientific continuity throughout the history of Czech and Czechoslovak academic research. Directors translated between science and political or financial authority, but their power could protect, distort, or interrupt the work entrusted to them. Teams converted institutional resources into collective competence and preserved knowledge beyond the career of any single researcher. Disciplinary cultures supplied standards of evidence, criticism, authorship, and succession that administrative rules could not replace. Under ČSAV, these elements operated within a hierarchy capable of building major research capacities while exposing institutes to ideological appointment and political purge. Reform in the 1960s revealed the creative potential of distributed leadership and interdisciplinary cooperation. Normalisation demonstrated how replacing directors could reshape teams and silence alternative traditions without immediately destroying scientific infrastructure. The transformation after 1989 restored collegial legitimacy by embedding leadership in elections, selection procedures, councils, evaluation, and legal accountability. Contemporary international and project-based science has made coordination more complex while increasing the importance of a durable institutional home. No director can personally embody the memory of an institute, and no team can remain productive without leadership and standards. No disciplinary culture can survive by repetition alone, because continuity requires correction, inclusion, and renewal. The institute endures when authority enables collective intelligence and inherited traditions remain open to disciplined transformation.

Continuity from ČSAV to AV ČR

1. Institutes That Survived Transformation

The survival of an institute cannot be established merely by finding the same name on two organisational charts. An institution may retain its title while losing its staff, research agenda, collections, and authority. Conversely, it may change its name, legal status, or internal structure while preserving a recognisable community of research. The transition from the Czechoslovak Academy of Sciences to the Academy of Sciences of the Czech Republic illustrates this distinction with unusual clarity. On 1 January 1993, the political and legal framework changed decisively, but many institutes continued their work without an equivalent rupture in scientific time. Experiments crossed the calendar boundary, manuscripts remained in preparation, and long-term observations did not begin again because a new state had been created. The surviving institutes were nevertheless not unchanged remnants of ČSAV. They entered a democratic polity, a different funding system, a newly divided state, and an

increasingly international research environment. Survival therefore meant the capacity to pass inherited people and resources through institutional selection. It also meant acquiring new legitimacy under conditions in which the socialist Academy itself was widely questioned. The result was neither simple preservation nor wholesale replacement. It was a negotiated continuity in which institutional identity had to be demonstrated through scientific value rather than asserted through administrative inheritance.

The transformation unfolded against the background of a more fundamental crisis than an ordinary reform of research administration. The Velvet Revolution removed the political order that had appointed leaders, regulated international contact, and defined the public mission of ČSAV. Universities sought renewal after decades of ideological control and began reclaiming a stronger place in research. Government officials faced fiscal pressure and questioned whether a large network of non-university institutes should remain intact. Some critics associated the Academy model with Soviet institutional design and argued that research should be transferred to universities or more directly exposed to the market. Academy researchers replied that the institutes contained specialised infrastructure, long-term programmes, and concentrated expertise that could not be redistributed without serious loss. Both sides could point to genuine features of the inherited system. ČSAV had been politically subordinated, yet it had also created capable workplaces with international reputations. Its institutes included both productive scientific communities and structures weakened by isolation, ideological distortion, or administrative inertia. Reformers therefore had to distinguish the institutional form of state socialism from the scientific capacities located inside it. The survival debate was consequently also a debate about the proper institutional location of basic research. The future of each institute depended on how convincingly that distinction could be made (*Pačes, 1995*; *Šebková, 1994*).

The first phase of survival began before the formal creation of AV ČR. After November 1989, ČSAV itself became an arena of democratic reorganisation. Compromised leaders were replaced, scientific councils were reconstituted, and institutes began reassessing programmes that had previously been protected by political rather than scholarly authority. Otto Wichterle's presidency symbolised the effort to reform the Academy from within rather than abandon its accumulated capacities. Internal renewal was essential because a successor institution could not gain legitimacy by automatic legal succession alone. Researchers had to demonstrate that collegial governance and critical evaluation could replace party supervision. Institutes reopened contact with exiled colleagues, foreign partners, and universities. They also faced the return of scholars who had been excluded or marginalised, although restoration could never fully repair interrupted careers. This transitional ČSAV was therefore already different from the institution that had existed before the Velvet Revolution. Its surviving institutes began to alter their leadership and intellectual priorities while still operating within the federal Academy. The period between 1989 and 1992 should consequently be understood as part of the founding history of AV ČR. Institutional survival was prepared through reform before it was secured through law.

Act No. 283/1992 provided the decisive legal bridge. It established the Academy of Sciences of the Czech Republic and defined it as the Czech successor to the Czechoslovak Academy. The law transferred institutes assigned to the Czech Republic into the new Academy rather than requiring each workplace to be founded again from nothing. Existing directors and scientific councils could continue their terms, preventing a vacuum in everyday governance. Property, employment relationships, research obligations, and administrative responsibility could

therefore pass into the successor framework. This mechanism mattered because scientific institutions depend on uninterrupted authority to pay staff, protect assets, maintain facilities, and honour contracts. A gap in legal personality could have caused damage far beyond the central administration. The legislation nevertheless did more than preserve organisational convenience. It declared that the democratic state regarded a substantial part of the ČSAV institute system as legitimate scientific inheritance. At the same time, the new Academy received powers and self-governing bodies that changed how those institutes would be directed. Legal succession was therefore selective in its political meaning even where it was comprehensive in its immediate administrative effect. The statute preserved the workplaces while enabling their governance to be democratically refounded (*Czech National Council, 1992*).

The dissolution of Czechoslovakia added a territorial and national dimension to this transfer. ČSAV had been a federal institution whose Czech and Slovak workplaces belonged to one academic system. The emergence of the Czech Republic and Slovak Republic required institutes, property, budgets, and central functions to be assigned between successor states. This separation was administratively necessary but intellectually artificial in fields built through decades of Czech-Slovak cooperation. Personal relations, shared journals, data series, and joint projects did not cease at midnight on 31 December 1992. Yet their continuation now required agreements between distinct academies and funding systems. Czech institutes inherited the facilities located within the new republic, but not the complete federal geography of their former disciplinary networks. Some research communities therefore survived as divided constellations rather than intact organisations. The transition also encouraged both successor academies to articulate national missions more explicitly. For AV ČR, institutional survival had to be narrated within the history and needs of the Czech state. This national redefinition did not erase Czechoslovak scientific inheritance, but it changed the administrative framework through which that inheritance could be used. The boundary between continuity and separation was consequently reproduced inside many fields.

Legal transfer was followed by evaluation, and evaluation determined which inherited institutes would enjoy more than nominal survival. Scientific communities were examined for research quality, relevance, staffing, and prospects under new conditions. External and domestic experts acquired a greater role in judging work that had previously been assessed through planning hierarchies and politically filtered bodies. Institutes had to explain their achievements in forms intelligible beyond the internal vocabulary of ČSAV. International publication, disciplinary reputation, unique infrastructure, and credible future programmes became especially important. The process was inevitably imperfect because fields differed in output, language, time horizon, and access to foreign networks. Humanities institutes could not be measured by the same indicators as experimental physics. Newly rehabilitated subjects also appeared weaker on paper because normalisation had restricted their development. Evaluation therefore involved historical judgement as well as comparison of recent results. It could expose sheltered mediocrity, but it could also undervalue capacities whose importance was cumulative or nationally specific. Survival depended on persuading evaluators that inheritance could become a foundation for renewal. The resulting institutional map reflected contestable decisions rather than a mechanically objective ranking.

The early 1990s brought severe reductions in personnel and resources even to institutes that survived. Public finances contracted while the Academy faced political demands to demonstrate efficiency. Departments were closed, administrative structures compressed,

and some institutes were merged or dissolved. Researchers who remained encountered uncertainty over salaries, equipment, and long-term employment. This contraction was not equivalent to the political purges of earlier decades, because its declared criteria and legal setting were different. Its consequences could nevertheless be experienced as another rupture in institutional memory. The departure of an entire group might eliminate a method or data tradition regardless of whether the decision was political or economic. Younger scholars were especially vulnerable when hiring stopped and career ladders narrowed. Institutes therefore survived at different levels of integrity. Some retained most of their scientific core, whereas others continued under familiar names after losing significant parts of their former capacity. The post-socialist transformation should not be romanticised as a frictionless liberation of excellent science. It combined intellectual opening with material austerity and forced selection (*Blažka, 2014*).

Several distinct forms of institutional survival emerged from this process. The clearest was direct continuation, in which an institute retained its principal name, staff, field, and physical base. A second form involved renaming while the underlying workplace remained recognisable. A third involved division, with selected departments becoming independent institutes or passing to other public authorities. A fourth involved merger, in which several inherited institutions survived as components of a larger organisation. A fifth involved restoration, when an earlier identity suppressed under communism was revived through personnel and resources that had persisted elsewhere. These forms could overlap over time. An institute might continue directly in 1993 and later enter a merger while preserving its internal scientific identity. Another might recover an old name but pursue methods transformed by decades of intervening research. Institutional survival therefore resembles a genealogy more than an unbroken line. Names, legal personalities, teams, buildings, and programmes possess related but non-identical chronologies. A serious history must specify which of these elements continued in each case. Otherwise, both narratives of total rupture and claims of timeless identity become misleading.

The archival organisation of ČSAV and AV ČR records provides unusually clear evidence for this genealogical approach. The Masaryk Institute and Archives lists the fonds of predecessor and successor workplaces together because many institutes operated continuously despite reorganisation of the Academy's governing bodies. Its descriptions record sequences of names, dates, mergers, divisions, and renewed institutions. The Institute of Physics, for example, appears as a workplace founded within ČSAV and continued within AV ČR from 1993. The Institute of History appears through several political names before recovering its earlier designation and entering the Czech Academy. The Institute of Philosophy is connected to the former Institute for Philosophy and Sociology and to its reconstitution in 1990. Such archival practice does not erase discontinuity. It allows records created under different regimes to be understood as parts of one organisational history. The fonds also preserve evidence of institutes that disappeared or were absorbed, preventing survival from becoming the only story told. Archival genealogy therefore offers a more precise map than retrospective celebration. In this sense, archival arrangement mirrors continuities that researchers experienced within their workplaces. It shows that the passage from ČSAV to AV ČR consisted of many workplace-level transitions rather than a single institutional event (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*).

The Institute of Physics represents one of the strongest examples of direct continuity in the natural sciences. Its immediate predecessor was founded within ČSAV in 1954, drawing

together experimental and theoretical work that had already been developing in specialised laboratories. Later organisational changes, including consolidation with solid-state research, broadened the institute before the end of the socialist period. By 1989 it possessed personnel, laboratories, instrumentation, and international connections that could not plausibly be recreated elsewhere at short notice. The transition required changes in leadership, evaluation, and funding rather than abandonment of the institution. In 1993 the institute entered AV ČR and continued to develop its major fields. Its survival illustrates the protective value of large-scale infrastructure, because particle physics, condensed-matter research, optics, and materials science require durable organisational support. It also shows that scale alone was insufficient. The institute had to demonstrate international quality and adapt its internal structure to competitive research. Its later participation in European facilities and construction of advanced laser centres built upon capabilities inherited through the transformation. The continuity of the Institute of Physics was therefore neither passive nor purely nominal. It consisted in the successful conversion of a ČSAV research platform into an internationally integrated AV ČR institution (*Institute of Physics of the Czech Academy of Sciences, n.d.*).

Chemistry supplied several similarly durable institutional lines. The Institute of Organic Chemistry and Biochemistry, founded in the early ČSAV period from the group assembled by František Šorm, retained a strong identity across 1993. Its established schools in organic chemistry, biochemistry, and related fields gave the workplace a scientific coherence that exceeded the political system under which it had been created. The Institute of Macromolecular Chemistry likewise carried forward a research tradition associated with Otto Wichterle and subsequent generations of polymer scientists. The survival of these institutes depended on teams, instruments, international reputations, and specialised buildings that made institutional continuity scientifically rational. It also depended on new leaders capable of reconnecting the workplaces with global research and funding. Continuity did not require freezing the research agenda of the 1960s. It required preserving a disciplinary capacity from which new molecular, biomedical, and materials research could grow. The international visibility of Czech chemistry gave these institutes an important advantage during evaluation. The post-socialist workplaces remained recognisable because their knowledge communities could renew themselves within inherited institutional frameworks. Yet their post-1993 success should not be projected backwards as proof that transformation was inevitable. It resulted from choices to retain research communities whose value became clearer as international collaboration expanded (*Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences, n.d.*).

The history of the Institute of Chemical Process Fundamentals demonstrates how renaming could accompany direct legal succession. The workplace had been established by the ČSAV Presidium in 1960 as the Institute of Theoretical Foundations of Chemical Technology. Under Act No. 283/1992, it became a workplace of the Czech Academy at the end of 1992. The Academic Council renamed it the Institute of Chemical Process Fundamentals from July 1993. This sequence altered the institutional label without interrupting the workplace's legal and organisational existence. The new name expressed a reconsideration of disciplinary identity in the post-socialist setting. It reduced the ideological and planning-era resonance of the earlier formulation while preserving expertise in chemical engineering and process research. Staff, facilities, and accumulated experimental knowledge provided continuity beneath the terminological revision. At the same time, the institute had to redefine relations with industry in a market economy. Applied cooperation could no longer follow the same ministerial

channels or planned production priorities. Renaming therefore marked both inheritance and strategic repositioning. The case reveals why a changed name should not automatically be counted as the death of an institute (*Institute of Chemical Process Fundamentals of the Czech Academy of Sciences, n.d.*).

The Institute of Experimental Botany offers a particularly detailed account of survival through political, regional, and organisational change. Founded in 1962 from departments of the earlier ČSAV Institute of Biology, it developed workplaces in Prague, Olomouc, Brno, and other locations. Its researchers maintained programmes in phytopathology, photosynthesis, plant hormones, growth regulation, and later molecular methods. Normalisation affected leadership and resources, but the institute retained internationally recognised scientific capacities. A government-directed relocation of biological institutes towards České Budějovice remained incomplete by 1989. After the Velvet Revolution, the Academy halted the compulsory transfer, allowing the institute to retain its Prague and Olomouc centres. Departments already established in České Budějovice formed the new Institute of Plant Molecular Biology. The surviving institute thus continued through a negotiated territorial division rather than through simple preservation of every unit. In 1993 it entered AV ČR and adapted to grant funding, freer travel, and renewed university cooperation. It also endured later disruptions, including the destructive Moravian floods of 1997. Continuity was therefore achieved through a mixture of institutional refusal, division, and reconstruction. Its history shows that institutional survival can involve relinquishing one organisational branch while protecting the coherence of the remaining research community (*Institute of Experimental Botany of the Czech Academy of Sciences, n.d.*).

Other biomedical and life-science institutes survived because they combined long-term experimental systems with expertise that could not be rapidly relocated. The Institute of Physiology continued a line established in ČSAV in 1954. The Institute of Microbiology retained research capacities created through the expansion and later differentiation of biological research within the socialist Academy. The Institute of Experimental Medicine, established in the 1970s, entered AV ČR as a specialised biomedical workplace. These institutes had all been shaped by the priorities and constraints of state socialism. Their laboratories nevertheless investigated problems whose validity was not confined to that political context. Cell physiology, microbial processes, toxicology, neurobiology, and mechanisms of disease remained fields of international basic research. Survival required the removal of political restrictions, improved equipment, and the reconstruction of foreign cooperation. It also required credible connections with medical faculties, hospitals, and universities. The institutes' value rested partly on the continuity of experimental models and accumulated data. Their transfer into AV ČR preserved this temporal depth while exposing it to new forms of evaluation. Biomedical continuity therefore arose from the distinction between politically administered institutions and the internationally intelligible problems pursued inside them.

Institutes concerned with the Earth and environment survived through a comparable combination of cumulative observation and practical relevance. Geophysics, geology, atmospheric physics, hydrology, and rock mechanics depend on records whose value increases with duration. Measurement series cannot simply be recreated after an institution is dissolved. Field stations, observatories, maps, sample repositories, and specialist workshops also tie research to particular places. The post-1989 environmental awakening gave some of these capacities new public importance. Pollution, landscape degradation, water quality, mining impacts, and ecological risk could now be studied without the same pressure to

subordinate findings to production goals. The Institute of Hydrodynamics, for example, entered AV ČR in 1993 and reorganised its departments while maintaining expertise in fluid mechanics and water-related research. Its later changes in scientific focus illustrate continuity through repeated adaptation rather than the preservation of a fixed disciplinary boundary. Similar processes occurred across institutes studying the solid Earth and atmosphere. Their archives of observation became part of the environmental record of the new state. Their survival was justified both by international science and by the need for knowledge specific to the Czech landscape. Environmental relevance therefore helped inherited workplaces translate older measurement capacities into democratic public value (*Institute of Hydrodynamics of the Czech Academy of Sciences, n.d.*).

Astronomical and mathematical research displayed another form of durable continuity. Their institutes required less direct justification through immediate industrial application, but they possessed strong traditions of international disciplinary recognition. Astronomy depended on observatories, precision instruments, cumulative observations, and participation in transnational scientific networks. Mathematics depended on concentrated communities, seminars, journals, and schools of reasoning whose infrastructure was primarily human. Both fields demonstrated why the survival of an institute cannot be judged only by visible equipment or short-term utility. The relevant capital might be a telescope and its archive, or it might be a community capable of sustaining advanced theoretical work. Under ČSAV, these disciplines had gained permanent organisational bases that allowed research beyond the teaching obligations of universities. After 1989, their institutes had to show that this concentration complemented rather than duplicated university activity. Collaboration in doctoral training and international projects became an important part of the answer. Their survival preserved the capacity of Czech science to participate in fields whose scale and timescales exceeded national policy cycles. It also confirmed that institutional reform would not reduce the Academy to narrowly applied research. The continued presence of astronomy and mathematics helped define AV ČR as a comprehensive institution of basic science.

Archaeology provides one of the longest and most visibly layered lines of institutional survival. The Prague institute originated as the State Archaeological Institute founded in 1919 and entered ČSAV in 1953. Its Brno branch had developed from wartime beginnings and became an independent ČSAV institute in 1970. Both workplaces carried extensive field documentation, artefact collections, specialist libraries, and knowledge of regional archaeological landscapes. The transition of 1993 preserved the research institutes within AV ČR while redistributing some monument-care functions. Branches in Most and Pilsen and the dispatch centre in Dolní Břežany were transferred to the Ministry of Culture as workplaces concerned with archaeological heritage protection. This transfer clarified the boundary between basic research and state conservation responsibilities without erasing cooperation between them. The Prague and Brno institutes continued as distinct regional centres with related but not identical institutional histories. Their survival depended on the inseparability of scholarship from accumulated site records and material collections. It also reflected the national responsibility associated with documenting endangered archaeological heritage. Democratic transformation changed legal responsibilities and access to international methods, but it did not make the older field infrastructure redundant. Archaeology therefore survived through functional differentiation rather than through the retention of every inherited administrative task (*Digital Humanities Czech Academy of Sciences, n.d.*; *Institute of Archaeology of the Czech Academy of Sciences, Brno, n.d.*).

The Institute of History illustrates survival through recovery of an earlier identity after ideological reorganisation. Its genealogy extends to the Czechoslovak State Historical Publishing Institute founded after the creation of the republic. Incorporated into ČSAV in the early 1950s, it became part of the socialist organisation of historical research. After the Prague Spring, the institute was renamed the Institute of Czechoslovak and World History and lost prominent scholars through forced departure and political exclusion. Valuable work continued, especially in older history, but research priorities and personnel were seriously distorted. At the beginning of 1990, the Institute of History was restored under the leadership of František Šmahel. This restoration occurred within the final years of ČSAV and therefore preceded legal succession to AV ČR. The institute entering the Czech Academy in 1993 was both an inherited workplace and a recently reconstituted scholarly community. Its collections, bibliographies, editorial enterprises, and remaining personnel connected it to earlier institutional phases. Its renewed name signalled rejection of normalisation-era control rather than a claim that nothing had changed. Its genealogy was therefore discontinuous in governance but continuous in scholarly materials and several long-term tasks. Survival in this case meant recovering disciplinary breadth while critically reassessing the institution's own compromised history (*Institute of History of the Czech Academy of Sciences, n.d.*).

The Czech Language Institute represents an even longer continuity anchored in cumulative national scholarship. Its origins lay in the Office of the Dictionary of the Czech Language established by the Czech Academy of Sciences and Arts in 1911. The office became a research institute in 1946 and entered ČSAV as one of its principal humanities workplaces. Lexicography, dialectology, etymology, grammar, language history, and language cultivation all required sustained collection and editorial labour. Political regimes influenced linguistic policy and the public meaning of standard language, but they could not replace the evidence accumulated across generations. After 1989, František Daneš again assumed the directorship, symbolising intellectual as well as administrative renewal. The institute then passed into the Czech Academy while continuing its Prague and Brno activities. Its survival preserved dictionaries, card files, dialect records, journals, specialist libraries, and communities of linguistic expertise. These resources were subsequently adapted to corpus linguistics and digital publication. The institute's continuation also maintained a bridge between academic research and public language consultation. The example shows that national relevance and international methodology need not be opposed. Continuity protected a distinctive Czech research responsibility while allowing the institute to transform the techniques through which that responsibility was fulfilled (*Czech Language Institute, n.d.*).

The Oriental Institute survived one of the most substantial shifts in intellectual orientation among the inherited humanities workplaces. Founded by law in 1922 with support from Tomáš Garrigue Masaryk, it had entered ČSAV in 1952. Under Jaroslav Průšek, the institute developed internationally recognised schools across Asian and African studies. Normalisation and changing foreign-policy priorities later restricted classical fields and encouraged ideologically framed research on contemporary regions. Emigration further weakened several specialist traditions. After 1989, the institute returned greater attention to languages, histories, religions, literatures, and cultures while retaining awareness of contemporary societies. This reorientation occurred under severe staffing constraints. The institute could no longer cover every region and discipline represented during its period of greatest expansion. Its survival therefore required explicit selection among traditions. The library, journals, accumulated linguistic expertise, and international scholarly connections made dissolution especially

costly. Entry into AV ČR preserved a platform from which neglected fields could be revived gradually. The Oriental Institute demonstrates that an institution may survive by narrowing its scope temporarily in order to protect the depth from which future renewal becomes possible (*Oriental Institute of the Czech Academy of Sciences, 2013*).

Philosophy and sociology complicate any straightforward distinction between survival and re-creation. The Institute for Philosophy and Sociology of ČSAV had embodied the forced organisational combination and ideological supervision characteristic of normalisation. In 1990, separate institutes of philosophy and sociology were re-established. Their new existence drew on personnel, libraries, records, research experience, and suppressed traditions that had survived within or outside the former structure. The restored institutes were therefore not creations without predecessors. Nor were they direct continuations in the same sense as the Institute of Physics. They represented critical institutional reassembly after a politically imposed configuration had lost legitimacy. The Institute of Philosophy could recover fields marginalised by official Marxism while preserving scholarly resources accumulated during the socialist period. The Institute of Sociology had to rebuild a discipline whose institutional development had been sharply interrupted after 1968. Both entered AV ČR as workplaces whose continuity depended on acknowledged rupture. Their survival illustrates why democratic transformation sometimes required division rather than preservation of an inherited institute. Institutional inheritance became productive only after its components were reorganised around renewed disciplinary autonomy.

Institutes created or restored between 1989 and 1992 also crossed the threshold into AV ČR. The Institute of Contemporary History was established to investigate periods and problems that the communist regime had rendered inaccessible or ideologically distorted. Its founding assembled returned scholars, younger historians, documentary initiatives, and newly available archives. The Economics Institute emerged within the transition towards modern economic research and became associated with new forms of international and university cooperation. The Masaryk tradition was revived through institutional initiatives that would later acquire a more stable place within the Academy. These workplaces had only a short ČSAV existence, yet they belonged to the democratic transformation of that institution. Their survival after 1993 demonstrates that the successor Academy inherited innovations as well as older structures. This point prevents continuity from being equated solely with preservation of socialist-era institutes. The final ČSAV served as an incubator for institutions designed to criticise and transcend its previous political limitations. Their continuation demonstrated that institutional inheritance could include deliberate innovation. Legal succession allowed these fragile new workplaces to consolidate rather than seek an entirely separate administrative home. AV ČR thus inherited both durable scientific schools and the organisational products of the Velvet Revolution.

Regional location influenced which institutes survived and how they adapted. ČSAV had developed important centres outside Prague, especially in Brno, Ostrava, and České Budějovice. These workplaces connected the Academy with regional universities, landscapes, industries, and field sites. The transition could have intensified centralisation if scarce resources had been concentrated only in the capital. Instead, major regional institutes remained part of AV ČR, although their structures and partnerships changed. Brno preserved institutes in materials physics, instrumentation, analytical chemistry, psychology, archaeology, and other fields. Ostrava-based research retained links with mining regions, geonics, and environmental transformation. České Budějovice developed a particularly

important concentration of biological and ecological research. Regional survival was not merely a matter of geographic balance. It preserved local infrastructures and knowledge that could not be reproduced through occasional visits from Prague. Cooperation with newly developing regional universities also created opportunities unavailable under the older centralised system. The national character of AV ČR consequently rested on a network of institutional places rather than on the continuity of the Prague headquarters alone.

Buildings and property formed a practical test of whether legal succession would become effective continuity. Laboratories required utilities, maintenance, safety systems, and costly renovation. Libraries and collections required secure storage even when immediate research budgets were shrinking. Some institutes occupied premises designed for their work, whereas others remained dispersed through adapted buildings. Restitution and changing property relations after communism created additional uncertainty. An institute could survive legally while losing the spaces that made its research possible. Decisions about property therefore became decisions about scientific futures. Relocation sometimes permitted modernisation, as when institutes moved into new or reconstructed Academy campuses. It could also break local routines and impose costs on staff. The preservation of central services and shared facilities reduced the danger that every workplace would have to solve these problems alone. Material continuity required investment, not simply protection from closure. The institutes that endured did so because the new Academy treated buildings, libraries, collections, and equipment as productive capital rather than disposable remnants of the former regime.

Personnel continuity was equally necessary and equally contested. The new Academy needed experienced researchers and technicians, but it also needed to remove political privilege and open careers to younger scholars. Blanket dismissal would have destroyed scientific capacity and repeated the logic of collective punishment. Uncritical retention would have left old hierarchies intact. Institutes therefore relied on elections, competitions, evaluations, and case-specific judgements to reconstruct legitimacy. These procedures did not resolve every dispute over collaboration, compromise, or professional quality. They did, however, shift the basis of institutional belonging away from party vetting. Directors and scientific councils became responsible for converting inherited staffs into democratically governed research communities. Some former employees returned, while others remained abroad or chose new careers. The loss of an entire emigrant generation could not be reversed through formal rehabilitation. Surviving institutes thus carried demographic gaps alongside restored intellectual freedoms. Their post-1993 identity emerged from the interaction of those who had stayed, those who returned, and those newly recruited.

Changes in funding altered the conditions under which institutional survival could be maintained. ČSAV institutes had operated primarily through centrally assigned resources and planned research tasks. AV ČR preserved institutional funding but increasingly combined it with competitive grants and project-based support. This mixed system encouraged initiative and external judgement. It also created pressure on institutes whose work required long time horizons or produced outputs not easily divided into short projects. Directors had to protect core functions while enabling teams to compete nationally and internationally. University cooperation became more important because doctoral education, joint appointments, and shared facilities strengthened the position of institutes within the Czech research system. The inherited separation between Academy research and university teaching began to soften. Surviving institutes justified their autonomy by demonstrating complementarity rather than isolation. Their continued existence depended increasingly on networks extending beyond the

Academy. Funding reform therefore did not merely finance institutional continuity. It changed the relationships through which institutes proved that they deserved to continue.

The subsequent merger of institutes shows that survival did not end with the settlement of 1993. In 2006, five previously separate biological institutes in České Budějovice were brought together within the Biology Centre. Entomology, hydrobiology, parasitology, plant molecular biology, and soil biology retained recognisable disciplinary units inside a larger legal and administrative organisation. The merger reduced the number of independent workplaces while preserving research communities, collections, field programmes, and specialist identities. Shared management and infrastructure could release resources for science and encourage collaboration across biological scales. At the same time, centralisation carried risks of weakened local autonomy and competition for common resources. The Biology Centre therefore represents survival through incorporation rather than disappearance. A related logic shaped the merger of the Masaryk Institute with the Archives of the Academy in 2006. The resulting Masaryk Institute and Archives joined historical research, documentary custody, and the study of academic memory within one institution. Neither case can be understood adequately by counting legal entities alone. These cases demonstrate that later consolidation could preserve inheritance more effectively than maintaining multiple fragile legal entities. Institutional survival remained a process of organisational redesign long after the immediate post-communist transition (*Biology Centre of the Czech Academy of Sciences, n.d.*; *Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*).

The conversion of Academy workplaces into public research institutions in 2007 marked another common threshold. Their legal form changed, but most institutes retained their scientific identities and organisational genealogies. The new status clarified governance through directors, institute boards, and supervisory boards. It also increased the legal and financial responsibility of individual workplaces. Institutes became more autonomous actors while remaining founded by and connected through the Academy. This arrangement gave institutional continuity a legal structure suited to the democratic Czech state. Survival was no longer secured by belonging to a centrally managed state organisation in the ČSAV sense. It depended on accountable self-government, evaluation, and the capacity to manage public resources. By the mid-2000s, the Academy network had already been reduced and consolidated through successive reforms. The public research institution framework stabilised the remaining system without freezing it permanently. Institutes could still merge, reorganise, or alter their scientific focus. Legal continuity now supported adaptability rather than administrative immobility (*Czech Academy of Sciences, 2006*).

The contemporary Academy's network of fifty-four public research institutions is the cumulative result of these selections, transfers, restorations, and mergers. It contains institutes founded under the First Republic, workplaces created during the expansion of ČSAV, institutions re-established after 1989, and composite centres formed in the 21st century. This chronological diversity is one of its defining features. No single founding moment explains the whole institutional landscape. The network retains strong concentrations in physics, chemistry, biology, Earth sciences, and the humanities, reflecting the breadth developed under ČSAV. Its democratic governance and international integration distinguish it from the command system in which many of those capacities matured. Current institutional identity therefore depends on holding continuity and transformation together. The Academy is neither the unchanged ČSAV under a different name nor an organisation created ex nihilo in 1993. It is a successor that selected, re-legitimated, and repeatedly reorganised an inherited research

system. This diversity demonstrates that several historical layers remain active within a single organisation. The survival of institutes made that succession materially credible. Their continuing diversity shows that reform preserved a comprehensive conception of basic research rather than reducing the Academy to a small group of immediately profitable fields (*Czech Academy of Sciences, n.d.*).

Survival nevertheless should not be treated as proof that every institutional decision was correct. Some closed or merged workplaces may have contained valuable expertise whose loss became visible only later. Some institutes that continued may have preserved internal inequalities or unproductive habits longer than reformers intended. Evaluation cannot eliminate uncertainty because the future significance of research is not fully predictable. Political support, disciplinary prestige, leadership skill, and regional influence all affected institutional outcomes alongside scientific quality. The costs of both mistaken preservation and mistaken closure were real. The history of surviving institutes must therefore be read together with the history of those that disappeared. Such comparison reveals which kinds of knowledge the new system found easiest to defend. Large infrastructures, internationally visible disciplines, national collections, and clearly defined public functions possessed strong arguments for continuity. Smaller fields and politically damaged communities often faced greater difficulty demonstrating immediate strength. Yet the restoration of institutes in philosophy, sociology, history, and contemporary studies shows that democratic importance could sometimes outweigh inherited weakness. The transformation was thus an exercise in institutional judgement under pressure rather than a neutral process of natural selection. Its achievement lies not in perfection but in preserving enough diversity for later correction and growth.

Thus, the institutes that passed from ČSAV to AV ČR survived through a combination of legal succession, scientific evaluation, material preservation, and democratic re-legitimation. The law of 1992 prevented administrative collapse by transferring Czech workplaces into the successor Academy. Evaluation and restructuring then determined which inherited organisations would continue, merge, divide, or disappear. Institutes of physics, chemistry, biology, Earth science, archaeology, language, history, and regional studies preserved substantial research capacities across the political boundary. Their continuity rested on teams, equipment, collections, buildings, data, and disciplinary reputation rather than on names alone. Other workplaces survived through restored identities that acknowledged the intellectual damage caused by normalisation. Institutes created during the final democratic years of ČSAV carried the Velvet Revolution itself into the new Academy. Regional centres ensured that succession remained national rather than exclusively Prague-based. Later mergers and the public research institution reform demonstrated that survival remained compatible with organisational change. The resulting Academy preserved the breadth of non-university basic research while rejecting the political command structure of its predecessor. This outcome was neither inevitable nor cost-free, since austerity, closure, and demographic loss accompanied renewal. Institutional survival should therefore be understood as the successful transformation of selected scientific communities into legitimate components of a democratic research order.

2. Research Programmes Renewed after 1993

The decisive question was therefore not whether a programme had existed before 1993, but whether its accumulated capacity could generate credible work under new conditions. The renewal of research programmes after 1993 was more complex than the replacement of obsolete topics with fashionable ones. A programme was not simply a title in an annual plan, but a working arrangement that connected questions, people, equipment, methods, funding, and expectations of future results. Many such arrangements had originated within ČSAV and could not be discarded without losing scientific capacities that remained valuable. At the same time, their earlier formulation had often reflected ministerial planning, ideological language, restricted international exchange, or the technological priorities of a centrally administered economy. AV ČR therefore had to separate durable scientific problems from the political and administrative forms in which they had previously been pursued. Some lines of inquiry were continued almost immediately because their international relevance was evident. Others were reformulated around new concepts, methods, or partners. Fields suppressed or distorted during normalisation required deliberate restoration rather than routine continuation. Entirely new programmes emerged where democratic transformation had opened archives, public debates, markets, ecosystems, and international networks as objects of research. Renewal thus occurred through selection and recombination rather than through a single foundational decision. It was the programmatic counterpart of the negotiated institutional continuity described in “Institutes That Survived Transformation”.

Under ČSAV, long-term research had been organised through a hierarchy of state plans, Academy plans, institutional tasks, and subordinate projects. This system could sustain costly laboratories and extended editorial undertakings, but it also encouraged programmes to seek security through conformity with approved priorities. Directors and scientific councils translated central directives into local research agendas, while individual investigators possessed unequal room for initiative. In politically sensitive fields, an acceptable vocabulary could determine whether a question was researchable at all. Even in the natural sciences, international cooperation, equipment acquisition, and publication were mediated by political and economic constraints. The system nevertheless accumulated valuable experimental series, collections, technical skills, and partially autonomous schools. After 1989, reformers therefore confronted programmes that were simultaneously over-administered and scientifically productive. The removal of compulsory Marxist-Leninist framing did not automatically reveal a ready-made democratic agenda beneath it. Institutes had to decide which tasks represented genuine intellectual continuity and which had survived mainly because of bureaucratic protection. They also had to learn that continuation would increasingly depend on explanation to external peers. The first post-1993 programmes were consequently shaped by critical inventories of inherited work rather than by a clean institutional slate (*Provazník et al., 1996*; *Provazník et al., 1998*). This inventory transformed the programme from an administrative obligation into a claim about future scientific relevance.

The most immediate change was the movement from assigned research tasks towards competitive project funding. The Czech Science Foundation began financing basic research projects in 1993, creating a national arena in which Academy teams competed with university and other researchers. This did not abolish institutional support, but it altered how new questions entered the research system. A scientist could propose a project because it was intellectually promising rather than because it had already been incorporated into a centrally approved plan. Peer review transferred part of agenda formation from administrative hierarchy

to disciplinary communities. The new system encouraged smaller teams to establish distinct profiles within large institutes. It also allowed younger researchers to challenge inherited priorities, although unequal experience in grant writing initially favoured established groups. Competition exposed Czech proposals to criteria increasingly aligned with international scientific practice. Repeated failure could weaken a programme even when its institute survived. Success, by contrast, could turn a marginal line of inquiry into a durable research group. The renewal of programmes therefore became inseparable from the capacity to formulate questions persuasively, specify methods, and accept comparative judgement (*Czech Science Foundation, 2023*). Scientific initiative acquired a new procedural language, and mastering that language became part of research competence.

Competitive grants did not replace the need for stable institutional funding. Many Academy programmes required technical staff, libraries, animal facilities, observatories, field stations, databases, or multiyear sample series that no short project could maintain alone. Institutional resources preserved this slow infrastructure of knowledge, while grants financed more sharply defined investigations within it. The resulting mixed system became one of the characteristic conditions of post-1993 programme renewal. It protected continuity but also required research leaders to assemble several funding streams around a coherent scientific purpose. By 2003, Academy institutes were conducting long-term research assignments alongside hundreds of projects supported by the Czech Science Foundation, the Academy's own grant agency, ministries, and international providers. This plurality reduced dependence on a single state plan. It also increased administrative work and exposed programmes to changing calls and evaluation rules. Successful teams learned to translate one long-term agenda into a sequence of fundable projects without allowing the sequence to become intellectually fragmented. Less adaptable groups could find themselves following available calls rather than setting questions of their own. Programme renewal was therefore sustained by a productive but unstable balance between continuity money and competitive opportunity (*Academy of Sciences of the Czech Republic, 2003*). The quality of leadership was revealed in the ability to preserve an agenda while navigating this financial mosaic.

Regular institutional evaluation supplied a second mechanism for redirecting research. From its establishment in 1993, the Academy organised periodic assessments of institutes and later of research teams, usually at intervals of several years. These exercises asked not only what had been published but also whether programmes possessed credible future directions. International experts gradually became more important because comparison with advanced research environments was itself a goal of transformation. Evaluation could confirm that an inherited field remained competitive, recommend a change in emphasis, or expose a programme whose continuation rested mainly on internal habit. Its effect was often indirect, operating through leadership decisions, staffing, and the distribution of institutional resources. The prospect of future assessment encouraged institutes to formulate strategies rather than reproduce annual lists of disconnected tasks. Yet evaluators faced the difficulty of comparing experimental, theoretical, archival, linguistic, and infrastructure-based work. A programme maintaining a unique corpus or observation series might appear less spectacular than one producing rapidly cited articles. The Academy's evaluation system therefore developed through repeated attempts to combine accountability with disciplinary judgement. Programme renewal occurred within this evaluative conversation between inherited capability, demonstrated achievement, and plausible scientific promise (*Arnold et al., 2011*; *Czech*

Academy of Sciences, 2024). Evaluation became most constructive when it supplied programmes with diagnosis rather than merely a retrospective grade.

International reopening changed the intellectual content of programmes as powerfully as any domestic reform. Researchers could travel more freely, subscribe to foreign journals, invite colleagues, and participate in conferences without the same political filtering. Laboratories that had preserved expertise under isolation now encountered techniques and questions that had advanced rapidly elsewhere. Humanities scholars gained access to archival collections, theoretical debates, and professional associations from which they had been separated. International contact did not simply supply missing information. It changed standards of evidence, collaboration, authorship, and methodological transparency. Programmes were increasingly designed around questions recognised by transnational disciplines rather than around the self-contained priorities of a national planning system. Foreign partners also made the weaknesses of obsolete equipment and limited support services more visible. At the same time, Czech institutes contributed specialised knowledge, regional data, and distinctive research traditions to these exchanges. Renewal was therefore not a one-directional imitation of Western science. It was a process of re-entering international conversations with capacities formed through a different institutional history (*Provazník et al., 1996*). The resulting exchanges altered what researchers considered possible as well as what they considered important.

The new publication environment translated this reopening into everyday research behaviour. International journals became more important for demonstrating the quality and visibility of programmes in many natural and social sciences. English expanded as the principal language of outward-facing communication, while Czech remained indispensable in research concerning national language, law, history, culture, and public debate. Electronic databases made disciplinary comparison more immediate and encouraged institutes to monitor citations and journal standing. These changes helped dismantle insular publication circuits whose audiences had been defined administratively. They also produced new hierarchies between forms of scholarship. A laboratory article, a critical edition, a dictionary, an archaeological catalogue, and a monograph could not be evaluated through identical rhythms or indicators. Pressure for international visibility sometimes encouraged valuable methodological renewal. At other times it threatened programmes whose importance rested on long-term national responsibilities or slow cumulative outputs. Research leaders had to defend plural publication cultures while raising standards across them. The renewal of programmes therefore involved a continuing negotiation between international recognition and the Academy's responsibility for knowledge that could not be reduced to globally standardised articles (*Good et al., 2015*). Publication strategy became part of programme design without being allowed to define scientific value completely.

European integration gradually provided a larger architecture for this international turn. Even before Czech accession to the European Union in 2004, Academy institutes participated in European scientific organisations, mobility schemes, and framework-programme projects. Such projects required consortia, formal work packages, shared milestones, and auditable budgets. These demands introduced organisational habits that differed sharply from both ČSAV planning and the relatively individualised logic of national grants. Research questions were increasingly embedded in networks whose members contributed complementary methods or infrastructures. Participation could open access to equipment and data unavailable within the Czech Republic. It also forced institutes to develop professional support for proposal preparation, financial management, and intellectual property. The European

Research Area offered opportunities but intensified competition for partners and reputation. Programmes with strong international records entered this environment more easily than fields still recovering from isolation. By the early 2000s, Academy reporting treated framework programmes and the formation of a European research area as central dimensions of scientific development. Europeanisation thus renewed not only research themes but also the organisational scale at which programmes were imagined (*Academy of Sciences of the Czech Republic, 2003*). Programme management itself became a specialised institutional competence.

Cooperation with universities gave renewed programmes a more durable generational base. The separation of Academy research from university teaching had never been absolute, but after 1989 it became increasingly difficult to defend as an organising principle. Universities recovered their research mission, while Academy institutes needed doctoral students and access to emerging academic communities. Act No. 111/1998 placed doctoral degrees within the higher-education system, making formal cooperation essential for the training of researchers in Academy laboratories and departments. Joint accreditations, shared research centres, teaching appointments, and supervision connected programmes to graduate education. By 2003, fifty-one Academy institutes were involved in applications for accredited doctoral fields with universities, and numerous joint departments and projects were operating. This arrangement allowed students to work with specialised equipment, collections, and teams unavailable in a single faculty. It also exposed inherited Academy programmes to questions brought by new cohorts of researchers. Cooperation could be administratively awkward because institutes and universities retained different budgets, employment systems, and institutional interests. Nevertheless, doctoral integration transformed programme continuity from the transmission of posts within a closed workplace into a broader circulation of people and ideas (*Academy of Sciences of the Czech Republic, 2003*; *Czech Republic, 1998*). The research programme increasingly became a teaching environment as well as a structure of investigation.

The renewal of programmes depended particularly on researchers entering science after the formative ruptures of 1968 and 1989. The Academy's age structure made this a strategic concern rather than a matter of routine recruitment. Early post-socialist austerity had limited vacancies precisely when institutions needed people fluent in new methods and international practices. In response, the Academy gradually developed instruments intended to give younger researchers recognition, temporary security, and the possibility of establishing their own topics. The Otto Wichterle Award, internal junior projects, and start-up support helped bridge the vulnerable period after doctoral study or return from abroad. The J. E. Purkyně Fellowship was designed to attract outstanding Czech and foreign researchers from other countries into Academy institutes. These instruments were modest compared with the financial needs of whole institutions, but their programmatic significance was considerable. They enabled renewal to occur within institutes rather than only through the replacement of institutes. A young group could redirect an inherited laboratory towards genomics, advanced microscopy, computational modelling, or a newly accessible historical problem. Career support therefore functioned as research policy at the scale of the team. The 2003 annual report's emphasis on junior programmes reveals that generational renewal had become a recognised condition of institutional scientific quality (*Academy of Sciences of the Czech Republic, 2003*; *Czech Academy of Sciences, n.d.*). Without such entry points, continuity could easily have hardened into demographic immobility.

Return migration and international recruitment further complicated the meaning of renewal. After 1989, some émigré and expatriate scholars resumed contact with Czech institutions, but few interrupted careers could simply be restored to their former course. Researchers returning from long stays abroad brought laboratory practices, professional networks, and expectations of institutional autonomy that sometimes conflicted with local routines. Foreign scientists introduced additional disciplinary connections and made English a working language in a growing number of teams. Their presence could accelerate methodological change, especially when they were able to recruit students and control project resources. Yet recruitment programmes alone could not guarantee integration. Salaries, housing, administrative support, and transparent career prospects remained decisive. Institutes also had to ensure that internationalisation did not become a separate enclave disconnected from inherited local expertise. The most durable programme renewal occurred when returning or foreign researchers joined experienced technical staff and Czech colleagues in genuinely shared groups. In this way, mobility transformed institutional memory without treating it as an obstacle. The goal of attracting outstanding scientists from abroad, explicitly formulated in the J. E. Purkyně Fellowship, captured the Academy's effort to turn earlier scientific emigration into a two-way circulation of knowledge (*Czech Academy of Sciences, n.d.*). Mobility became institutionally valuable when it produced lasting relationships rather than brief episodes of prestige.

Digital technologies altered almost every programme, including those whose substantive questions remained old. Computer modelling expanded in physics, chemistry, atmospheric science, economics, and biology. Automated measurement increased the volume and precision of experimental data. Molecular databases and bioinformatics changed the relationship between wet laboratories and computation. Geographic information systems reorganised archaeological, geological, historical, and ecological evidence around spatial analysis. Text corpora enabled linguists to examine usage at a scale impossible with card indexes alone. Digitisation made manuscripts, photographs, maps, and sound recordings available to new forms of comparison. These technologies did not simply modernise presentation. They changed what counted as an answerable question and which collaborations were necessary to answer it. Programmes increasingly required programmers, data managers, imaging specialists, and statisticians alongside traditional disciplinary experts. The institute became a place where inherited collections could be translated into research infrastructures for the digital age. Methodological renewal therefore allowed old objects of study to generate new programmes without surrendering their historical depth.

Experimental programmes faced a parallel challenge of instrumental renewal. Many institutes entered the 1990s with skilled personnel but equipment that had aged under restricted access to advanced technology and foreign currency. Replacement could not occur through ordinary operating budgets alone. Laboratories had to combine institutional investment, grants, international cooperation, and later European funds. New instruments often altered the division of labour inside institutes because they required dedicated operators, maintenance, software, and shared booking systems. They also encouraged cooperation across institutional boundaries when no single team could justify exclusive ownership. The acquisition of equipment therefore became an intellectual decision about which programmes could grow around it. In some fields, modernisation preserved a pre-1993 research line by making it internationally competitive again. In others, the new apparatus attracted questions that had not been central to the original institute. The movement from locally improvised devices to

participation in shared international facilities changed the scale of experimental ambition. Technical renewal consequently acted as a bridge between the practical ingenuity of ČSAV laboratories and the infrastructure-intensive science of AV ČR. Every major instrument carried an implicit programme because its design privileged particular observations, samples, and collaborations.

Long-term data programmes required a different kind of renewal because their value lay precisely in not beginning again. Astronomical observations, hydrological measurements, ecological surveys, seismic records, dialect collections, and demographic series could acquire new meanings when interpreted through new methods. Democratic government and public access also changed the questions asked of data gathered under socialism. Pollution measurements could be connected to environmental accountability rather than concealed behind production targets. Social surveys could investigate trust, inequality, political participation, and changing identities without compulsory ideological conclusions. Historical databases could incorporate previously inaccessible archives and perspectives excluded from official narratives. Renewal in these cases meant preserving comparability while revising interpretation. Changes in instruments or classification had to be documented carefully so that long series did not become misleading. The Academy's institutes were particularly well suited to this work because they could maintain programmes beyond the duration of an ordinary grant. Their continuity gave Czech society evidence of change across political regimes. Such programmes demonstrate that methodological and ethical renewal can increase, rather than diminish, the value of inherited scientific records. Here continuity was itself a method, because comparison depended on maintaining an evidential relationship between past and present.

The humanities and social sciences experienced programmatic renewal through the recovery of forbidden questions and the revision of inherited conceptual languages. Contemporary history, political sociology, market economics, religious studies, and several philosophical traditions could now be pursued without compulsory alignment with official Marxism. Archives opened unevenly but sufficiently to transform research on occupation, Stalinism, the Prague Spring, dissent, exile, and normalisation. Researchers also began treating the post-1989 transformation itself as an object of observation rather than merely as a political environment. Programmes in language and literature revisited canon formation, cultural plurality, censorship, and relations between Czech, German, Jewish, Slovak, Roma, and other traditions. Renewal did not mean replacing every scholar or discarding all work produced before 1989. It required critical examination of categories, silences, and institutional complicities. Some older empirical projects, including dictionaries, editions, and bibliographies, could continue after their interpretative framework had changed. New international theories entered Czech debates, but they were most productive when tested against local archives and linguistic materials. The resulting programmes combined restitution with innovation. They also restored the humanities as a domain of public argument about how a democratic society should understand its past and cultural inheritance. Programmatic freedom thus carried an obligation to investigate the Academy's own historical entanglements as well as those of the wider society.

By the early 2000s, programme renewal was increasingly connected to national research policy. The first decade after 1993 had created a plural funding system, but the relationship between investigator-led projects, institutional strategies, ministerial programmes, and state priorities remained unsettled. National Research Programme I attempted to coordinate

targeted support around themes considered important for the Czech Republic. Academy representatives participated in its preparation and accepted responsibility for administering elements concerned with the information society and integrated research. This involvement placed AV ČR between two roles. It remained a defender of autonomous basic research, yet it also became a provider and organiser of programme-oriented public support. The tension was productive when national themes encouraged collaboration without prescribing conclusions. It became problematic when administrative priorities were too broad, unstable, or politically determined. Academy institutes responded by connecting their accumulated expertise to programmes in information technology, health, environment, materials, and cultural knowledge. The earlier Support Programme for Targeted Research and Development provided one bridge into the new structure. National programming therefore added a strategic layer to the grant system without fully restoring the directive logic of state planning (*Academy of Sciences of the Czech Republic, 2003*). The essential distinction lay in coordinating capacities around problems without predetermining the scientific answers.

The conversion of Academy institutes into public research institutions in 2007 gave programme renewal a more autonomous legal and economic setting. Institutes remained founded by the Academy, but they acquired clearer responsibilities for governance, property, contracts, and the management of external income. This legal form made it easier to enter complex projects and partnerships as identifiable institutional actors. Directors and institute boards could connect scientific strategies more directly with budgets and personnel. Greater autonomy also transferred risk downwards from the Academy centre to individual workplaces. A programme that attracted grants, partners, or contract income could expand, while one that failed to adapt could become more exposed. The reform therefore encouraged strategic differentiation among institutes. It did not abolish the common Academy mission or institutional evaluation. Instead, it combined cohesion at the level of the Academy with operational responsibility at the level of the institute. The first year under the new form was presented as a stabilisation of Academy activity and as an opportunity to exploit new organisational possibilities. Programme renewal after 2007 consequently depended more visibly on the capacity of each institute to convert formal autonomy into scientific direction (*Academy of Sciences of the Czech Republic, 2007*; *Academy of Sciences of the Czech Republic, 2008*). Legal reform became scientifically meaningful only through the choices made within each workplace.

Relations with industry and public administration also moved from inherited sectoral links towards more varied forms of knowledge transfer. The collapse or privatisation of many industrial research organisations after 1989 had broken channels through which ČSAV expertise had once reached production. In the new economy, Academy institutes had to identify partners, negotiate contracts, protect intellectual property, and explain the possible use of results. Some programmes remained appropriately distant from immediate application. Others found new opportunities in medical diagnostics, materials, instrumentation, environmental technologies, software, and chemical processes. Joint projects with ministries and firms helped translate basic research into practical experimentation. Spin-off initiatives and innovation centres appeared during the 2000s, although their success varied greatly by field. The 2008 annual report described joint research centres with private organisations and new structures intended to accelerate the use of research results. These arrangements changed programme design by adding regulatory, commercial, and user perspectives. They also created a danger that short-term market demand might displace curiosity-driven work. The Academy's solution was increasingly to treat transfer as one possible extension of strong

basic research rather than as a substitute for it (*Academy of Sciences of the Czech Republic, 2008*). Practical relevance became a route through which some programmes expanded, not a universal test imposed on every field.

European structural funds transformed the material conditions under which programmes could be renewed. During the 2007–2013 funding period, the Czech Republic gained resources for research centres on a scale unavailable through ordinary institutional budgets. Academy institutes became leading or participating organisations in projects designed to create centres of excellence and regional research capacity. Buildings, lasers, imaging systems, clean rooms, animal facilities, and data infrastructures could now be planned as integrated scientific environments. This opportunity also required programmes to anticipate decades of operation rather than the life of a single grant. Construction funding did not guarantee the salaries, maintenance, or user communities needed after completion. Research strategies therefore had to demonstrate both immediate excellence and long-term sustainability. The national roadmap for large infrastructures emphasised uniqueness, open access, international reach, and nationwide significance. These principles shifted attention from equipment owned by one institute towards facilities serving wider scientific communities. Structural funding consequently renewed programmes by changing their scale, spatial location, and expectations of access. It also tied Czech research more closely to the infrastructure policies of the European Research Area (*Ministry of Education, Youth and Sports, 2014*; *Academy of Sciences of the Czech Republic, 2014*). The challenge shifted from obtaining an instrument to sustaining an ecosystem of users, expertise, and technical care around it.

ELI Beamlines offers the clearest example of an inherited research tradition becoming a qualitatively new programme. Czechoslovak Academy institutes had developed important laser research from the 1960s, and later work with iodine lasers sustained expertise through the final socialist decades. After 1993, international cooperation and new investment enabled the Prague Asterix Laser System to extend that tradition. The decision to build ELI Beamlines at Dolní Břežany moved the programme into a different scientific and organisational category. It was no longer primarily a laboratory serving the agenda of one inherited institute. It became a multidisciplinary user facility designed for experiments in high-field physics, materials, chemistry, biology, and medicine. The Institute of Physics supplied institutional memory, technical experience, and project leadership. European infrastructure policy supplied scale, international users, and a transnational legal horizon. The facility opened for user experiments in 2018 and later became part of ELI ERIC. This trajectory did not reproduce the ČSAV laser programme. It converted an accumulated competence into a European platform whose future questions would be shaped by a much wider community (*ELI Beamlines, n.d.*; *Czech Academy of Sciences, 2022*). The history of the programme remained visible, but no longer determined the limits of its scientific constituency.

BIOCEV and CEITEC illustrate a related renewal through inter-institutional concentration. BIOCEV joined six Academy institutes with two faculties of Charles University in a new biotechnology and biomedicine centre at Vestec. Its laboratories were designed around functional genomics, cellular biology, structural research, biomaterials, and therapeutic development rather than around the administrative borders of the participating institutes. The centre therefore allowed inherited biological programmes to be recombined around shared technologies and questions. CEITEC in Brno linked universities and Academy institutes across life sciences, advanced materials, and nanotechnologies. Shared core facilities reduced duplication and created points of entry for international teams. These centres did not dissolve

the historical identities of their partners. They layered a consortium logic over them. Programme leadership increasingly depended on negotiation across employers, disciplines, and funding regimes. The resulting structures made it possible to undertake projects beyond the capacity of a single traditional institute. They also demonstrated that continuity after 1993 could mature into federated research environments rather than remain confined within inherited organisational boundaries (*Czech Academy of Sciences, 2015*; *Central European Institute of Technology, 2020*). Scientific identity became partly distributed across a network while remaining anchored in the participating workplaces.

The expansion of competitive and performance-based funding produced tensions that directly affected programme continuity. From 2004, national evaluation increasingly relied on countable outputs, and after the 2008 reform those results became closely connected to institutional allocations. The system promised transparency and protection from personal or political favour. In practice, the so-called coffee-grinder methodology assigned points to heterogeneous outputs and encouraged organisations to maximise measurable production. Academy researchers objected that such metrics could not compare fields fairly or recognise infrastructure, public expertise, critical editions, and long-term data work. Short publication cycles could be rewarded at the expense of ambitious programmes whose results matured slowly. Quantification also risked fragmenting coherent agendas into outputs optimised for funding. The Academy retained its own internal evaluation and used international peer review as a counterweight to mechanical comparison. This did not remove every problem, but it preserved space for programme-level judgement. The controversy revealed that depoliticisation could not be achieved merely by replacing political discretion with numbers. Renewed programmes required evaluation capable of recognising diversity, future potential, and the conditions necessary for sustained quality (*Good et al., 2015*; *Arnold et al., 2011*). A credible assessment system had to judge whether a programme was worth developing, not merely whether it had already produced countable items.

Programmes for scientific excellence offered another response to the risk of fragmentation. The Praemium Academiae, awarded from 2007, provided leading researchers with substantial multiyear support to develop teams and pursue demanding agendas. Its scale allowed recipients to think beyond a succession of small, short grants. Later schemes such as Lumina Quaeruntur helped younger researchers establish independent groups within Academy institutes. These instruments placed the individual scientific leader between institutional continuity and programmatic innovation. A successful investigator could use an inherited laboratory or collection while assembling a team around a new question. Excellence support also strengthened the Academy's ability to retain researchers who might otherwise move abroad. Its selectivity inevitably concentrated resources and prestige. Institutes therefore had to prevent elite schemes from becoming isolated islands detached from shared technical and intellectual environments. When integrated well, they renewed programmes by combining long horizons with personal responsibility. The progression from early junior initiatives to large excellence awards shows how the Academy gradually diversified its tools for creating scientific futures (*Academy of Sciences of the Czech Republic, 2003*; *Czech Academy of Sciences, 2025*). Excellence was treated most fruitfully as a capacity to build communities rather than as an attribute of isolated individuals.

By the middle of the 2010s, the Academy sought a more explicit framework for connecting disciplinary strength with public problems. Strategy AV21 was prepared in 2014 and implemented from 2015 under the motto "Top research in the public interest". Its creation

responded to persistent questions about the social value of a publicly funded non-university research system. Rather than assigning every institute a utilitarian mission, the strategy organised selected work into cross-cutting research programmes. The original set included themes such as the digital era, energy, nuclear systems, natural hazards, health, food, and social change. These themes were broad enough to require cooperation across scientific divisions. They also made it possible to connect basic research with expert analysis, communication, and potential application. Strategy AV21 did not replace ordinary institute programmes or competitive grants. It provided a platform through which existing capacities could be coordinated around issues visible to society. Its significance lay as much in institutional design as in thematic choice. The strategy converted decades of decentralised programme renewal into an Academy-wide language of purposeful interdisciplinarity (*Czech Academy of Sciences, 2015*; *Czech Academy of Sciences, 2017*). Public interest was thereby framed as a field for rigorous inquiry rather than a political instruction to deliver predetermined results.

The operating logic of Strategy AV21 represented a departure from both state planning and temporary project consortia. Programmes were coordinated but remained distributed among participating institutes and external partners. Their membership could cross the boundaries of natural sciences, engineering, medicine, social sciences, and humanities. A programme on energy, for example, could combine materials, plasma physics, storage technologies, environmental consequences, economics, and public acceptance. A programme on memory or identity could link archives, digital methods, linguistics, history, sociology, and public institutions. Coordination created shared questions without requiring the creation of a new permanent institute. This made the strategy adaptable because programmes could be established, revised, or concluded as problems changed. It also preserved the disciplinary homes in which methods and specialist standards were maintained. The model depended on active coordinators capable of translating among fields rather than merely aggregating unrelated projects. Its success could not be measured only through publications, since expert reports, prototypes, public debates, databases, and partnerships also mattered. Strategy AV21 therefore institutionalised programme renewal as a recurring process of assembling inherited expertise around emerging challenges (*Czech Academy of Sciences, 2017*; *Czech Academy of Sciences, 2023*). Coordination became an intellectual practice in its own right because it shaped how different forms of evidence could address a common problem.

Public crises tested whether these renewed programmes were genuinely adaptable. Environmental disasters, energy uncertainty, demographic change, disinformation, and public-health emergencies demanded knowledge that crossed established disciplinary jurisdictions. During the COVID-19 pandemic, Academy institutes contributed to virology, antiviral research, diagnostics, modelling, social analysis, and public communication. Such responses depended on basic research conducted long before the emergency. They also required rapid coordination with hospitals, universities, ministries, firms, and international networks. Strategy AV21 programmes provided one channel through which expertise could be made visible and combined. The lesson was not that every programme should be organised around the latest crisis. Research directed only by immediate urgency would lack the reservoirs of knowledge from which rapid response becomes possible. Rather, programme renewal had to maintain both exploratory depth and institutional readiness. The Academy's 2022 reporting connected work on coronaviruses with the Strategy AV21 commitment to research in the public interest. Crisis response thus revealed continuity as an active capacity

to mobilise old knowledge for problems that could not have been predicted when that knowledge was created (*Czech Academy of Sciences, 2022*). Institutional preparedness proved to be a delayed return on earlier investments in seemingly non-urgent research.

Open science has introduced a further phase in the renewal of research practice. The Academy approved an Open Access Policy in 2010 and later replaced it with broader Open Science Principles. Publications, data, software, and methods are increasingly treated as outputs whose accessibility affects reproducibility and public value. Institutional repositories and digital services extend the work of Academy libraries into the research process itself. For programmes built on archives, collections, or long-term observations, openness can create new users and unexpected collaborations. It also requires careful attention to copyright, personal data, sensitive locations, research security, and the costs of preservation. Not every dataset can be released without restriction, and not every field has identical standards of reuse. Open science therefore demands professional data management rather than simple online publication. Its evaluative recognition is important because researchers otherwise carry the labour of documentation without institutional reward. The transition from guarded institutional holdings to responsibly shared research objects changes how continuity operates. Knowledge is preserved not only by remaining inside an institute but also by becoming intelligible and reusable beyond it (*Czech Academy of Sciences, n.d.*). Programme design increasingly includes decisions about future access, metadata, stewardship, and reuse from the beginning of research.

The history of renewed programmes nevertheless contains losses, asymmetries, and unfinished transitions. Competitive funding favoured groups able to write persuasive proposals in internationally familiar forms. Infrastructure investment produced impressive facilities but also long-term operating obligations. Internationalisation expanded opportunity while intensifying competition for mobile researchers. Evaluation improved accountability but sometimes encouraged short horizons and strategic publication behaviour. Interdisciplinary programmes created connections, yet they could not replace the slow cultivation of disciplinary competence. Applied partnerships generated public value, though they remained easier in some sciences than in the humanities. Digital methods opened collections while creating new dependencies on software, standards, and technical staff. Generational schemes supported selected researchers but could not eliminate insecure careers or demographic gaps inherited from the 1990s. Programme renewal was therefore uneven across institutes, regions, and fields. Its most successful forms combined stable institutional memory with enough external challenge to prevent stagnation. The central achievement after 1993 was not permanent modernisation, but the creation of mechanisms through which research agendas could repeatedly be reconsidered without destroying the communities capable of carrying them (*Arnold et al., 2011*; *Good et al., 2015*).

Thus, research programmes renewed after 1993 by changing the principles through which scientific continuity was organised. Inherited lines of inquiry were released from state planning and tested through peer review, competitive grants, international comparison, and institutional evaluation. Stable funding preserved laboratories, collections, and long-term observations, while project support opened space for new questions and teams. Cooperation with universities joined Academy programmes to doctoral education and widened the circulation of knowledge between institutions. Mobility and career schemes allowed younger, returning, and foreign researchers to redirect established capacities. Digital methods and advanced instruments transformed both the scale of evidence and the composition of

research groups. National and European programmes added strategic coordination, large infrastructures, and transnational partnerships. Public research institution status strengthened the responsibility of institutes for turning autonomy into coherent scientific agendas. ELI Beamlines, BIOCEV, and CEITEC demonstrated how inherited expertise could grow into shared research platforms of a new order. Strategy AV21 later gave programme renewal an Academy-wide form centred on interdisciplinary research in the public interest. Open science extended continuity beyond institutional walls through reusable publications, data, and research services. The enduring pattern was therefore renewal through layered adaptation: programmes remained recognisable enough to transmit knowledge, yet open enough to acquire new methods, participants, purposes, and publics.

3. The Transformation of Inherited Scientific Capital

The phrase *inherited scientific capital* provides a more exact description of the Academy's post-1993 predicament than the simpler language of survival. It does not denote a treasure chest that passed intact from the Czechoslovak Academy of Sciences to the Academy of Sciences of the Czech Republic. Inherited laboratories, libraries, instruments, research habits, reputations, and personal networks possessed very different degrees of usefulness in the new political and scientific environment. What crossed the institutional threshold of 1993 was therefore a heterogeneous accumulation of capacities, liabilities, memories, and expectations. What mattered thereafter was the ability to separate epistemic value from obsolete administration and professional competence from ideological privilege. The transformation involved selection, depreciation, revaluation, combination, and, in a few exceptional cases, profitable conversion. Some assets could be used almost immediately because their scientific quality had already been tested through publications, experiments, or enduring services. Others acquired value only after new equipment, legal authority, international partners, or younger researchers had been added. Still others became burdens because they absorbed scarce funds without supporting a credible future programme. The result was neither the conservation of ČSAV in a democratic shell nor the creation of AV ČR from an institutional vacuum. It was a prolonged remaking of inherited resources under new rules of legitimacy, accountability, and exchange. This process connects the institutional survivals discussed in *Institutes that Survived Transformation* with the thematic renewals examined in *Research Programmes Renewed after 1993*, while shifting attention from continuity itself to the changing value of what continued.

Pierre Bourdieu's concept of scientific capital is useful here because it directs attention beyond money, buildings, and formal qualifications. Scientific capital includes recognised competence, authority among qualified peers, command of specialised instruments, and the ability to define problems that others consider worth pursuing. It is relational rather than purely possessive, since a discovery or reputation has value only within communities able to understand and judge it. It is also historically accumulated, because laboratories, journals, schools, and careers store the effects of earlier work and distribute opportunities unevenly. At the same time, Bourdieu distinguished specifically scientific recognition from the administrative power to appoint, allocate, and command (*Bourdieu, 2004*). That distinction was crucial after state socialism, when some office-holders possessed considerable institutional authority but little credibility under restored standards of open scholarly competition. Conversely, researchers marginalised for political reasons could hold strong

intellectual or moral standing despite weak positions in the official hierarchy. The democratic transition therefore altered not merely who controlled capital but which forms of capital could legitimately be converted into leadership. International peer recognition gained weight, while party credentials and politically protected monopolies rapidly lost it. Yet administrative knowledge did not become worthless, because institutes still required people who knew how to maintain facilities, organise teams, and negotiate with the state. The post-1993 Academy had to recompose scientific and organisational authority rather than pretend that every inherited hierarchy was either valid or void. Scientific capital, in this sense, was transformed whenever the criteria of recognition, the arenas of competition, or the institutional uses of expertise changed.

For analytical purposes, the Academy's inheritance can be divided into six overlapping forms, although in practice they rarely existed separately. Human capital comprised theoretical knowledge, experimental dexterity, linguistic competence, technical craft, mentorship, and the tacit judgement acquired through years of research. Material capital included buildings, instruments, experimental sites, collections, workshops, observatories, computing facilities, and the often-invisible systems that kept them operational. Organisational capital resided in routines for coordinating difficult work, preserving standards, distributing responsibility, and sustaining projects beyond an individual career. Informational capital consisted of archives, bibliographies, longitudinal measurements, specimen records, catalogues, unpublished notes, software, and accumulated data. Relational capital linked institutes to universities, hospitals, enterprises, ministries, regional authorities, learned societies, and foreign partners. Symbolic capital took the form of names, schools, prizes, trusted journals, celebrated discoveries, and the expectation that an institute could produce authoritative knowledge. Economic capital, although not a specifically scientific form, entered the picture whenever patents, contracts, grants, or property allowed one kind of accumulated capacity to finance another. These categories reveal why institutional continuity cannot be measured by counting surviving institute names alone. A renamed or merged institute might retain powerful teams and collections, whereas an unchanged title could conceal the erosion of its skills or mission. They also show why transformation was recursive: new symbolic standing attracted grants, grants purchased instruments, instruments drew talented researchers, and their work generated further recognition. The central historical question is consequently how AV ČR made inherited resources reproducible rather than merely possessible.

The political origin of much inherited capital made its valuation morally and intellectually difficult. ČSAV had been created within a Stalinised order, incorporated into central planning, and repeatedly exposed to ideological intervention. Its premises, posts, and disciplinary map were therefore inseparable from decisions made by an authoritarian state. Nevertheless, the knowledge produced inside that framework was not simply an ideological emanation of the regime. Experimental results, technical skills, philological editions, astronomical observations, and biological collections could retain validity beyond the political circumstances of their production. Some institutes even provided relative shelter for forms of serious inquiry that universities, because of their educational role and closer supervision, found harder to protect (*Cidlinská & Linková, 2015*). The task after 1989 was to acknowledge this mixed history without granting the institution an innocent past. Democratic legitimacy required personnel review, open argument, and the removal of structures whose principal purpose had been political control. Scientific responsibility required equal caution against destroying capacities merely because they had developed under socialism. The line between

purification and impoverishment was rarely self-evident, especially when political compromise, professional competence, and personal loyalty were embodied in the same career. Judgements made in the early 1990s inevitably combined evidence, moral memory, disciplinary rivalry, and urgent financial constraint. Transformation therefore meant converting a politically compromised inheritance into publicly defensible capability, not retrospectively declaring that inheritance either wholly contaminated or wholly autonomous.

The founding legislation of the Czech Academy established the material and juridical basis for this conversion. Act No. 283/1992 transferred to the new Academy the property, rights, and obligations allocated to the Czech Republic from the former federal Academy. It also converted the relevant ČSAV institutes into institutes of the Czech Academy and temporarily carried over their directors and scientific councils (*Czech National Council, 1992*). This was a remarkably direct act of succession, but it did not freeze the inherited order. Scientific posts were to be filled through competitions, governing bodies were reconstituted, and transitional directors had to pass through newly organised procedures. The law thus treated continuity as an initial condition rather than a final verdict. Buildings, contracts, instruments, and legal obligations could be transferred by statute, whereas scientific credibility had to be renewed through institutional practice. The distinction matters because property without a viable community of inquiry is only a costly asset, while a strong team without secure premises can rapidly disperse. Legal succession bought time in which the Academy could evaluate, reduce, merge, and redirect its holdings without interrupting every research process at once. It also placed responsibility for inherited resources within an Academy possessing representative organs rather than within a ministry administering a command system. The post-1993 institution consequently became a trustee of scientific assets whose value depended on future use. In this respect, the founding law converted state inheritance into a duty of academic stewardship.

Human capital was the most valuable and the most fragile component of the inheritance. A senior physicist's ability to recognise an anomalous signal, a glassblower's knowledge of a unique apparatus, or an archivist's memory of uncatalogued papers could not be transferred by decree. Such expertise was embodied in persons and sustained through repeated collaboration. Research teams also possessed collective capacities that exceeded the sum of individual qualifications, because members knew one another's techniques, limits, and habits of verification. Their dissolution could therefore destroy a competence that no recruitment of isolated individuals would immediately restore. The upheavals of the early 1990s exposed these capacities to abrupt dissolution. Evaluation and personnel reduction were necessary parts of reform, yet dismissals and departures could remove technicians, middle-generation organisers, and mentors together with obsolete posts. Contemporary accounts emphasised that Czech research employed far fewer people as transformation proceeded and that institutes had to operate under newly competitive conditions (*Provazník et al., 1998*). The losses were not evenly distributed across disciplines, locations, age groups, or career stages. A theorist might continue with a desk and foreign correspondence, while an experimental team could lose years of accumulated skill if a workshop or breeding facility closed. Human capital was therefore preserved most effectively where institutes identified indispensable competence before organisational surgery began. Its transformation required not only retaining excellent individuals but rebuilding the social settings in which their knowledge could be transmitted.

The contraction of the early transition also demonstrated that scientific capital can depreciate through neglect as well as through political suppression. By one contemporary reconstruction,

the first internal assessment began in 1990, after which low-quality units were abolished and the Academy's workforce was approximately halved (*Cidlinská & Linková, 2015*). These changes removed duplication and opened space for renewal, but they also produced age gaps, insecurity, and weakened technical support. Their effects were magnified where an already narrow age structure had weakened generational succession. Salaries that lagged behind emerging private-sector opportunities encouraged some researchers to leave academic work or the country. Others established companies, moved into universities, or adapted their expertise to commercial research, thereby transferring capital out of the Academy rather than simply destroying it (*Provazník et al., 1998*). The resulting circulation could benefit the wider Czech knowledge economy, although it often imposed immediate costs on institute teams. Laboratories whose leaders remained but whose junior cohorts departed acquired an appearance of continuity without a secure mechanism of succession. Conversely, younger scholars sometimes inherited responsibilities faster than established career systems would previously have allowed. The transition created both a brain drain and an accelerated redistribution of authority. It also made visible the dependence of celebrated scientists on less visible engineers, librarians, animal carers, programmers, and administrative specialists. An inherited scientific school survived only when enough of this occupational ecology remained capable of training its successors.

The revaluation of human capital gradually moved from emergency personnel review towards more regular career institutions. Open competitions, fixed-term appointments, doctoral collaboration, and periodic assessment made professional standing more contestable than it had been under late socialism. These mechanisms did not automatically eliminate patronage or generational advantage, but they changed the language in which appointments had to be justified. International publication, mobility, grant success, mentorship, and the capacity to establish an independent research direction became increasingly legible signs of promise. At the same time, the Academy could not simply import a universal career model without regard to disciplinary time scales. A young molecular biologist, an archaeologist responsible for a long excavation, and an editor of historical sources accumulate credible achievement at different rates. Career regulation therefore became one of the principal sites where inherited disciplinary cultures met new standards of openness. Studies of Academy careers have shown both the strength of self-government and the tensions created by short-term funding, university dependence in doctoral education, and uneven employment security (*Cidlinská & Linková, 2015*). These tensions reveal that human capital is not renewed by competition alone. Researchers need sufficient temporal security to learn difficult methods, undertake risky projects, and assume responsibility for shared collections or instruments. They also need meaningful routes by which authority can pass from productive senior scholars to capable successors. The democratic transformation of inherited expertise was successful where contestability and continuity were treated as complementary rather than mutually exclusive values.

Material capital presented a different but equally demanding problem. ČSAV left a substantial landscape of laboratories, observatories, libraries, field stations, offices, and specialised workshops. The physical existence of these facilities gave the new Academy a formidable starting position compared with organisations that had to build research capacity from nothing. Yet many buildings required repair, and much instrumentation was worn, technologically isolated, or incompatible with rapidly changing international standards. An inherited device could embody valuable local ingenuity while also limiting the questions a team

was able to ask. Maintenance costs further complicated valuation, because a large facility might consume resources long after its original scientific rationale had weakened. Decisions about closure or renewal were therefore arguments about future capability, not merely audits of past expenditure. Material capital became genuinely scientific only when it was coupled to competent users, reliable technical service, and a programme judged worth sustaining. The early transition often forced institutes to improvise, cannibalise equipment, or rely on foreign partners for measurements unavailable at home. Such dependency could be productive when it created collaboration, but damaging when it reduced Czech teams to peripheral service roles. Modernisation consequently required strategic discrimination between heritage worth upgrading, facilities worth sharing, and assets whose continued operation merely postponed decline. The concrete inheritance of ČSAV was thus a platform, but never a guarantee, for the capital-intensive science of AV ČR.

Later investment converted parts of this ageing platform into infrastructures embedded in national and European research systems. The Czech roadmap for large research infrastructures defined such facilities by uniqueness, national significance, international reach, open access, and scientific excellence rather than by institutional ownership alone (*Ministry of Education, Youth and Sports, 2014*). This framework changed the meaning of an Academy laboratory from a protected internal possession to a node serving wider research communities. European structural resources and national co-financing enabled new construction and sophisticated instrumentation on a scale that ordinary institute budgets could rarely sustain. Yet these investments were most productive when they were anchored in inherited competence capable of specifying equipment, training users, and interpreting results. ELI Beamlines, research reactors, distributed biological resources, and specialised materials facilities illustrate different combinations of old expertise and new organisational scale. Their emergence did not render earlier laboratories irrelevant; it repositioned them within networks of access, calibration, data exchange, and joint governance. The conversion also imposed obligations that capital grants alone could not satisfy. Instruments require maintenance, highly skilled operators, energy, software renewal, and long-term operating budgets. An instrument purchased without a credible operating model can become a monument to investment rather than a source of discovery. The energy pressures reported by the Academy in 2022 showed how quickly expensive equipment can become vulnerable when recurrent costs rise (*Czech Academy of Sciences, 2023*). Material transformation was therefore successful only when investment in objects was matched by investment in the communities and financial routines that kept them scientifically alive.

Informational capital was less visible than buildings but often more resistant to abrupt political change. Decades of astronomical measurements, linguistic excerpts, archaeological records, botanical observations, social surveys, and laboratory notebooks preserved temporal depth that no new grant could purchase quickly. Their value lay not only in individual documents but in consistent series, contextual knowledge, and systems of classification. A collection separated from its catalogue, or a dataset detached from its methodology, could lose much of its evidential power. The post-1993 Academy therefore inherited obligations to preserve the relations among objects, descriptions, and expert interpreters. In some fields, the information had been gathered under conceptual assumptions later rejected by the discipline. This did not necessarily make the records useless, because later researchers could reclassify them or study the categories as historical evidence. Political bias similarly required critical annotation rather than automatic disposal, especially in archives and social-scientific materials.

Informational capital could thus be transformed through reinterpretation, comparison, and the recovery of suppressed provenance. Its preservation also protected the possibility of asking questions that the original collectors had not imagined. When research fashions changed, a well-maintained archive or specimen series could unexpectedly become central to environmental, genetic, or cultural investigation. The Academy's long institutional memory acquired scientific force precisely because it could be reopened to new methods and arguments.

Digitisation substantially altered both the reach and the governance of this informational inheritance. A manuscript catalogue once usable mainly by local specialists could become searchable across borders, while a distributed database could connect Czech observations to European longitudinal research. The gain was not simply speed or convenience. Digital description forced institutions to make provenance, metadata, access conditions, and formats explicit, thereby exposing weaknesses previously managed through personal memory. It also shifted value from exclusive possession towards reliable circulation. The Academy's recent Open Science principles present accessibility, reusability, transparency, FAIR data, and trustworthy repositories as conditions of research quality and reproducibility (*Czech Academy of Sciences, 2025*). This policy converts accumulated information into a shared epistemic resource without denying legitimate restrictions. Personal data, sensitive locations, copyright, cultural obligations, and intellectual property can require closure or controlled access. The formula of being as open as possible and as closed as necessary is therefore not a retreat from openness but a rule for responsible stewardship. Digitisation also creates new dependencies on software, cybersecurity, migration, and sustained curation. A scanned image without structured metadata may preserve appearance while losing much of the object's research potential. The transformation of informational capital is complete only when digital availability is accompanied by interpretability, durability, and conditions for legitimate reuse.

Organisational capital consisted in the Academy's ability to make complex work repeatable across time. Institutes inherited procedures for operating facilities, allocating technical labour, editing serial publications, mounting field expeditions, and coordinating research that exceeded the capacity of one scholar. Some routines had been distorted by central planning or ideological supervision, yet others embodied hard-won practical knowledge. Reformers could abolish a committee overnight, but they could not instantly recreate the competence that allowed a telescope, archive, or long experiment to function. The challenge was to retain coordination while changing command. Institute councils, elected representative bodies, transparent competitions, and fixed leadership terms gradually relocated organisational knowledge within a more accountable structure. The Academy's statute and founding law made self-governing organs responsible for strategy, budgets, appointments, and scientific policy rather than leaving these matters to ministerial instruction (*Czech National Council, 1992*; *Czech Academy of Sciences, 2006*). This arrangement converted obedience to a vertical state system into the capacity for collective institutional judgement. It also distributed risk, since directors remained important but could no longer plausibly embody the whole institute's legitimacy. Organisational capital became most valuable when routines could be criticised by those who used them and revised without paralysing research. The post-socialist Academy therefore did not abandon bureaucracy; it attempted to distinguish enabling administration from political tutelage. Its administrative inheritance was transformed when procedure became a support for autonomous inquiry rather than a channel for prescribing its conclusions.

This reorganisation changed the exchange rate between administrative and specifically scientific authority. Under the former regime, access to posts, travel, premises, and resources could depend heavily on political reliability and location within official hierarchies. After 1989, those assets could no longer guarantee durable leadership because peers, foreign evaluators, and competitive funders operated with different criteria. Researchers who had accumulated recognition through difficult work, international contacts, or intellectual independence could convert it into new institutional influence. Yet the reversal was never perfectly symmetrical. Seniority, control of information, and command over facilities continued to shape opportunities even when their public justification changed. Bourdieu's warning that scientific and temporal power can reinforce one another is therefore as relevant to democratic institutions as to authoritarian ones (*Bourdieu, 2004*). The crucial difference lies in the presence of counterweights, contestable procedures, and arenas in which decisions can be reviewed. Periodic evaluation, elected councils, term limits, and international advisory bodies do not abolish hierarchy, but they prevent hierarchy from resting on one source of authority alone. They also allow scientific capital to migrate from an individual founder to a team, programme, or institute. Such migration is essential when a famous school must survive the retirement of its leading figure. The transformation of inherited authority was consequently institutional when recognition became detachable from office and office became answerable to more than inherited prestige.

Relational capital within the Czech research system was rebuilt through connections that changed the meaning of Academy autonomy. ČSAV had maintained relations with universities, industrial research, hospitals, and state bodies, but these links were structured by sectoral divisions and political planning. The democratic transition restored universities as major research actors and required the Academy to justify its place within a plural institutional landscape. Collaboration in doctoral education became especially important because Academy institutes conducted advanced research while universities retained degree-awarding authority. Shared supervision enabled students to use specialised facilities and join mature teams, while Academy researchers entered teaching and accreditation networks. By the middle of the following decade, descriptions of the system recorded numerous shared centres and a substantial Academy role in postgraduate training (*Cidlinská & Linková, 2015*). These arrangements converted concentrated research expertise into educational capacity without transforming institutes into conventional faculties. Relations with hospitals, regions, museums, and public agencies likewise turned specialist knowledge into diagnostic, environmental, cultural, and policy services. Partnership could, however, become unequal if one institution supplied infrastructure while another captured visibility, student funding, or intellectual credit. Durable relational capital therefore required clear agreements concerning authorship, supervision, costs, data, and responsibility. It also required respect for the Academy's long time horizons, which differ from both electoral cycles and immediate commercial demand. Domestic integration strengthened inherited capital when cooperation enlarged its uses without dissolving the institutional conditions that had produced it.

International relations underwent an even more conspicuous conversion. ČSAV scientists had possessed foreign contacts, but mobility and collaboration were filtered by bloc politics, security restrictions, currency shortages, and unequal access to travel. After 1989, individual correspondence and bilateral contacts could become entry points into European programmes, multinational consortia, and mobile career networks. The value of earlier international reputation therefore increased when political barriers fell. At the same time,

inherited contacts with Soviet and East European institutions were reassessed rather than simply erased, since some retained scientific importance despite the collapse of their governing framework. European Union accession widened access to competitive resources, shared infrastructures, standard-setting forums, and recruitment markets. Czech institutes increasingly had to demonstrate that they were partners able to shape research rather than inexpensive subcontractors performing routine tasks. Bibliometric evidence for 1993–2009 indicated rising international visibility, impact, and cooperation across the Czech research system (*Arnold et al., 2011*). This improvement represented more than publication growth, because it signalled a change in how Czech competence circulated and was recognised. Relational capital could now be converted into grants, co-authorship, equipment access, mobility, and participation in the governance of international facilities. The transfer of ELI Beamlines into the ELI European Research Infrastructure Consortium later illustrated the possibility of placing major Czech-based capacity within a transnational legal and scientific structure (*Czech Academy of Sciences, 2023*). Internationalisation transformed inheritance most effectively when it increased reciprocal influence rather than merely measuring Czech science by standards formulated elsewhere.

Symbolic capital formed the most intangible bridge between the two Academies. Institute names, celebrated scientists, distinctive schools, and landmark discoveries could attract trust long after their original organisational setting had changed. The legacy of Jaroslav Heyrovský, the polymer chemistry associated with Otto Wichterle, or established traditions in organic chemistry and biomedicine gave successor institutes narratives with international resonance. Such inheritance was useful because scientific partners often approach institutions through reputational shortcuts before they possess detailed knowledge of current teams. Yet a glorious past can become a substitute for present quality if commemoration is mistaken for validation. Symbolic capital therefore required repeated conversion into contemporary results, credible appointments, and responsible public conduct. The post-1993 Academy increasingly displayed continuity through anniversaries, awards, institute histories, and the preservation of archives, but these acts worked best when joined to visible renewal. A distinguished name could help recruit a young scientist, secure philanthropic attention, or reassure an industrial partner. It could not by itself make an obsolete research programme competitive. Nor was all inherited prestige innocent, since official honours and institutional prominence had sometimes reflected political selection. Historical self-examination thus became part of reputational management rather than a threat to it. AV ČR strengthened its symbolic capital when it presented scientific achievement and institutional criticism as compatible elements of the same democratic identity.

Evaluation provided one of the principal mechanisms for translating inherited reputation into newly certified standing. Since its establishment in 1993, the Czech Academy has organised regular assessments of institutes, progressively expanding the role of international experts and team-level evidence (*Czech Academy of Sciences, 2021*). The evaluation for 2015–2019 combined selected outputs with assessment of institutes and teams, while examining quality, societal relevance, international position, vitality, cooperation, and outreach. Its field-based structure recognised that a patent, critical edition, theoretical proof, and archaeological synthesis cannot be judged through an identical evidential template. This was an important corrective to the national performance-based system widely criticised for instability, unpredictability, and crude conversion of heterogeneous outputs into points (*Good et al., 2015*). Evaluation nevertheless remained an act of capital conversion. Publications, software,

patents, monographs, and professional services were translated into profiles that could affect strategy, funding, appointments, and reputation. Such translation inevitably privileged what could be made visible to panels and databases. Institutes therefore learned to describe not only what they had achieved but how their achievements should be valued. This administrative literacy became a new form of organisational capital, useful yet capable of diverting attention from research. The strongest evaluation system was not the one claiming perfect measurement, but the one exposing judgements to disciplinary comparison and reasoned challenge. Through this process, inherited symbolic claims became provisional reputations that had to be earned again.

The growing international visibility of Czech research demonstrates one outcome of this revaluation, but it must be interpreted carefully. Between 1993 and 2009, Czech output in journals indexed by Web of Science nearly tripled, while citation impact and cooperation increased substantially (*Arnold et al., 2011*). Academy institutes contributed disproportionately to national publication production, reflecting their concentration on research rather than mass teaching (*Cidlinská & Linková, 2015*). These indicators suggest that inherited skills and organisations were successfully converted into outputs recognised within global scientific communication. They do not prove that every valuable capacity was captured by citation databases. English-language articles in rapidly publishing fields circulate differently from Czech dictionaries, source editions, taxonomic collections, legal commentaries, or patient longitudinal studies. A metric can reveal conversion into one market of recognition while obscuring value stored elsewhere. The danger is greatest when indicators become prices that determine resources automatically. Under those conditions, teams may reshape publication practices to fit the measure rather than improve the underlying research. The critique of the Czech performance-funding methodology showed how a system designed to depersonalise allocation could instead undermine strategic planning (*Good et al., 2015*). Scientific capital requires public accountability, but its plural forms resist reduction to a single unit. The Academy's field-sensitive peer evaluation was therefore not merely an assessment technique; it was an institutional defence of differentiated value.

The humanities reveal particularly clearly why inherited capital cannot be equated with internationally priced output. Institutes concerned with Czech language, literature, history, archaeology, philosophy, art, law, and ethnology hold resources whose primary significance is inseparable from national culture. Dictionaries, corpora, critical editions, excavation archives, bibliographies, and documentary collections preserve the conditions under which a society can investigate its own past and language. Their audiences may be concentrated in Czech-speaking communities even when their methods and comparative implications are international. The political transition changed these holdings by opening previously restricted topics, restoring suppressed intellectual traditions, and enabling alternative interpretations of national history. It also created pressure to demonstrate relevance within evaluation systems modelled partly on natural-scientific publication patterns. The Academy's later methodology responded by maintaining distinct panels for history and archaeology, languages and literature, and other humanities and arts (*Czech Academy of Sciences, 2021*). This disciplinary differentiation recognised that cultural stewardship and frontier research can be mutually reinforcing. A carefully edited medieval text or reconstructed archaeological sequence is simultaneously an intellectual intervention and an infrastructure for future scholarship. Its capital accumulates through reliability, completeness, and generational use rather than rapid citation alone. The transformation of humanities inheritance therefore required democratising

access and interpretation without abandoning long-term scholarly obligations. In these fields, scientific capital became publicly renewed cultural memory.

Intellectual property introduced a more explicit route by which knowledge could be converted into economic resources. Patents, licences, research contracts, and spin-off firms made some Academy results legible to markets that had not existed in the same form under central planning. This did not mean that commercialisation replaced publication or public mission. Rather, institutes acquired new possibilities for protecting an invention, finding development partners, and returning income to research. The 2007 conversion of Academy institutes into public research institutions strengthened their capacity to own property and undertake secondary activities, including profit-generating work (*Cidlinská & Linková, 2015*). Legal flexibility mattered because the path from laboratory finding to medicine, instrument, or material often exceeded the Academy's own manufacturing and regulatory capacities. Technology transfer offices and specialised companies later supplied expertise in patents, contracts, valuation, and business development. The Academy's knowledge and technology transfer strategy treated these activities as part of connecting research with public and economic use (*Czech Academy of Sciences, 2023*). Yet every conversion introduced questions about secrecy, ownership, conflicts of interest, and the distribution of returns. Premature patenting could narrow collaboration, while failure to protect a discovery could allow others to appropriate public investment without fair return. Commercial value also varied radically among fields and could not serve as a universal test of scientific worth. Intellectual property was therefore best understood as one selective mechanism for renewing inherited capital, not as the Academy's governing purpose.

The Institute of Organic Chemistry and Biochemistry offers the clearest example of a full conversion cycle. Founded within ČSAV in 1953, it inherited a durable interdisciplinary culture joining organic chemistry, biochemistry, biology, and medicine. That culture provided the setting in which Antonín Holý developed acyclic nucleotide phosphonates through long-term research in modified nucleosides and nucleotides. The compounds were subsequently developed and marketed as antiviral medicines through international collaboration with clinical and industrial partners (*Institute of Organic Chemistry and Biochemistry, n.d.*). Their commercial success generated substantial patent royalties for the institute. Instead of treating this income as a terminal reward, IOCB used it to modernise its campus, acquire advanced equipment, and enlarge its research capacity. Its 2007 restructuring opened all group-leader positions to international competition. Regular assessment by an international advisory board and a tenure-track route for junior groups further altered the institute's internal reproduction. English became a working language, recruitment widened geographically, and the research portfolio expanded beyond its traditional core. Knowledge accumulated under ČSAV had thereby become intellectual property, economic income, renovated material capacity, international human capital, and renewed symbolic standing. The cycle depended on unusual pharmaceutical success, but it was not accidental in the simple sense, because decades of basic research and relational trust had created the possibility of application. IOCB's history demonstrates that inherited scientific capital is most dynamic when its returns finance conditions for discoveries that cannot yet be predicted.

The IOCB model nevertheless cannot be generalised across the Academy without serious distortion. Most mathematical proofs, historical editions, biodiversity records, philosophical arguments, and atmospheric observations will never yield comparable royalties. Their failure to do so is not evidence of weak science or deficient public value. Even within chemistry and

biomedicine, successful drug development is rare, expensive, and dependent on industrial, clinical, and regulatory partners. A policy that allocated resources according to commercial return would reward fields already closest to appropriable markets. It would also encourage institutes to neglect difficult problems whose benefits are diffuse, delayed, or freely shared. Publicly funded basic research exists partly because markets cannot reliably capture such benefits. The exceptional institute can nonetheless create wider value by sharing transfer expertise, supporting common facilities, or financing collaborations beyond its original speciality. This converts private contractual returns into a broader institutional public good. Care is required, however, to prevent a wealthy institute from becoming an implicit norm against which less monetisable disciplines are judged. The Academy's plural mission protects forms of capital that mature through cultural authority, policy usefulness, trained people, or open knowledge rather than licence revenue. IOCB is therefore best read as an illuminating pathway of conversion, not as a financial template for the entire institution.

The change to public research institution status in 2007 provided a common legal framework within which diverse conversion strategies could develop. According to contemporary institutional analysis, the reform transferred property into institute ownership, enabled secondary profit-making activities, and improved the Academy's position in relation to European Framework Programmes (*Cidlinská & Linková, 2015*). It gave institutes greater room to manage assets, conclude contracts, and combine public funding with project and commercial resources. Autonomy of this kind enlarged the possible uses of inherited buildings, patents, services, and organisational expertise. It also transferred risk and responsibility downwards. Property ownership entails maintenance, insurance, accounting, legal compliance, and difficult decisions about underused assets. Revenue-generating activity can support research, but it can also create cross-subsidy disputes or expose an institute to market volatility. The Academy therefore remained a coordinating and supervisory body rather than a loose association of self-financing firms. Its statutes coupled institute autonomy to elected organs, scientific evaluation, public budgeting, and authorisation of consequential legal acts (*Czech Academy of Sciences, 2006*). The reform's historical importance lies in this combination of freedom and fiduciary obligation. It transformed inherited capital from administratively assigned state resources into assets that research institutions could actively govern. The legal form did not create scientific value by itself, but it widened the repertoire through which value could be preserved, shared, invested, or converted.

Active conversion also created inequalities that became cumulative over time. An institute beginning with internationally recognised scientists, modernisable facilities, and valuable patents could attract stronger applicants and win further grants. A smaller humanities institute might hold nationally indispensable collections while lacking comparable access to international project income. Robert Merton described a related process as the Matthew effect, in which prior recognition increases the probability of receiving additional recognition and resources (*Merton, 1968*). At institutional level, the same mechanism can make initial differences appear to be neutral evidence of intrinsic quality. Better infrastructure yields more competitive results, which justify further infrastructure, while underinvestment makes another team's potential harder to demonstrate. Competitive funding is necessary to reward strong proposals, but it cannot by itself maintain the full ecology of scientific capability. The Academy's task is consequently both selective and redistributive. It must allow exceptional concentrations of talent to grow while protecting common services, emerging fields, long-duration resources, and disciplines whose outputs accumulate slowly. Peer evaluation can

moderate this tension only if it examines vitality, sustainability, cooperation, and societal relevance alongside visible results. Transparent allocation cannot abolish inequality, but it can distinguish productive concentration from inherited advantage reproducing itself without scrutiny. The transformation of capital was therefore also a politics of deciding which asymmetries strengthened the scientific system and which merely entrenched it.

European structural investment intensified this politics by enabling a rapid enlargement of Czech research infrastructure. New centres, renovations, and advanced instruments allowed teams to enter areas that had previously depended on access abroad. The national roadmap placed facilities within European networks and required open access, expert evaluation, and significance beyond a single host organisation (*Ministry of Education, Youth and Sports, 2014*). Such requirements encouraged Academy institutes to convert local expertise into national service capacity. They also promoted cooperation with universities and foreign consortia, producing new relational capital around expensive equipment. Yet construction funding could make the acquisition of infrastructure easier than its long-term operation. Buildings and devices become stranded capital when recurrent budgets cannot cover staff, consumables, software, maintenance, or energy. Regional eligibility rules could also direct investment geographically without ensuring that every new site possessed an equally mature research community. Institutes carrying strong inherited teams were often better able to absorb funds and turn hardware into publishable science. This advantage was rational from the perspective of immediate effectiveness, but it risked widening gaps between established centres and weaker regions. Sustainable conversion required planning across the whole life cycle of infrastructure rather than celebrating its opening ceremony. The deeper achievement of European investment lay not in replacing socialist-era equipment, but in connecting upgraded Czech competence to durable systems of transnational access and shared responsibility.

Open Science represents a different conversion principle because it seeks to enlarge value through reuse rather than exclusivity. Under this model, publications, data, software, and metadata become more productive when other researchers can inspect, combine, and extend them. The Academy's principles explicitly connect openness with quality, transparency, sustainability, and reproducibility (*Czech Academy of Sciences, 2025*). This approach changes the symbolic economy of research. Prestige need no longer derive only from being the sole possessor of a collection or the first author of a conventional article. Credit can also attach to curating a reliable dataset, maintaining software, documenting a protocol, or enabling an infrastructure used by others. Such recognition is particularly important for technical and informational labour that older academic hierarchies often rendered invisible. Openness does not abolish intellectual property, privacy, or security, since responsible access may require embargoes, licences, anonymisation, or controlled environments. Nor is it costless, because durable repositories and high-quality metadata demand skilled work and long-term finance. If these costs are ignored, open mandates can transfer labour to already overburdened teams and intensify inequalities. Properly supported, however, Open Science converts inherited informational capital from a guarded institutional reserve into a renewable commons. The more responsibly knowledge can be found, understood, and reused, the greater the return on the generations that produced and preserved it.

The public value of inherited capital becomes especially visible when society confronts an unexpected crisis. A pandemic, energy shock, environmental disaster, cyber threat, or dispute over historical memory rarely arrives in the form anticipated by a project call. Institutions respond effectively because they already possess laboratories, datasets, regional knowledge,

trusted experts, and communication channels assembled for broader purposes. During the energy crisis, the Academy had to protect research from rising operating costs while also contributing knowledge relevant to national choices (*Czech Academy of Sciences, 2023*). Its Strategy AV21 programmes similarly drew multiple institutes around food security, low-emission energy, and societal resilience during the Czech presidency of the Council of the European Union. Such mobilisation shows the option value of basic research: capacity created before a crisis preserves choices when the crisis occurs. It also converts symbolic capital into public trust, provided experts communicate uncertainty honestly and distinguish evidence from political decision. Long-term environmental series or social surveys can become irreplaceable precisely because no one could reconstruct their past observations after an emergency begins. The same is true of technical workshops and specialist teams able to adapt instruments or methods rapidly. A narrow audit focused only on immediate outputs would undervalue this readiness. Yet public usefulness should not be romanticised, because advice can be ignored and institutional trust can be damaged by overclaiming. Scientific capital serves society most credibly when preparedness, independence, and transparent limits accompany rapid response.

The long-term problem is therefore the reproduction rather than the mere retention of capital. Every form of scientific inheritance decays if it is not renewed through people, maintenance, criticism, and use. Human expertise disappears without secure career passages and intergenerational teaching. Instruments become obsolete without technical staff and recurrent investment. Archives become opaque without cataloguing, digitisation, and scholars capable of reading their languages and contexts. Networks weaken when collaboration is reduced to grant acquisition rather than sustained intellectual exchange. Reputation turns ceremonial when institutes invoke famous predecessors without exposing current work to demanding review. Competitive project funding can stimulate renewal, but excessive short-termism fragments teams and makes stewardship difficult. Metric pressure can increase visible productivity while discouraging risky, slow, or locally significant inquiry (*Good et al., 2015*). Wealth from patents can regenerate science, but it can also isolate prosperous institutes from the obligations of a common academic system. Open Science can broaden access, but only if curatorial labour and digital preservation are treated as core research capacity. The Academy's strategic responsibility is to keep these conversion pathways plural enough that weakness in one does not destroy value stored in another.

Thus, the transformation of inherited scientific capital from ČSAV to AV ČR was a process of critical recomposition rather than passive transmission. The new Academy received property, institutes, teams, records, routines, relationships, and reputations whose scientific and political meanings were inseparably mixed. Democratic law secured succession while making appointments, governance, and institutional authority more contestable. Evaluation converted inherited prestige into provisional standing tested by peers and differentiated across fields. Internationalisation turned previously restricted contacts into networks of collaboration, mobility, infrastructure, and recognition. Modern investment combined ageing material assets with new equipment and European forms of shared access. Digitisation and Open Science began converting accumulated information into reusable knowledge while imposing new duties of curation. Intellectual property allowed certain discoveries to generate income, most dramatically when IOCB reinvested antiviral royalties in laboratories, people, and organisational renewal. That success also exposed the need to protect forms of value that cannot be monetised or counted on a common scale. Human capital remained the decisive

link, because no building, archive, patent, or reputation can reproduce itself without communities able to understand and transform it. The achievement of AV ČR lay not in escaping its past, but in making the usable parts of that past answerable to democratic legitimacy, international science, and public purpose. Scientific continuity became durable when inheritance ceased to be an entitlement and became a renewable responsibility.

Examples of Disciplinary and Institutional Continuity

1. Chemistry, Physics, and Materials Research

Chemistry, physics, and materials research reveal disciplinary continuity most clearly when institutes are treated as evolving systems rather than containers of famous discoveries. Their history within ČSAV and AV ČR was shaped by laboratories whose value depended on instruments, technical workshops, tacit skills, reference materials, and accumulated experimental judgement. These disciplines therefore make continuity materially visible in a way that a list of publications cannot. A spectrometer, reactor, accelerator, fatigue-testing machine, or polymerisation line carries earlier design decisions into every later experiment. Yet no apparatus guarantees intellectual continuity if the team capable of modifying and interpreting it disappears. Conversely, an established group may preserve a research tradition even while replacing almost all of its original equipment and terminology. The relevant unit of history is therefore a changing configuration of people, methods, facilities, and questions. Chemistry supplied techniques for creating and analysing substances, physics offered models and measurement regimes, and materials research joined both to the behaviour of useful matter. Institutional boundaries among these fields were consequently porous from the beginning. A chemical institute might become a centre of spectroscopy, a physics institute might develop functional materials, and a metallurgy laboratory might depend on electron optics and computation. This porosity protected useful knowledge from becoming trapped within obsolete administrative classifications. The following examples show continuity as a capacity to cross disciplinary boundaries without losing the accumulated competence that made such crossings credible.

The rapid creation of specialised ČSAV institutes during the 1950s and 1960s gave these fields a durable institutional geography. State socialism supplied premises, posts, and strategic attention because chemistry, electronics, nuclear research, and advanced materials were tied to industrialisation, defence, energy, and technological prestige. This political sponsorship was never identical to scientific freedom, but it created concentrations of expertise that universities and sectoral laboratories could not easily reproduce. Institutes could maintain expensive equipment, employ dedicated technicians, and organise work over longer periods than an individual grant or teaching department permitted. They also absorbed groups that had originated in universities, industrial research, older learned institutions, and post-war state laboratories. The resulting organisations were not born fully formed. They grew through mergers, transfers, divisions, renamed departments, and the movement of researchers between Prague, Brno, Řež, and other centres. Their disciplinary maps reflected both

international scientific development and the planning priorities of the Czechoslovak state. Some programmes received disproportionate support because they promised industrial application, while others survived through the scientific authority of their leaders or their usefulness to neighbouring fields. The Academy thus accumulated not one coherent scientific estate but a network of partially overlapping capabilities. After 1989, that uneven inheritance could not simply be measured by the number of institutes that remained. Its value depended on whether historically assembled concentrations could function within competitive, internationally evaluated, and democratically governed science (*Franc & Mádlová, 2014*; *Provazník et al., 1998*).

In these disciplines, methods often provided a stronger line of continuity than research topics. Polarography generated traditions in electrochemical measurement that later supported studies of interfaces, energy storage, and molecular processes. Gas chromatography led towards increasingly complex systems of separation, detection, miniaturisation, and bioanalysis. Vacuum electronics supplied knowledge of beams, discharges, high voltage, and precision construction that could migrate into plasma physics. Metallography and mechanical testing evolved into multiscale investigations of fatigue, fracture, creep, and nanostructure. Polymer synthesis became inseparable from scattering, microscopy, surface science, and the modelling of self-organisation. Each transition changed the object of research while retaining a recognisable experimental grammar. Researchers learned how to make signals reliable, how to calibrate apparatus, how to distinguish an artefact from a phenomenon, and how to construct instruments unavailable commercially. Such knowledge was rarely captured in institutional statutes or published results. It resided in laboratory routines, workshop drawings, standard samples, informal teaching, and the memory of failed experiments. The survival of a discipline therefore depended on intergenerational transmission across occupational categories, not only on the retention of senior scientists. A successful post-socialist transformation preserved this methodological depth while releasing it from programmes whose original political or industrial rationale had expired.

The political history of these institutes was neither uniform nor irrelevant. Natural and technical sciences were often less exposed to direct doctrinal prescription than the humanities, because an experimental result could be defended through specialised evidence and practical utility. Nevertheless, appointments, travel, access to information, and institutional leadership remained vulnerable to political intervention. The reform atmosphere of the 1960s widened international contact and professional self-assertion, but the invasion of 1968 abruptly reversed many of those gains. The Institute of Physical Chemistry lost numerous members, including leading personalities, through emigration after the invasion (*Heyrovský Institute, 2026*). The Institute of Plasma Physics likewise records the departure of many important researchers in 1968, even after its Prague beam-plasma school had achieved international recognition (*Institute of Plasma Physics, n.d.*). These losses damaged teams, yet they did not erase the methods, instruments, and younger researchers that remained. Normalisation constrained careers and contacts while permitting significant work in areas that the state regarded as useful or politically manageable. It would therefore be misleading to describe the period as scientifically empty, just as it would be misleading to separate its achievements from unequal freedom and political selection. Different laboratories found different accommodations, and individuals within the same institute could combine professional ambition, private dissent, conformity, or institutional protection in different proportions. Continuity across 1968 was consequently real but morally and organisationally fractured.

The reforms after 1989 tested whether this fractured capital could survive without the command structures that had maintained it. Evaluation removed weak or politically compromised units, while severe reductions also threatened viable teams and technical services. Grant competition replaced much automatic programme allocation, and foreign cooperation became a normal rather than exceptional condition of research. Institutes had to explain their value to elected Academy bodies, external reviewers, ministries, universities, and increasingly mobile researchers. The transition was particularly difficult for experimental disciplines because old equipment depreciated faster than the knowledge required to replace it could be financed. At the same time, international openness allowed institutes to acquire instruments, software, and partnerships previously beyond their reach. Czech research output and international visibility subsequently increased markedly, although this improvement was uneven across fields and institutions (*Arnold et al., 2011*). The strongest institutes did not merely continue their former subjects. They used inherited competence to enter adjacent problems, to combine basic and applied work differently, and to reorganise teams around externally intelligible standards. Some institutional names changed to acknowledge broader programmes, while others retained historic names as a source of identity. What endured was less a fixed disciplinary boundary than a credible capacity for experimental and theoretical renewal. Chemistry, physics, and materials research thus became a central demonstration that post-socialist continuity could be selective without becoming amnesiac.

The chemical institutes formed an ecology whose internal differentiation was itself a historical asset. Organic and biochemical research, macromolecular science, inorganic chemistry, physical chemistry, analytical chemistry, and chemical process fundamentals addressed different stages in the creation and understanding of matter. Their separation allowed specialised schools and facilities to mature over decades. Their proximity within the Academy also encouraged movement across synthesis, characterisation, modelling, engineering, and application. No institute could command this entire chain of knowledge on its own. This division of labour protected Czech chemistry from dependence on a single celebrated speciality. When one industrial route declined, competence in catalysis, spectroscopy, electrochemistry, separation, or polymer physics could be recombined around a different problem. Institute autonomy further enabled research cultures to develop distinctive rhythms and standards. A physical-chemistry laboratory could organise itself around precise measurement and theory, while a process institute maintained pilot apparatus and engineering scale-up. An analytical institute treated instrument design as part of method development, whereas a polymer institute placed chemists and physicists under one roof. These differences generated productive friction as well as occasional competition for resources and authority. The continuity of Czech Academy chemistry therefore rested on a structured plurality rather than on one institutional lineage.

The institutional genealogy of the Heyrovský Institute shows how a celebrated method could become the foundation for a much wider scientific culture. The Institute of Polarography, founded in 1950 and incorporated into ČSAV two years later, combined theory, electrode processes, instrumentation, and analytical application. Its authority was reinforced when Jaroslav Heyrovský received the Nobel Prize in Chemistry in 1959 for the invention and development of polarography. The Institute of Physical Chemistry followed a related but broader path after its formation from an Academy laboratory in 1955. Many early members had trained through polarographic research, yet the programme expanded towards mass spectrometry, molecular collisions, quantum chemistry, adsorption, catalysis,

thermodynamics, kinetics, and several forms of spectroscopy. The two institutes therefore shared intellectual ancestry without becoming duplicates. Their eventual merger in 1972 created the J. Heyrovský Institute of Physical Chemistry and Electrochemistry (*Heyrovský Institute, 2026*). This was an administrative consolidation, but it also gathered complementary traditions of measurement, theory, and chemical reactivity. The Heyrovský name preserved symbolic continuity while the actual research portfolio moved far beyond the original dropping-mercury electrode. Such expansion illustrates how an institute can remain faithful to a scientific tradition without treating its founding technique as a permanent boundary. The deeper inheritance was a culture of analysing chemical processes through exact physical methods.

The 1972 merger cannot be understood apart from the rupture that preceded it. Emigration after 1968 removed researchers whose authority, contacts, and mentoring had helped sustain the Institute of Physical Chemistry. Rudolf Brdička's death in 1970 further weakened continuity of leadership. Amalgamation with the Institute of Polarography therefore occurred during a period of scientific loss and political recentralisation. It may be read partly as administrative compression under normalisation, but its effects were not reducible to that intention. The combined institute retained enough disciplinary breadth to support electrochemistry, catalysis, molecular science, spectroscopy, and theoretical chemistry over the following decades. Its movement to a new building in 1988 substantially improved working conditions and prepared a material base that could be modernised after the regime changed (*Heyrovský Institute, 2026*). Here continuity depended on an infrastructure created late in socialism but used under a different scientific order. The episode also warns against assigning a single political meaning to institutional mergers. A merger can eliminate autonomous centres, preserve threatened teams, create new combinations, or accomplish all three simultaneously. The historical outcome depends on how researchers subsequently use the organisational form. At the Heyrovský Institute, a politically constrained consolidation nevertheless carried diverse methods into the post-1989 period.

The changes beginning in 1990 converted that inheritance through unusually visible institutional surgery. An elected Scientific Council participated in management, and Rudolf Zahradník became director as the institute regained a large measure of autonomy. Staff numbers were reduced by almost half, while some fields were terminated in an effort to overcome the legacies of central planning. Competitive grants altered how projects were initiated and justified. Restrictions on foreign contact disappeared, allowing rapid participation in research networks and extensive international cooperation. Experimental and computing facilities were modernised at the same time (*Heyrovský Institute, 2026*). These measures produced genuine renewal, but they also reveal the human cost concealed by the language of efficiency. A field closed during restructuring could contain useful competence even when it lacked an immediately convincing programme. The institute's survival therefore involved deliberate forgetting alongside preservation. Its later strength rested on choices about which groups could translate their work into the new evaluative environment. The Heyrovský case makes disciplinary continuity visible as a sequence of selections rather than an unbroken ascent. Autonomy mattered because it enabled those selections to be argued within a scientific community rather than imposed solely by state planners.

The institute's most recent development confirms that continuity remains an unfinished process. On 1 July 2026, it adopted the shorter name Heyrovský Institute of the Czech Academy of Sciences. The change acknowledged that its programme had expanded well beyond the

conventional limits of physical chemistry. A new Department of Space Chemistry and Technology simultaneously extended work in spectroscopy and scientific instrumentation towards future space missions (*Heyrovský Institute, 2026*). At first sight, removing "Physical Chemistry" from the name might appear to weaken disciplinary memory. In practice, retaining Heyrovský while widening the designation distinguishes historical identity from present administrative taxonomy. The institute remains connected to electrochemistry and exact chemical measurement, yet it no longer needs to represent every new activity as a subdivision of an inherited label. This flexibility is a sign of continuity rather than its opposite. Institutions become brittle when names force living research to imitate the intellectual map of an earlier generation. They become amnesiac when novelty is presented as if no accumulated competence made it possible. The 2026 renaming negotiates between these dangers by preserving the eponym and releasing the programme. It demonstrates that institutional heritage can guide expansion without dictating its final form.

The Institute of Macromolecular Chemistry offers a different pattern, in which disciplinary hybridity was written into the organisation at its foundation. Czech polymer research had developed in several settings from the early 1940s, before ČSAV established the institute in 1959 under Otto Wichterle. Government support was encouraged by industrial work on polycaprolactam and by the success of the 1957 International Symposium on Macromolecules in Prague. The institute's new building, completed in 1963, provided a distinctive architectural and experimental home for the field. From the outset, polymer chemistry and polymer physics received comparable weight. Theory, fundamental investigation, technological development, and practical application were treated as connected activities rather than successive stages managed by separate institutions. Alkaline polymerisation of caprolactam and hydrophilic polymers for soft contact lenses became the most visible results of this arrangement (*Institute of Macromolecular Chemistry, n.d.*). Their historical importance, however, should not reduce the institute to two inventions or to the biography of its founder. Its durable achievement was the construction of a community able to move repeatedly between molecular design, physical characterisation, processing, and use. That community could reinterpret the social promise of polymers when markets, medical expectations, and environmental standards changed. It also ensured that applied success did not exhaust the institute's capacity for basic research. The balance created in the founding period consequently became an adaptable disciplinary culture rather than a fixed programme.

International meetings were particularly important carriers of that culture because they maintained a horizon wider than the political boundaries of socialist Czechoslovakia. Prague hosted major IUPAC symposia on macromolecules in 1957, 1965, and again in 1992. The Prague Meetings on Macromolecules, organised annually from 1967, created a more regular rhythm of scientific exchange (*Institute of Macromolecular Chemistry, n.d.*). Such events did not cancel restrictions on travel, censorship, or unequal access to Western laboratories. They nevertheless enabled researchers to compare methods, terminology, and emerging questions with an international community. A recurring conference can preserve a school of research even as its participants and favoured topics change. Younger scientists encounter disciplinary standards as lived practices rather than abstract rules, while senior researchers renew relationships that may later support visits, joint papers, or access to equipment. The meeting series also made Prague a recognised place within the geography of polymer science. After 1989, this inherited visibility could be converted into open cooperation without inventing an international identity from the beginning. The 1992 IUPAC symposium, held during political and

institutional transition, symbolically joined the earlier tradition to the new order. Continuity here was sustained less by an unchanged administrative programme than by repeated acts of convening a community. The institute survived transformation partly because it possessed a scientific public extending beyond its own payroll.

Contemporary macromolecular research demonstrates how that inherited balance can address questions that were scarcely imaginable in 1959. Synthetic chemistry now works with physics, biology, computation, and engineering to design polymer systems whose behaviour depends on structure across several scales. Biomedical materials include carriers, scaffolds, responsive systems, and surfaces intended to interact selectively with living tissue. Other programmes investigate polymers for electronics, energy-related functions, and advanced manufacturing. Environmental questions have meanwhile made durability, degradation, recycling, and the full life cycle of polymeric products central scientific problems (*Institute of Macromolecular Chemistry, n.d.*). These themes do not abandon the institute's earlier concern with useful materials. They alter the criteria by which usefulness is judged. A material may now be evaluated not only for performance and manufacturability but also for biocompatibility, reparability, resource demand, and fate after use. This expanded judgement requires teams that can connect molecular synthesis with physical measurement and social need. The old pairing of polymer chemistry and polymer physics thus persists within a wider multidisciplinary field. Its continuity lies in the capacity to formulate new material problems without severing the experimental and conceptual links that made earlier innovation possible. In this sense, the institute's tradition is a reusable way of organising inquiry rather than a collection of historically successful substances.

The Institute of Chemical Process Fundamentals illustrates continuity built from the joining of groups that already possessed their own traditions. Founded in 1960, it combined a department concerned with organic technology and organosilicon compounds with a laboratory specialising in chemical engineering. The former brought experience in heterogeneous catalysis, while the latter contributed work on distillation and extraction. A group studying thermodynamics and phase equilibria joined from the Institute of Physical Chemistry in 1964. The new organisation therefore assembled reaction, separation, and measurement into a common institutional setting. Its move to the Suchdol–Lysolaje campus that year allowed staff numbers and research programmes to expand. Reactor engineering, homogeneous catalysis, non-Newtonian fluids, sublimation, process control, and other themes developed alongside work connected with terephthalic acid and polyesters (*Institute of Chemical Process Fundamentals, n.d.*). This history shows why the boundaries between fundamental and applied chemistry were difficult to draw. Designing an industrial process demanded general knowledge of transport, phase behaviour, kinetics, and control. Conversely, practical production problems exposed phenomena from which new fundamental questions could be derived. The institute's title made "fundamentals" the intellectual centre of a technological field. Its original groups consequently bequeathed not only subjects but a habit of extracting general principles from complex processes.

Post-1989 reorganisation tested whether that habit could survive after the planned industrial environment that had supported it receded. Staff at the institute fell by about half, and a dispersed multidisciplinary portfolio was integrated into a more concentrated structure. The Czech name was shortened, and the English designation became the Institute of Chemical Process Fundamentals. In 2007 the institute acquired the legal form of a public research institution, with corresponding changes in its management and scientific bodies (*Institute of*

Chemical Process Fundamentals, n.d.). The reduction was severe, but the surviving capabilities proved applicable to problems formed by a different political economy. Separation science and catalysis could be redirected towards cleaner production, waste conversion, and more selective use of resources. Thermodynamics and transport remained essential wherever substances had to be transformed efficiently and safely. Research on aerosols connected chemical engineering with atmospheric science, health, and climate observation. Energy technologies and circular-economy questions similarly joined fundamental process knowledge to public priorities (*Institute of Chemical Process Fundamentals, n.d.*). The continuity is therefore neither the persistence of a socialist industrial plan nor a retreat into chemically pure theory. It is the reuse of process thinking in settings where environmental effects, international standards, and competitive funding shape the definition of a worthwhile problem. The institute retained its identity because an analytical approach to transformation could itself be transformed.

The Institute of Analytical Chemistry in Brno supplies an especially clear example of a research tradition expanding through instruments and method combinations. Its history began in 1956 when a small group from the Institute for Petroleum Research became the ČSAV Laboratory for Gas Analysis. Jaroslav Janák led the group and later the institute until 1980. Gas analysis and gas chromatography provided the initial centre of competence. Liquid chromatography, electromigration, field-flow fractionation, supercritical-fluid methods, and environmental analysis were added as analytical problems became more complex. The institute acquired international recognition not only by applying available techniques but also by designing apparatus for analytical separations. Researchers created couplings in which a separation method fed directly into a detection technique (*Institute of Analytical Chemistry, n.d.*). This combination demanded chemical judgement, mechanical ingenuity, electronics, signal interpretation, and exact control of flow. It therefore generated a local engineering culture within analytical chemistry. Moving to larger premises in 1991 improved the conditions for continuing that culture just as institutional funding became uncertain. Later work in mass spectrometry, miniaturised instrumentation, proteomics, microfluidics, and nanomaterials preserved the emphasis on constructing reliable paths from a sample to interpretable information. The object being analysed changed, but the institute's characteristic interest in how measurement systems are assembled remained recognisable.

The Brno institute also shows that continuity after 1989 could be achieved by receiving knowledge from an organisation that did not survive intact. Budget reductions in 1992 led to the dissolution of the Institute of Nuclear Biology and Radiochemistry in Prague. Its trace inorganic analysis group, however, was transferred to the Institute of Analytical Chemistry as a detached workplace. Atomic spectrometry thereby entered a programme that had previously concentrated on analytical separations (*Institute of Analytical Chemistry, n.d.*). The transfer did not preserve the dissolved institute as an administrative entity. Nor did it leave the incoming team untouched, because its methods acquired new neighbours and possible applications. It preserved a specific concentration of expertise by placing it within an organisation whose methodological culture could accommodate it. This is institutional recombination rather than simple survival. It reminds us that the number of institutes closed during transformation is an incomplete measure of scientific loss. Some closures dispersed groups beyond recovery, while others redistributed capabilities into settings where they could be renewed. The distinction depends on whether people, equipment, records, and opportunities to train successors moved together. In analytical chemistry, the addition of trace-element work

broadened the institute's scope without erasing its identity. The episode is therefore a small but revealing case of inherited capital being conserved through a changed institutional boundary.

The Institute of Organic Chemistry and Biochemistry represents another chemical trajectory, although its best-known post-socialist success should not obscure the collective foundations beneath it. Its research culture joined synthetic organic chemistry, natural substances, medicinal questions, and biochemical mechanisms across the ČSAV and AV ČR periods. Programmes that later acquired commercial and therapeutic significance depended on long-established capacities for synthesis, purification, structural analysis, and biological cooperation. After 1989, international partnerships and intellectual-property arrangements gave some of this work an economic scale that was unusual within the Academy. Royalty income then made possible substantial reinvestment in research, facilities, and new teams (*Institute of Organic Chemistry and Biochemistry, n.d.*). This pathway differed from that of institutes whose transition was dominated by contraction and reliance on ordinary public grants. It should therefore be treated as a revealing exception rather than a universal model. Its continuity nevertheless depended on the same unglamorous elements found elsewhere: laboratory craft, doctoral training, technical services, archives of compounds, and the credibility needed to form external partnerships. Commercial value appeared at the end of a long chain of publicly sustained knowledge. The institutional lesson is not that every chemical institute ought to finance itself through patents. It is that inherited scientific capital can yield unforeseen forms of value when an institute retains both specialist depth and authority over how returns are used. In this case, autonomy enabled economic success to reinforce rather than displace a fundamental research mission.

Taken together, the chemical institutes reveal a division of labour that no single organisational chart could fully represent. The Heyrovský tradition centred on exact physical investigation of chemical processes. Macromolecular chemistry joined synthesis to the physics and use of polymer materials. Chemical process research linked transformations at laboratory scale to reactors, separations, energy flows, and environmental systems. Analytical chemistry constructed the means by which complex substances and samples could be separated, identified, and quantified. Organic chemistry and biochemistry connected molecular invention with living mechanisms and therapeutic possibilities. These profiles overlapped through spectroscopy, catalysis, computation, surface science, and instrument construction. Their overlap was productive because each institute also maintained a sufficiently distinctive culture to ask different questions of shared methods. Post-1993 competition could have encouraged isolation or duplication, yet cooperation and access to common facilities increasingly made boundaries permeable. The chemical section of the Academy consequently functioned as an ecosystem of capabilities rather than a set of self-contained establishments. Its resilience depended on diversity: political or economic change did not threaten every research style in precisely the same way. Continuity at this scale was an emergent property of specialised institutions that could exchange people and techniques without becoming interchangeable.

Physics acquired a similarly differentiated institutional landscape, but its dependence on large apparatus made transformations especially visible. The direct predecessor of today's Institute of Physics was founded on 1 January 1954 during the early expansion of ČSAV. Its creation brought sustained institutional support to fields that required expensive measurement, long technical preparation, and collective experimental work. Solid-state research, particle and

nuclear questions, optics, and plasma science subsequently developed across several Academy organisations rather than within one central physics establishment. Groups moved or generated new institutes as technologies and political priorities changed. This branching should not be mistaken for fragmentation alone. Specialisation allowed teams to develop workshops, detectors, sources, sample-preparation methods, and theoretical competence suited to particular regimes of matter. At the same time, the Institute of Physics retained an unusually broad portfolio and became a point of connection among subfields. Its history thus contains both institutional concentration and disciplinary differentiation (*Institute of Physics of the Czech Academy of Sciences, 2024*). What endured was not a single research programme but an Academy capacity to support physics across scales, from elementary particles to the properties of solids. The following trajectories show that this capacity survived because apparatus, methods, and teams could be reorganised without treating every organisational boundary as permanent. Czech physics entered the AV ČR era through a landscape already formed by decades of such internal branching.

The present Institute of Physics embodies that breadth through a portfolio extending from elementary particles and astroparticle questions to condensed matter, solid-state physics, plasma, optics, and high-power laser science. These are not simply departments placed under one legal roof. They share precision engineering, cryogenics, vacuum practice, computation, detector development, sample preparation, and the interpretation of weak or complex signals. A detector devised for fundamental physics may stimulate new sensor technologies. A method for growing or characterising crystals may become relevant to electronics, optics, energy conversion, or instrumentation. Theoretical modelling travels even more readily across the boundaries of named programmes. Such exchanges give a large institute advantages that cannot be captured by counting its subfields. With more than eleven hundred employees, the institute can sustain specialised technical occupations and long experimental time horizons that smaller units often struggle to protect (*Institute of Physics of the Czech Academy of Sciences, n.d.*). Size also brings risks of hierarchy, internal distance, and competition between expensive programmes. Continuity therefore depends on management that treats shared capabilities as intellectual infrastructure rather than merely as services. The institute's disciplinary culture remains coherent only when researchers can recognise how apparently remote projects contribute to a common economy of measurement and explanation. Its survival from ČSAV to AV ČR is consequently meaningful because breadth was repeatedly reorganised into interaction rather than preserved as an administrative inventory.

Large facilities and international experiments changed the scale on which this inherited economy could operate after the end of state socialism. Earlier ČSAV physics often depended on domestically constructed or adapted apparatus because access to Western equipment and collaborations was restricted. This constraint fostered ingenuity, but it could also isolate researchers from rapidly advancing experimental standards. Open borders allowed Czech teams to participate routinely in multinational collaborations and to contribute components, software, diagnostics, and analysis rather than observe from the periphery. Membership in such projects gave younger physicists a way to acquire experience abroad without permanently abandoning their home institution. New facilities in Czechia likewise attracted foreign users and embedded Academy laboratories in European research networks. These developments required investment, project management, and standards of quality assurance that differed from the organisational habits of many socialist-era laboratories. They did not, however, replace local traditions with imported science. International credibility rested on the

very capacities in instrument building, solid-state knowledge, optics, and theory that earlier institutes had accumulated. Evaluation and competitive funding selected which capacities could be translated into the new scale of cooperation (*Arnold et al., 2011*). The historical danger is to identify continuity with the names of costly machines, whose operational lives are necessarily finite. A facility carries a research tradition only when its design, use, maintenance, data, and successor projects reproduce a capable community. Physics therefore demonstrates most starkly that material continuity lies in organised competence, not in permanent attachment to a particular apparatus.

The history of the Nuclear Physics Institute at Řež makes this distinction especially clear because one institution was divided according to different relationships between basic and applied research. A nuclear institute was founded within ČSAV in 1955 and later bore the name Nuclear Research Institute. The expansion of nuclear power encouraged its separation in 1972. The largest and more application-oriented part passed to the Czechoslovak Atomic Energy Commission as the Nuclear Research Institute. A second major part, focused principally on basic research, remained within ČSAV as the Nuclear Physics Institute. When the applied organisation was privatised in 1992, the Academy institute followed a different route and entered AV ČR in 1993. The former Institute of Radiation Dosimetry was then attached to it as a Prague branch in 1994, while a neutron-activation group arrived from the Czech Environmental Institute (*Nuclear Physics Institute, n.d.*). The sequence demonstrates that the transformation of scientific capital began well before the Velvet Revolution. Administrative boundaries had already separated energy-sector research from a basic-physics community, even though both continued to use related sites, technologies, and expertise. Privatisation and Academy continuity in the early 1990s intensified that divergence without making the two worlds independent. Řež remained an environment in which public research, specialised services, industrial needs, and large technical systems had to coexist. The institute survived because its basic mission was institutionally identifiable, yet it continued to depend on relationships created by the earlier nuclear complex.

The Nuclear Physics Institute's present range shows how a fundamental specialisation can generate connections far beyond its nominal discipline. Experimental and theoretical nuclear physics remain central, including heavy-ion and intermediate-energy research. Neutron diffraction and scattering reveal the structure and dynamics of materials. Ion beams and activation methods permit elemental analysis at concentrations or spatial scales inaccessible to many conventional techniques. Radiation dosimetry links physical measurement to medical treatment, occupational protection, and environmental safety. Radiopharmaceutical research connects accelerator competence with chemistry and clinical practice. Nuclear analytical methods can also contribute to ecology, archaeology, and the investigation of cultural objects (*Nuclear Physics Institute, n.d.*). These applications do not make the institute an incoherent collection of services. They arise from a common command of radiation, nuclear reactions, detectors, standards, and the quantitative interpretation of interactions between particles and matter. The integration of dosimetry and analytical groups during the 1990s strengthened this methodological core through institutional recombination. Participation in international particle experiments extended the same competence into collaborations much larger than the institute itself. Continuity therefore consists in a nuclear-physics language capable of answering questions posed by materials scientists, physicians, environmental researchers, and archaeologists. The Řež trajectory illustrates how a politically sensitive and

technologically strategic field can acquire a diversified civil scientific identity without denying its institutional past.

The Institute of Plasma Physics originated through another migration of technical knowledge. In 1959, approximately fifty employees from an industrial research organisation in vacuum electrical technology formed the ČSAV Institute of Vacuum Electronics. The institute received its present disciplinary designation in 1963 as research shifted towards the behaviour and control of plasma. Vacuum systems, accelerators, high voltage, electron beams, and precision engineering gave the new programme a material foundation. A recognised Prague school of beam–plasma interaction developed during the 1960s, but emigration after 1968 removed many important researchers. The loss interrupted personal lineages without ending experimental and theoretical plasma work. The TM-1-MH tokamak began operating in 1977 and was reconstructed locally as CASTOR in 1983–1984. A water-stabilised plasma-torch group joined from an external enterprise in 1981, and a materials-engineering group followed in 1985 (*Institute of Plasma Physics, n.d.*). These additions widened the institute beyond fusion research. Plasma became both an object of fundamental investigation and a tool for modifying surfaces, creating coatings, generating radiation, or driving chemical processes. The institute's history therefore joined several cultures that used common physical phenomena for different ends. Its identity survived because beam physics, fusion, plasma chemistry, and materials engineering could share technical competence without being forced into a single application.

The post-1989 transformation of the Plasma Physics Institute was severe but also unusually generative. Between 1990 and 1992, staff numbers were reduced by half, management was simplified, and greater emphasis was placed on scientific outputs. At the same time, researchers participated in European studies connected with the proposed ITER fusion reactor. A formal association agreement with EURATOM followed in 1999, giving Czech plasma research a more stable position within European fusion cooperation. The transfer of the Asterix IV laser system from Germany, agreed in 1997, led to the operation of the Prague Asterix Laser System in 2000 as a joint centre of the Plasma Physics and Physics institutes. The British COMPASS tokamak was accepted in 2005, transported to Prague in 2007, and brought into experimental operation soon afterwards (*Institute of Plasma Physics, n.d.*). These transfers might appear to be simple acquisitions of foreign apparatus. In reality, dismantling, moving, rebuilding, diagnosing, and scientifically repurposing such systems demanded strong local teams. Imported machines became Czech research environments through domestic adaptation and the training of new users. Their value lay as much in the continuity of diagnostic and engineering skills as in their technical specifications. Later successor projects grew from experience accumulated through operating these systems rather than from an institutional blank slate. The institute thus converted international circulation of equipment into intergenerational continuity of expertise.

Plasma research also demonstrates why disciplinary continuity cannot be read from a sequence of institute names alone. Fusion experiments investigate confinement, turbulence, heating, and interactions between plasma and reactor materials. Laser-produced plasma connects high-energy-density physics with radiation sources and extreme states of matter. Plasma chemistry uses discharges to transform gases and liquids, destroy pollutants, or generate reactive species. Materials engineers employ plasma spraying and related processes to create coatings whose microstructure determines performance. Optical design and diagnostics translate plasma-generated signals into measurable information and can support scientific instruments beyond the original field. The institute's present divisions in fusion

plasma, laser plasma, plasma chemistry and materials, and specialised optics express this accumulated plurality (*Institute of Plasma Physics, n.d.*). Each branch has its own external community, funding opportunities, and standards of achievement. Their coexistence is justified by shared physical principles and a long culture of constructing demanding equipment. It also reduces institutional vulnerability because no single technological promise bears the whole burden of relevance. The move from vacuum electronics to plasma physics was therefore not one historical replacement followed by stability. It initiated a continuing process in which a common command of ionised matter generated new disciplinary edges. This is continuity through branching, held together by methods and engineering memory.

The Institute of Photonics and Electronics provides an equally instructive case of renaming, contraction, and the absorption of a displaced laboratory. Established by a ČSAV decision in 1953, it began work in 1954 and was formally founded in 1955 as the Institute of Theoretical Radio Engineering before becoming the Institute of Radio Engineering and Electronics. Specialists arrived from industrial research in stable oscillators and statistical radio engineering, establishing an early bridge between Academy science and technological practice. Work on precise time, radio propagation, semiconductors, masers, lasers, optical communication, and signal processing successively altered the institute's centre of gravity. Optical-fibre research began during the late 1970s and developed through cooperation with the Institute of Chemistry of Glass and Ceramic Materials. After 1989, an elected Scientific Council participated in management, grant funding expanded research freedom, and the programme moved more strongly towards basic research. Although the institute passed evaluation in 1992, it still reduced its workforce by one third. In 1993, the Optical Fibre Technology Laboratory from the former glass and ceramics institute joined it, bringing material research on communication fibres, fibre lasers, and chemical sensing (*Institute of Photonics and Electronics, 2026*). This transfer preserved a team while changing the institutional balance of the receiving organisation. The later name "Institute of Photonics and Electronics" acknowledged that optics had become central without erasing the electronic and measurement traditions from which it grew. Subsequent evaluation again reorganised teams, discontinuing some topics while merging or creating others. Its trajectory shows that institutional continuity may be most faithful when an organisation repeatedly changes its description of itself.

Materials research in Brno offers a quieter but equally durable form of continuity. A ČSAV Laboratory for the Study of the Properties of Metals was founded in 1955. It became the Institute of the Properties of Metals in 1963 and the Institute of Physical Metallurgy in 1969. The present name, Institute of Physics of Materials, was adopted in 1994, widening the declared field beyond traditional metallurgy (*Institute of Physics of Materials, n.d.*). Research on fatigue, creep, brittle fracture, phase structure, thermodynamics, and electrical or magnetic properties created long experimental series and distinctive schools. The persistence of fatigue studies from the 1960s is especially revealing because cyclic failure remains a practical and theoretical problem even as alloys, testing regimes, and models change. Electron microscopy, computational modelling, and multiscale analysis have transformed how mechanisms are observed and explained. The institute now studies advanced high-temperature systems, additively manufactured matter, and non-metallic materials alongside established metallic subjects (*Institute of Physics of Materials, n.d.*). In 2025, a new electron-microscopy centre with five instruments extended an important Brno tradition and created open facilities for researchers and students (*Czech Academy of Sciences, 2025*). This investment did not merely

replace old microscopes with more powerful ones. It connected inherited expertise in microstructure to a regional network of universities, scientific institutes, and instrument manufacturers. The Brno case demonstrates continuity as cumulative precision: new scales of observation deepen questions about material behaviour that earlier generations made institutionally durable.

Thus, chemistry, physics, and materials research show that scientific continuity within AV ČR is neither a museum of ČSAV achievements nor a story of complete rebirth after 1989. It is the capacity of specialised communities to preserve demanding knowledge while changing the organisations and purposes through which that knowledge is used. Some institutes retained their legal and symbolic identity, whereas others inherited groups from dissolved or divided establishments. Some traditions travelled through recurring conferences, and others through workshops, sample collections, diagnostic systems, or long experimental series. Political intervention and emigration fractured personal lineages, yet the normalisation decades also contained substantive work whose methods later supported renewal. The post-socialist transition restored autonomy and international exchange while imposing evaluations, staff reductions, and hard choices about which programmes would continue. After 1993, competitive funding and European cooperation did not abolish inherited scientific capital but exposed its strengths and weaknesses to new tests. Chemistry proved resilient through an ecology joining synthesis, physical measurement, analysis, process thinking, and biological application. Physics preserved breadth by combining local instrument-making with participation in transnational experiments and the adaptation of transferred facilities. Materials research linked long-standing questions of failure and structure to new microscopy, modelling, and fabrication. Across all three domains, the decisive inheritance was not any single discovery or machine but a disciplined ability to create reliable knowledge collectively. Their continuity is therefore best understood as a living institutional competence that turns remembered practice into questions the founding generation could not have foreseen.

2. Biology, Medicine, and Environmental Research

Biology, medicine, and environmental research make the continuity of Academy science visible through living systems that cannot be reconstructed at will. Their institutions inherited organisms, habitats, tissue preparations, long observation series, and forms of experimental care as well as buildings and instruments. Living systems introduce temporalities that differ from those of administrative reform. A culture collection survives only through repeated cultivation, verification, and protection against contamination. A field station becomes scientifically valuable when comparable observations are made there across many seasons. A microbial strain carries an experimental history that may be lost if its provenance and phenotype are detached from laboratory practice. An animal line embodies breeding decisions, health controls, and accumulated knowledge of variation. A herbarium sheet or preserved parasite remains useful because earlier specialists identified, labelled, and situated it within a collection. These assets are material, but their meaning depends on communities capable of interpreting them. For that reason, the replacement of ČSAV by AV ČR in 1993 did not create biological research anew. The transition changed authority, funding, international access, and evaluation while leaving researchers responsible for organisms and records whose scientific lives crossed the political boundary. The resulting history is best understood

as transformation through stewardship rather than either passive survival or complete institutional rebirth.

Continuity in the life sciences was therefore distributed among several kinds of scientific capital. Laboratories preserved protocols for cultivation, dissection, staining, microscopy, electrophysiology, and biochemical analysis. Farms, greenhouses, aquaria, growth chambers, and germ-free animal facilities maintained conditions in which observations could be repeated. Collections retained specimens that allowed later taxonomic revisions and molecular comparisons. Clinical relationships supplied medically meaningful questions and access to expertise that a non-clinical Academy could not produce alone. Field programmes connected experimental reasoning with landscapes, reservoirs, forests, soils, and populations exposed to changing environments. Journals and seminar series provided durable forums in which disciplinary standards were articulated. Technical staff often ensured that sensitive systems survived reorganisations more effectively than statutes did. Senior scientists transmitted judgement about normal variation, anomalous signals, and the limits of particular models. Younger researchers brought molecular, computational, and imaging methods that altered what inherited materials could reveal. No single component constituted a research tradition by itself. Continuity arose when several components remained connected long enough to generate new questions. In this sense, biological capital was less a stock inherited in 1993 than an ecology requiring constant reproduction.

The three domains considered here also operated on different but increasingly connected scales. Molecular genetics examined regulatory mechanisms within cells and genomes. Experimental medicine translated such mechanisms into models of injury, development, immunity, toxicity, and repair. Ecology followed interactions among organisms and environments over spaces ranging from soil aggregates to entire catchments. These levels were never sealed from one another. Microorganisms could be industrial resources, immune partners, pathogens, or drivers of carbon and nutrient cycles. Plant physiology could illuminate cell signalling while also informing crop resilience and ecosystem responses to drought. Animal models linked genetics and physiology to human disease, yet the same species could be studied as members of wild populations. Environmental exposures connected atmospheric or landscape change to toxicology and public health. The rise of genomics and high-resolution imaging did not abolish organismal or field biology. It made the reliability of older specimens, models, and time series even more important by adding new analytical layers. Conversely, molecular results acquired public meaning when interpreted through bodies, populations, and environments. Academy institutes supplied organisational spaces in which these scales could meet without being reduced to a single professional mission. Their continuity should consequently be judged by the quality of such connections, not by an unchanged list of research topics.

Political regimes nevertheless shaped which connections were encouraged and which careers could sustain them. Socialist planning favoured programmes linked to agriculture, public health, industrial microbiology, and the management of natural resources. It also created institutes large enough to preserve specialised facilities and support long-term work outside the university timetable. These advantages coexisted with party control over directors, travel, recruitment, and access to international scientific exchange. Genetics carried additional ideological memories because its legitimacy in the Soviet bloc had earlier been threatened by Lysenkoism, even though Czechoslovak researchers subsequently rebuilt strong experimental schools. The reform climate of the 1960s widened professional contacts and allowed several

biological institutes to gain international visibility. The invasion of 1968 then removed leaders, encouraged emigration, and narrowed foreign communication. Normalisation did not stop laboratory and field research, but it distributed opportunity according to political as well as scientific criteria. Some teams protected valuable programmes through practical usefulness or the authority of their remaining members. Others survived only in fragments that later had to be reassembled or redirected. The institutional histories of biology and medicine therefore preserve both achievement and enforced absence. Any account of continuity that records results but ignores these unequal conditions would mistake endurance for institutional innocence (*Franc & Mádlová, 2014*).

After 1989, restored autonomy altered the moral and organisational framework of work with living systems. Researchers could travel, teach, recruit internationally, and form partnerships with hospitals and universities without the previous political barriers. At the same time, institutes faced evaluation, staff reduction, competitive grants, and the need to justify programmes in internationally legible terms. Biomedical groups increasingly worked within formal regimes of research ethics, informed consent, biosafety, and animal welfare. European rules on the protection of animals used for scientific purposes codified replacement, reduction, refinement, project authorisation, and standards of care across member states (*European Parliament & Council of the European Union, 2010*). Compliance demanded more than new paperwork because facilities, veterinary supervision, experimental design, and professional responsibility all had to change. Molecular methods made some experiments more precise while generating new requirements for data management and reproducibility. Environmental research gained public urgency as pollution, biodiversity loss, drought, and climate change moved from specialist concerns into democratic policy disputes. International integration created access to infrastructures and collaborative datasets that no Czech institute could maintain alone. Yet participation depended on the credibility of local collections, model systems, and monitoring programmes accumulated over previous decades. The post-socialist order thus transformed inherited practices rather than simply replacing them with Western ones. Its strongest institutions combined greater openness and ethical accountability with the patient custodianship on which biological knowledge already depended.

The genealogy of the Institute of Molecular Genetics begins with a research school rather than with its present name. From 1953, Milan Hašek headed the Department of Experimental Biology and Genetics within the Institute of Biology of ČSAV. His work on immunological tolerance placed transplantation, development, and the recognition of biological self within a common experimental field. In 1962, the department became the independent Institute of Experimental Biology and Genetics, with Hašek as director. The institute gathered Pavol and Juraj Iványi, Jan Klein, Tomáš Hraba, Ivan Hilgert, Věra Hašková, Alena Lengerová, and other researchers associated with what became known as the Czechoslovak immunogenetic school. Their collective identity mattered because complex breeding experiments and immunological assays required shared standards over time. Work on retroviruses under Jan Svoboda added another programme in which experimental systems could connect tumour biology with fundamental questions of heredity and infection. The school was therefore plural before molecular genetics became its official organising language. It joined organisms, cells, immune reactions, viruses, and inheritance through carefully controlled experiments. Recognition abroad gave its members a community of comparison beyond Czechoslovak institutions. The institute's authority was not merely the sum of eminent biographies but the

capacity to train researchers within an exacting experimental culture. That capacity formed the human and methodological capital later carried into AV ČR (*Institute of Molecular Genetics, n.d.*).

The invasion of 1968 exposed how quickly a scientific school could be damaged without being wholly erased. Many promising younger researchers emigrated, and Hašek was removed from the directorship. Foreign contacts were sharply restricted, severing collaborations and reducing the circulation of people and ideas. The losses were particularly serious because immunogenetics depended on rapidly developing international debates and shared experimental resources. Yet researchers who remained continued work in immunology, virology, genetics, and tumour biology. In 1976, the institute was joined with several biochemical laboratories from the Institute of Organic Chemistry and Biochemistry and received the name Institute of Molecular Genetics. This merger reflected administrative power, but it also brought biochemical competence into closer contact with established biological questions. Molecular biology became the principal orientation while immunogenetics, retrovirology, and tumour immunology persisted by moving towards molecular levels of explanation. Josef Říman's leadership linked the new programme with work on reverse transcription, while Jan Svoboda's virogeny research and viral-genome studies sustained internationally significant lines. Continuity here did not mean that the flourishing school of the 1960s escaped normalisation intact. It meant that questions, model systems, and experimental judgement survived a severe break in personnel and freedom. The later institute inherited both the scientific productivity of the earlier school and the memory of opportunities politically foreclosed (*Institute of Molecular Genetics, n.d.*).

After 1989, the Institute of Molecular Genetics could convert that constrained inheritance into a broader institutional platform. Traditional subjects were pursued with rapidly expanding molecular approaches, and new groups entered fields shaped by genomics, cell biology, and modern immunology. Jan Svoboda and Václav Pačes provided leadership during the first phases of this reorientation. A new building begun on the Krč campus in 2004 enabled most employees to work together from 2007, ending a long history of physical dispersion. Spatial concentration mattered because shared facilities and daily contact made collaboration less dependent on personal travel between sites. The opening of BIOCEV in Vestec in 2015 created another form of extension rather than a simple move. Several institute groups entered a joint Academy–university environment, while the Czech Centre for Phenogenomics supplied systematic capacity for linking genomic variation to organismal traits. Core infrastructures in imaging and chemical biology further changed the economy of experimentation. They made costly methods available as professional services and required staff whose careers centred on reliability, training, and method development. Such facilities can appear impersonal compared with the charismatic schools of the 1960s. In practice, they institutionalise cooperation and allow knowledge to survive beyond one laboratory head. The institute's post-socialist renewal therefore joined historical questions about genes, immunity, viruses, and cancer to a shared technical architecture suited to international biology (*Institute of Molecular Genetics, n.d.*).

The deeper continuity of molecular genetics lies in the repeated reinterpretation of biological models. Immunological tolerance initially became visible through transplantation experiments and the developmental timing of exposure. Later molecular work could identify receptors, signalling pathways, genomic sequences, and regulatory networks underlying related phenomena. Retrovirus studies moved from patterns of tumour transmission towards reverse transcription, proviral integration, and the molecular organisation of viral genomes. Tumour

immunology similarly expanded from observable immune reactions to cellular subsets and molecular checkpoints. Each shift changed the explanatory vocabulary without rendering the earlier experimental tradition irrelevant. Historical models supplied phenotypes against which new molecular tools could be tested. Archived samples, animal lines, and published protocols preserved comparisons that prevented novelty from becoming detached from biological behaviour. The institute also learned that a research school cannot depend indefinitely on reproducing a founder's agenda. Its continuity required younger leaders to formulate questions that international peers recognised as current. Shared infrastructures redistributed authority because expertise in imaging, phenotyping, and screening could originate outside conventional laboratory hierarchies. This combination of remembered models and changing technical citizenship distinguishes institutional continuity from intellectual conservatism. The Institute of Molecular Genetics endured because it treated inheritance as a repertoire for investigation rather than a canon to be defended.

The Institute of Microbiology developed from an equally strong but differently organised founding programme. Ivan Málek created a microbiological working group at the Faculty of Medicine in Hradec Králové in 1948. The group became the microbiology department of the Central Institute of Biology in 1950 and moved to Prague after the establishment of ČSAV. In 1962, it gained independence as the Institute of Microbiology, and in the following year it entered the new biological campus at Krč. Málek connected fundamental microbiology with the development of drugs, domestic antibiotic research, and the controlled cultivation of microorganisms. The first technique of continuous microbial culture developed at the institute enabled metabolism to be studied under sustained and reproducible conditions. This methodological achievement exemplified the Academy's ability to maintain apparatus and teams across experiments longer than routine teaching laboratories often allowed. The discovery of mucidin, an antibiotic that entered human and veterinary practice, demonstrated the practical reach of such competence. Immunology, microbial genetics, soil microbiology, and technical applications subsequently widened the institute's profile. Its research objects were small, but its institutional requirements were extensive because strains, media, sterile technique, fermenters, and quality controls had to be continuously maintained. The move to Krč consolidated this material culture and situated it beside other biomedical institutes. Microbiology thus became a bridge between basic knowledge, medicine, industry, and environment from the beginning (*Institute of Microbiology, n.d.*).

Scientific publishing gave that bridge an international public even when movement across political borders was difficult. The institute's journal first appeared in 1956 under the title *Czechoslovak Microbiology*. In 1959, it became the fully English-language *Folia Microbiologica*. The choice of language opened domestic work to readers beyond the socialist bloc and invited foreign authors into a Prague-centred forum. A journal could not eliminate restrictions on travel or access to equipment. It could nevertheless preserve common terminology, peer judgement, and awareness of research developing elsewhere. More than four thousand articles from many countries appeared during its first fifty years. The periodical also remained closely associated with the Czechoslovak Society of Microbiology, linking an Academy institute to the wider professional community. Editorial work created continuity through routines of review, translation, correspondence, and bibliographic memory. Later integration with an international commercial publisher changed distribution without erasing the journal's institutional ancestry. The continuing title supplied a visible line across ČSAV, AV ČR, and repeated changes in scientific fashion. In microbiology, where techniques and classifications move rapidly, such a

forum helped an inherited community remain internationally intelligible (*Institute of Microbiology, n.d.*).

The gnotobiological programme at Nový Hrádek shows an even more concrete form of temporal depth. Jaroslav Šterzl launched the dedicated programme in 1962 to investigate organisms whose microbial status was experimentally defined. Germ-free and deliberately colonised animals made it possible to separate host processes from the effects of particular microbes. Maintaining these models required protected breeding, specialised isolators, careful diet and sterilisation, and exceptional technical discipline. The scientific return accumulated slowly because reliable colonies and comparable developmental observations could not be improvised for a single short grant. Early work concentrated on immune ontogeny and the consequences of microbial exposure. Later generations connected the same experimental logic to mucosal immunity, tolerance, inflammation, allergy, atherosclerosis, and models of human disease. The rise of microbiome science gave this long-standing facility a new conceptual environment. Sequencing and omics technologies could describe microbial communities in unprecedented detail, but controlled colonisation remained essential for testing causal relationships. A programme once peripheral to fashionable biomedical language thus became newly central without changing its foundational question about relations between host and microbes. Its six decades of continuity depended on technicians and animal-care staff as much as on theoretical reframing. Nový Hrádek demonstrates how an apparently specialised facility can preserve a future scientific option that no administrator could fully predict in 1962 (*Tlaskalová-Hogenová et al., 2026*).

The Institute of Physiology preserved a different family of models centred on integrated bodily function. Zdeněk Servít and Arnošt Gutmann led a neurophysiology department within the Central Biological Institutes from 1950. Jiří Křeček's group on ontogenetic development joined them in the new Biological Institute of ČSAV in 1952. Their success supported the creation of an independent Institute of Physiology on 1 January 1954. Otakar Poupa's group on adaptation of the organism to its environment expanded the structure in 1956. These foundations connected nervous function, development, and adaptation rather than treating physiology as a single organ-based subject. Experimental animals, electrophysiological preparations, behavioural protocols, and developmental series created a common methodological environment. In 1980, the institute replaced its four departments with sectors for neuroscience and developmental physiology, later adding molecular and cell physiology. The reorganisation acknowledged changing scales of explanation while preserving several established lines. After November 1989, the sectors were abolished and laboratories became directly subordinate to the director. This flatter arrangement gave research groups clearer responsibility within the new system of competitive projects and evaluation. The institute's continuity therefore lay in enduring physiological questions that survived substantial changes in its internal administrative map (*Institute of Physiology, n.d.*).

Helena Illnerová's career makes the connection between laboratory tradition and institutional renewal unusually visible. She began work at the Institute of Physiology in 1961 and helped establish chronobiology as a durable Czech research field. Her investigations showed how the mammalian brain's biological clock responds to changing day length across the seasons. The result joined neurophysiology, environmental timing, and organismal adaptation within a precise experimental programme. Chronobiology required regular observations at inconvenient hours and careful control of light, season, and animal conditions. Its continuity therefore depended on collective discipline rather than on conceptual brilliance alone. The

programme also illustrates how a question developed within socialist-era physiology could gain wider significance as circadian biology expanded internationally. Illnerová later participated directly in the transformation of the Academy and served as its president from 2001 to 2005. Her trajectory joined scientific authority to the democratic governance of the institution. It did not imply that research excellence automatically produced administrative wisdom, but it showed how credibility earned in a laboratory could support wider academic leadership. The Institute of Physiology continued to combine neuroscience, cardiovascular and metabolic research, development, and cellular mechanisms through laboratories backed by common services. Here a disciplinary culture of controlled whole-organism inquiry supplied both a research inheritance and one of the people who shaped AV ČR itself (*Institute of Physiology, n.d.*).

The Institute of Experimental Medicine arose where Academy research met clinical disciplines without becoming a hospital institution. It was formally founded in 1975 by bringing together four medical laboratories established roughly two decades earlier. Three had close affiliations with Charles University departments of plastic surgery, ophthalmology, and otorhinolaryngology. The fourth worked with the First Faculty of Medicine on cell and tissue ultrastructure. Their leaders had built international reputations, but physical separation limited exchange among the groups. Consolidation under ČSAV sought to turn dispersed clinical-scientific competence into an institute able to develop shared experimental questions. New immunological work and research on the health effects of mycotoxins widened the original spectrum. During the 1970s and 1980s, subjects included cell ultrastructure, local and tumour immunity, eye biochemistry, corneal pathology, auditory physiology, genotoxicity, teratology, and developmental anomalies. This breadth created valuable connections but also produced fragmentation and weak internal communication. The institute's own historical account openly recognises that several groups achieved high standards while the organisation as a whole lacked a sufficiently coherent profile. That acknowledgement is important because institutional continuity should not convert every inherited programme into retrospective success. Experimental medicine entered the post-socialist period with substantial expertise and equally substantial need for intellectual reorganisation (*Institute of Experimental Medicine, n.d.*).

The early 1990s made reorganisation at the Institute of Experimental Medicine a selective process rather than a ceremonial change of affiliation. Internal projects competed freely, younger researchers gained space, and success in Academy grant competitions helped define a more coherent programme. Teaching medical students expanded, reinforcing links between a non-university institute and clinical education. Research on harmful environmental factors also strengthened the connection between medicine and ecology. Two groups entering in 1991 had particularly lasting effects. Eva Syková brought the Laboratory of Cellular Neurophysiology from the Institute of Physiological Regulations. Radim Šrám led a Laboratory of Genetic Ecotoxicology organised jointly with the Central Bohemian regional hygiene authority. Clinically oriented groups either disappeared or moved to clinical institutions, clarifying the Academy institute's role in experimental rather than direct patient care. The move to the biomedical campus at Prague-Krč in 1993 placed the institute near complementary expertise and shared services. Successful evaluation in 1994 confirmed survival, but continuing organisational changes did more than certify the inherited structure. In 2002, groups from the former Institute of Pharmacology and a molecular embryology department from animal physiology and genetics further reshaped the portfolio. The present conjunction of

neurobiology, toxicology, cancer research, developmental biology, tissue engineering, and nanomedicine is therefore a layered product of transfer, closure, and recombination (*Institute of Experimental Medicine, n.d.*).

The Institute of Animal Physiology and Genetics reveals how administrative reunification could acquire meanings unintended by its political authors. A Laboratory of Reproduction Biology of Farm Animals began work at Liběchov in 1954 within the Czechoslovak Academy of Agricultural Sciences. Strong cooperation connected it with ČSAV researchers in reproductive biology and immunology. In 1962, ČSAV incorporated this laboratory, an animal-physiology department at Uhříněves, and a radiobiology laboratory. From January 1963, the principal units formed the Laboratory of Animal Physiology and Genetics. The genetics department gained independent status in 1969. Political pressures following the 1968 invasion drove a renewed unification in 1972 under the title Institute of Physiology and Genetics of Farm Animals. A further name change in 1973 removed the explicit restriction to farm animals. The present title, adopted on 1 January 1993, deliberately recalled the original joint laboratory. Names in this sequence expressed shifting relations among agriculture, basic biology, and Academy administration. The 1993 designation did not conceal the politically motivated merger but repositioned the combined inheritance within a broader scientific mission. Institutional continuity was consequently built from units whose separation and reunion had never been governed by scientific logic alone (*Institute of Animal Physiology and Genetics, n.d.*).

Research at Liběchov and its associated sites gradually moved from immediate breeding applications towards fundamental questions of mammalian development. Work on female germ cells led to experiments on fertilisation, preimplantation embryos, in-vitro oocyte conditions, and gene expression during early development. These subjects retained agricultural relevance while creating models applicable to cell-cycle regulation, reproductive medicine, and cloning research. The shift did not require researchers to deny the institute's origin in farm-animal science. It required them to distinguish a useful organism from a narrowly prescribed economic objective. Domestic species could serve as experimentally and medically informative models rather than only as units of production. The institute's contemporary remit also includes genetic structure, animal–environment interactions, evolutionary questions, biodiversity, and food safety. This range connects laboratory animals, livestock, and wild populations without pretending that one method is sufficient for all three. Long-maintained reproductive expertise supplies an anchor, while genomic and evolutionary approaches broaden the questions asked of inherited material. Ethical regulation has changed breeding, housing, experimental design, and the justification of animal use. Those changes are part of scientific continuity because they alter what counts as responsible and credible evidence. The institute demonstrates that an applied inheritance can generate basic knowledge without severing relationships to medicine, ecology, and agriculture. Its capital lies in the ability to move among those contexts while preserving specialised competence in animal biology (*Institute of Animal Physiology and Genetics, n.d.*).

The creation of the Biology Centre in České Budějovice in 2006 represented consolidation without complete disciplinary absorption. It brought together five previously separate research bodies in entomology, hydrobiology, parasitology, plant molecular biology, and soil biology, alongside a common service centre. The legal organisation became larger, but the constituent institutes retained recognisable scientific identities. This arrangement acknowledged that shared administration and infrastructure could coexist with distinct collections, field traditions, and external communities. Molecular biology, genetics, taxonomy, field ecology,

and mathematical modelling became resources across the Centre rather than badges of isolated departments. Common facilities reduced duplication and made sophisticated methods available to smaller groups. At the same time, ecological research remained the predominant orientation, with a substantial biomedical component. That combination reflects the actual mobility of organisms and methods across the boundary between environment and health. Parasites, vectors, microbes, and plant pathogens can be studied as evolutionary systems and as sources of public risk. The Centre also formalised an especially close relationship with the University of South Bohemia through teaching and doctoral supervision. Students move between lecture rooms, core facilities, collections, and field sites, creating an intergenerational circuit that neither institution could sustain as effectively alone. The Biology Centre thus transformed inherited institutes into a federation whose continuity depends on cooperation without disciplinary flattening (*Biology Centre CAS, n.d.*).

Hydrobiology illustrates why such a federation must preserve long observational memory. A hydrobiological unit existed within ČSAV from the early 1950s and entered the Institute of Biology in 1953. It passed through several organisations, briefly held independent status between 1967 and 1970, and later belonged to the institutes of Entomology and Landscape Ecology. The unit moved to České Budějovice in 1981 and became an autonomous institute in 1990 before joining the Biology Centre. These changes did not eliminate its durable concern with standing waters, especially human-made reservoirs. Researchers combined water chemistry, microbiology, plankton studies, fish ecology, experiments, and ecosystem modelling. Regular observations at the Slapy and Římov reservoirs created records capable of distinguishing seasonal fluctuation from longer change. Studies of eutrophication followed phosphorus loading, microbial food webs, algal blooms, zooplankton, fish, and reservoir mixing as interconnected processes. Work on mountain lakes recorded both acidification and subsequent recovery across catchments in Czechia and Slovakia. A short project could measure a condition, but only sustained monitoring could reveal direction, lag, and ecological response. The institutional genealogy mattered because each reorganisation threatened comparability in staff, methods, and sampling while also introducing new expertise. Hydrobiology survived by treating time series as collective scientific obligations rather than the property of a single project (*Biology Centre CAS, 2013b*).

Soil biology carries continuity through systems whose most important processes are largely invisible and exceptionally slow. The Institute of Soil Biology was established in 1986 from a laboratory that had belonged to the Institute of Landscape Ecology since 1979. It joined the Biology Centre in 2006 and later made biogeochemistry explicit in its institutional identity. Its researchers follow interactions among soil animals, microorganisms, minerals, water, and organic matter in natural and human-altered environments. Questions about humus formation and soil microstructure preserve classical ecological concerns. Research on nutrient cycles and greenhouse-gas formation connects those concerns to contemporary climate science. The analytical repertoire has widened from taxonomy and controlled incubations to molecular characterisation, isotope methods, and ecosystem modelling. Yet a DNA sequence cannot by itself explain how a soil community transforms matter under field conditions. Long experience with sampling depth, season, land use, and spatial heterogeneity remains essential to interpretation. Technicians and curators make archived samples and experimental soils comparable despite personnel change. Collaboration with Czech and foreign universities places students inside this mixed culture of field observation and laboratory analysis. Soil

biology therefore demonstrates how an inherited ecological unit can become internationally current by deepening rather than abandoning its original object (*Biology Centre CAS, n.d.*).

Entomology and parasitology add collections and maintained organisms to the Centre's temporal architecture. Taxonomic expertise permits researchers to recognise species before asking molecular questions about their evolution or function. In parasitology, type and voucher collections represent roughly three thousand species of helminths, arthropods, and protists. Cultures of parasitic protists, cell lines, and colonies of ticks and mosquitoes preserve living experimental resources. These holdings connect morphology and electron microscopy with phylogenetics, functional genomics, and proteomics. A specimen collected decades ago can be re-examined when classifications change or new pathogens emerge. A maintained vector colony allows experimental comparisons that opportunistic field capture cannot guarantee. Host–parasite relations also join apparently separate missions in medicine, veterinary science, fisheries, and evolutionary biology. Entomological field knowledge similarly gives molecular analyses an ecological and taxonomic foundation. Joint laboratories with the University of South Bohemia integrate students into the care and interpretation of these resources. The collections are not static archives because new identifications can alter the meaning of old material. Their scientific continuity rests on combining custodial conservatism with methodological openness (*Biology Centre CAS, n.d.*).

The Institute of Plant Molecular Biology emerged from a late-socialist relocation that became a post-socialist institutional opportunity. In 1990, genetically oriented teams that had moved from the Institute of Experimental Botany in Prague formed a separate institute in České Budějovice. This origin links its independence to an incomplete state plan for dispersing Academy biology away from the capital. The new institute inherited people, plant material, and expertise rather than an entirely new programme. Its greenhouses, climate chambers, and tissue-culture rooms allowed environmental conditions and developmental stages to be controlled. Authorisation to work with genetically modified organisms and quarantine plant pathogens added specialised regulatory responsibility. Research connected genomes, cell structure, photosynthesis, signalling, plant metabolites, and responses to environmental stimuli. Molecular methods expanded explanatory power, yet cultivated plants and pathogens remained indispensable experimental actors. The institute also developed diagnostic and expert capacities relevant to agricultural and phytosanitary authorities. Entry into the Biology Centre in 2006 placed these facilities beside ecology, entomology, parasitology, and soil biology. That combination made it easier to study plants as molecular systems exposed to organisms and environments rather than as isolated genomes. The institute's history shows that a politically conceived move can yield a scientifically productive centre once teams acquire autonomy over its purposes (*Biology Centre CAS, 2013*; *Institute of Experimental Botany, n.d.*).

The partnership between the Biology Centre and the University of South Bohemia became a major mechanism of generational continuity. Academy researchers supervise doctoral candidates across entomology, hydrobiology, parasitology, ecosystem biology, molecular genetics, and plant and animal physiology. Many also teach undergraduate and postgraduate courses at the university. Students consequently encounter research infrastructures as part of education rather than only after formal training has ended. They learn that maintaining a collection, calibrating a field protocol, or caring for a culture can be intellectually consequential work. University departments gain access to long-term programmes and specialised facilities that would be costly to duplicate. Academy institutes, in turn, gain regular

contact with new cohorts and with the pedagogical challenge of explaining established practices. Joint laboratories reduce the institutional distance between teaching and research while preserving different organisational missions. This arrangement is particularly important outside Prague because it anchors advanced scientific careers in South Bohemia. It also makes disciplinary reproduction less dependent on appointing graduates into the same unit where they trained. Students can carry methods into universities, public agencies, industry, and foreign institutions while remaining part of collaborative networks. Mobility therefore becomes a mode of transmission rather than an automatic loss to the originating institute. The České Budějovice cluster demonstrates that an Academy's continuity may be strengthened when knowledge circulates beyond its legal boundaries (*Biology Centre CAS, n.d.*).

The Institute of Botany preserves another distributed geography of field sites, gardens, collections, and specialised departments. It was established in 1962 from a Geobotanical Laboratory founded in Prague and later Brno in 1954. Průhonice Castle became the institute's home, while a Botanical Garden created in 1963 was incorporated five years later. The institute assumed responsibility for the park and gardens, joining research to care for a culturally and biologically important landscape. A Brno department founded in 1962 connected plant ecology with palynology and palaeoecology. The hydrobotanical department established at Třeboň in 1971 developed research on ponds and wetlands. From 1998, the Třeboň workplace operated jointly with the University of South Bohemia. These sites preserved different relations between plants, historical records, experiments, and environments. Herbarium specimens and living collections allow species identities and distributions to be checked across generations. Pollen records and dendrochronology extend ecological interpretation into past environments. Contemporary population genetics, flow cytometry, and evolutionary biology add new dimensions to these inherited materials. The institute's continuity lies precisely in keeping taxonomic recognition, field observation, collections, and molecular analysis within one scientific conversation (*Institute of Botany, n.d.*; *Institute of Botany, n.d.*).

The Institute of Experimental Botany offers a complementary tradition centred on plant processes and experimental intervention. Its journals *Biologia Plantarum*, founded in 1957, and *Photosynthetica*, established in 1967, still connect contemporary research with earlier communities. During normalisation, work on phytohormones, flowering, tissue culture, and photosynthesis maintained international relevance despite political and financial restrictions. Researchers in Olomouc developed in-vitro methods useful to breeding, while Prague groups pursued growth regulation and plant physiology. Molecular biology and genetic engineering entered the programme during the 1980s rather than appearing only after the regime changed. After 1989, open travel and teaching accelerated that methodological transition. Mass spectrometry, confocal microscopy, genomics, and refined chemical analysis transformed how hormones, cells, pollen, pathogens, and genomes could be studied. The institute's plant-genomics programme in Olomouc grew from earlier breeding and cytogenetic competence rather than from a detached import. A joint laboratory with Palacký University connected hormone chemistry and experimental biology to teaching and application. Resistant apple varieties from the Střížovice breeding station preserved a visible relationship between fundamental insight and agricultural use. These programmes did not all advance at the same speed or through the same organisational route. Together they show that experimental botany remained continuous by allowing molecular techniques to reinterpret plants already embedded in physiological and breeding traditions (*Institute of Experimental Botany, n.d.*).

Vertebrate biology demonstrates how field traditions can withstand repeated changes of institutional form. The institute began in 1953 as the ČSAV Laboratory for Vertebrate Research under Josef Kratochvíl. It subsequently underwent several reorganisations and name changes before reaching its present form in 1998. Fish research started in 1955 and initially concentrated on growth, reproduction, population structure, and environmental conditions in Moravian waters. Decades of field observation established practical competence in sampling free-living populations and interpreting local ecological variation. Later generational change introduced molecular genetics, karyology, telemetry, respirometry, histology, behavioural observation, and parasitology. These methods altered the resolution of research without eliminating population ecology as a central concern. Studies of invasive species, hybridisation, reproductive strategies, host–parasite relations, and rapid ageing extended the geographical and theoretical range of the institute. Accredited fish facilities made controlled experiments possible alongside field investigation. Cooperation with fishing organisations, river-basin managers, and conservation authorities translated research into monitoring and species protection. The institute's zoological library provided another form of accumulated disciplinary memory. Vertebrate biology thus survived not by preserving an old descriptive programme unchanged but by joining modern experimentation to a durable knowledge of organisms in place (*Reichard & Jurajda, 2013*).

Landscape ecology provides the clearest warning that scientific continuity can outlive an institute while losing part of its former intellectual shape. The Institute of Landscape Ecology was created in 1971 under Emil Hadač from earlier Academy bodies. Its founding ambition joined biological systems with the social and cultural dimensions of landscape. Researchers sought a common interdisciplinary language for natural processes, settlement, values, planning, and human action. This breadth was politically sensitive because serious landscape analysis could reveal the ecological costs of state projects and short-term decisions. The institute later moved to České Budějovice and passed through mergers and renamings after 1993. Hydrobiology and soil biology acquired autonomous institutional paths, carrying important components of the former research environment elsewhere. In 2006, the remaining organisation became the Institute of Systems Biology and Ecology. The Academy's distinct institutional representation of landscape ecology ended in 2010. Researchers, concepts, and archives continued in universities, professional societies, conservation organisations, and successor institutes. Yet the integrated object called landscape became less visible when evaluation and organisation favoured specialised and rapidly published work. This case proves that the survival of people and methods cannot always compensate for the disappearance of a forum in which they were deliberately combined (*Lapka & Gottlieb, 2022*).

CzechGlobe represents both a successor to ecological competence and a significant redirection of it. The Centre for Global Change Research emerged in 2011 from the division and renaming of the Institute of Systems Biology and Ecology. The Global Change Research Institute became a separate public research institution in 2016. Its programme examines interactions among atmosphere, ecosystems, and human society through contemporary climate and global-change questions. Greenhouse-gas fluxes, carbon cycling, ecosystem responses, regional climate prediction, and social impacts now form parts of a coordinated research architecture. Observation towers, atmospheric stations, ecophysiological laboratories, remote sensing, isotope analysis, and modelling connect processes from leaves to regions. European infrastructures provide standards and comparisons that situate Czech measurements within continental networks. Public tools for drought and climate risk translate

research into information used by agriculture, government, local authorities, and citizens. This orientation preserves important ecosystem and monitoring capacities from earlier institutions. It does not, however, reproduce the former landscape school's equal attention to cultural meaning, aesthetics, and historically formed human environments. Continuity is therefore selective even when an organisational genealogy can be traced. CzechGlobe demonstrates how inherited ecological capital can be powerfully renewed around global change while leaving some dimensions of its predecessor without an equivalent institutional home (*Global Change Research Institute, n.d.*; *Lapka & Gottlieb, 2022*).

Thus, biology, medicine, and environmental research reveal the Academy's continuity as stewardship of living relations rather than preservation of administrative shells. Molecular genetics carried forward questions about immunity, viruses, heredity, and cancer despite emigration, political removal, merger, and technological revolution. Microbiology sustained strains, cultivation systems, journals, and germ-free models whose value increased when later science learned to ask new questions of them. Physiology and experimental medicine linked stable model systems to changing accounts of development, neural function, toxicity, repair, and disease. Animal research moved from production-centred programmes towards basic developmental, genetic, and evolutionary inquiry under more demanding ethical rules. Botanical institutes combined gardens, field stations, breeding material, journals, and herbaria with genomics, imaging, and chemical analysis. The Biology Centre showed that consolidation can protect disciplinary identities when common infrastructure and university education create genuine exchange. Long records from waters and soils made environmental change historically measurable rather than rhetorically asserted. Vertebrate biology joined population knowledge to molecular and experimental methods without abandoning organisms in their habitats. The end of a distinct Institute of Landscape Ecology nevertheless demonstrates that transmitted expertise is not identical to the survival of an interdisciplinary object. CzechGlobe converted much ecological capital into globally networked climate research while also making that selectivity visible. Across these fields, AV ČR became neither a clean successor nor a passive continuation of ČSAV, but an institution capable of renewing inherited life-science traditions while remaining answerable for what transformation preserved, altered, and allowed to disappear.

3. History, archaeology, language, and cultural research

Among the humanities and historically oriented disciplines of the Czech Academy of Sciences, continuity has rarely meant the uninterrupted survival of a single name, organisational chart, or authorised interpretation. Their deeper continuities were carried by evidence arranged for repeated use: copied charters, excavation records, dialect cards, bibliographical entries, photographs, maps, sound recordings, critical editions, and the habits required to read them. A laboratory instrument may become obsolete in a decade, whereas a carefully described manuscript, field diary, or lexical citation can remain productive for generations. Yet the endurance of such materials should not be confused with political innocence. Choices about what to collect, how to classify it, which questions to permit, and whose experience to preserve always express institutional priorities. The archival record is therefore both a support for scholarly memory and a trace of the power that shaped that memory (*Cook, 2013*; *Schwartz & Cook, 2002*). Regime changes altered research agendas, careers, vocabularies, and permissible narratives, but they did not erase every accumulated competence or every chain

of documentation. After 1989, the task was consequently more demanding than simply rescuing neglected subjects from censorship. It required scholars to distinguish durable intellectual capital from the ideological frames in which part of that capital had been produced. Preservation, criticism, and reinterpretation had to proceed together. For this reason, history, archaeology, linguistics, literary scholarship, ethnology, and art history offer particularly revealing cases of transformation through inheritance. Their post-socialist renewal rested on the capacity to make inherited evidence answerable to freer questions without pretending that its institutional past had never occurred.

The material ecology of these disciplines also gave continuity several different tempos. A diplomatic edition might advance across the working lives of many editors, while an archaeological site could be destroyed in one building season and survive thereafter only through its documentation. A dialect archive might preserve forms of speech that disappeared before the collection itself was digitised. A bibliography could accumulate quietly through political crises, even when the literary canon it described was being narrowed by censorship. Such resources became useful only because generations maintained shelf order, concordances, typologies, metadata, transcription conventions, and specialist languages. Infrastructure, in this sense, was not merely equipment standing behind research but a relational achievement embedded in routine practice (*Star & Ruhleder, 1996*). Its apparent stability depended upon constant repair, checking, migration, and teaching. Political rupture could interrupt those routines even when buildings and holdings remained physically intact. Conversely, an institute abolished on paper might retain a partial afterlife through dispersed scholars, journals, unfinished dictionaries, or collections incorporated elsewhere. The humanities of the Academy therefore developed through uneven combinations of institutional persistence, concealed survival, and deliberate reconstruction. These combinations complicate any simple opposition between the ČSAV and the AV ČR. They show that scientific capital was inherited not as a sealed treasure but as an unfinished system of evidence, obligations, and interpretative possibilities.

Historical and cultural research was especially exposed to political direction because it dealt with collective identities, contested sovereignty, religion, class, national traditions, and the legitimacy of regimes. Under state socialism, a medieval source edition could appear less politically dangerous than an account of 1968, yet even distant periods were not wholly insulated from authorised narratives. Personnel purges, restricted contacts, editorial delay, and the privileging of Marxist categories shaped what could be investigated and published (*Franc & Mádlová, 2014*). At the same time, specialised undertakings sometimes created limited professional spaces in which philological precision, archaeological classification, or art-historical connoisseurship remained defensible. Those spaces should neither be romanticised as untouched islands of freedom nor dismissed as scholarly irrelevance. They preserved techniques and corpora that later enabled more open interpretations. The experience of continuity was also morally unequal, because some researchers retained posts while others were excluded, silenced, driven into exile, or forced into marginal employment. When institutions were democratised after the Velvet Revolution, recovering a discipline consequently meant recovering broken human relations as well as topics. Older scholars returned, younger scholars entered, and inherited teams had to reassess their own compromises and exclusions. New autonomy changed the conditions under which evidence could speak, but it did not automatically settle disputes over responsibility. The strongest post-1989 institutions treated the record of their own political entanglement as an object of research

rather than a source of embarrassment. In doing so, they turned institutional memory from a defensive legend into a critical scholarly resource.

The Institute of History illustrates how a long research programme can outlive successive administrative settlements without remaining intellectually static. Its Department of Medieval History still combines the study of Czech and Central European history with historical geography, while maintaining source-publication projects that require a horizon longer than an ordinary grant cycle. The *Regesta diplomatica nec non epistolaria Bohemiae et Moraviae* and related regesta depend on cumulative identification, comparison, dating, and editing of documents scattered among many repositories. Their continuation is not antiquarian inertia, because every reliable edition enlarges the evidential field available for new questions about rulers, churches, elites, Jewish settlement, courts, landscapes, towns, and social interaction. The department's present programme explicitly places these materials within transdisciplinary and European contexts (*Institute of History of the Czech Academy of Sciences, n.d.*). That widening of scale marks a substantial change from research organised primarily around a nationally bounded master narrative. Nevertheless, it remains possible only because earlier generations created catalogues, transcriptions, files, and conventions that current scholars can verify and revise. Long editorial series discipline academic time by making unfinished work visible to successors. They also limit the temptation to make research policy depend exclusively on fashionable short-term themes. In this case, institutional continuity lies less in repeating conclusions than in accepting responsibility for a shared evidential undertaking. Its durability accordingly depends on disciplined revision rather than ceremonial repetition. The inherited programme survives because its questions can expand while its standards of source criticism remain exacting.

The Institute's photographic collection makes this mechanism unusually tangible. It originated in the needs of the Czechoslovak State Historical Publishing Institute, founded in 1921, whose work on the regesta required investigators to gather copies of medieval writings from domestic and European archives. Transcriptions were gradually joined by negatives and photographs, creating a surrogate archive that allowed documents from distant repositories to be compared in Prague. A surviving record counted just under 106,000 images on film rolls in 1960, an extraordinary material concentration of scholarly journeys and editorial labour. The collection was never complete, and its foreign coverage reflected financial and organisational constraints, but it became the country's most extensive photographic body of diplomatic sources (*Institute of History of the Czech Academy of Sciences, n.d.*). Its evidential value therefore includes both what was copied and the geography of what earlier scholarship could reach. Film rolls, pressmarks, alphabetical inventories, and descriptive notes together form a technical memory of research before digital capture. Electronic inventories now make parts of that old order searchable, although responsible access still depends on curatorial processing and knowledge of the collection's unevenness. Digitisation does not abolish the analogue archive; it creates another layer whose reliability rests on links back to original identifiers. This is a clear instance of inherited capital being transformed rather than merely stored. A tool devised for one editorial programme has become a broader resource for medieval, diplomatic, and European historical research. Its continued usefulness depends on preserving provenance alongside images, because an uncontextualised reproduction is only a fragment of evidence.

Historical geography demonstrates a related movement from cumulative collection to public research infrastructure. Maps, plans, cadastral evidence, written sources, and visual records permit scholars to reconstruct towns and landscapes as changing relationships rather than

fixed containers. The Historical Atlas of Czech Towns brings these forms together in a series that can serve urban history, monument care, spatial planning, landscape protection, education, and local self-understanding. Its value arises from the comparability of successive volumes as much as from the detail of any individual map. Cartographic continuity is methodologically active, since each edition requires decisions about scale, periodisation, uncertainty, and the translation of narrative evidence into spatial form. The series thus renews an older descriptive tradition by exposing it to questions about urbanisation, mobility, environment, and cultural landscape (*Institute of History of the Czech Academy of Sciences, n.d.*). It also carries academic work beyond the boundary of the institute without reducing scholarship to commemoration. Municipal authorities, conservationists, teachers, and residents can use the same mapped evidence for different purposes. This plurality of users increases the need for transparent sourcing rather than weakening scholarly standards. The atlas becomes a meeting place between long institutional memory and present civic decisions. Here continuity is neither a monument to a settled past nor a neutral database. It is the sustained capacity to relate documentary depth to the changing spatial problems of society.

Editorial periodicals reveal another modest but decisive carrier of disciplinary culture. A journal preserves more than articles, because it maintains reviewing practices, terminological debates, scholarly networks, and expectations about what counts as a significant problem. *Folia Historica Bohemica*, founded in 1979, initially covered Czech history from the early Middle Ages to the mid-19th century and was reoriented after 1990 towards early modern history. That alteration did not destroy the periodical's identity; it gave a continuing forum a sharper profile under new intellectual conditions (*Institute of History of the Czech Academy of Sciences, n.d.*). The case shows why continuity should not be measured by thematic immobility. A journal can retain accumulated trust while changing chronology, methods, languages, or peer-review procedures. Its archive preserves the marks of earlier historiographical priorities, including questions that have aged badly and evidence that remains valuable. Later contributors write within that layered conversation even when they reject its assumptions. Editorial labour also links institutes to universities, regional archives, museums, and foreign scholars more continuously than many temporary projects do. Such links helped Czech historiography regain international density after the isolation of normalisation. They also offered younger historians a route into a disciplinary public governed by criticism rather than political endorsement. The institutional memory of history therefore resides partly in recurrent forms of scholarly exchange, not only in official chronicles of the institute.

Contemporary history presents the inverse problem: continuity sometimes had to be created by establishing an institution for a field that the previous regime had made impossible to pursue independently. The Institute of Contemporary History was founded in 1990 on the initiative of the Civic Forum's historical commission to investigate Czechoslovak history between 1938 and 1989 without censorship or political vetting. Its formation acknowledged that the absence of credible institutional research was itself a legacy of communist rule. Vilém Prečan's return from exile supplied experience, international connections, and documentary knowledge that could not have been generated overnight inside the former Academy. Early source series, a specialised library, a continuously updated bibliography, and the journal *Soudobé dějiny*, first issued in 1993, converted democratic urgency into durable scholarly routines (*Institute of Contemporary History of the Czech Academy of Sciences, n.d.*). This was restitution in an intellectual rather than narrowly legal sense. Topics excluded from official historiography—

dissent, exile, political repression, 1968, and the mechanisms of dictatorship—required not only freedom but organised evidence. The institute's collections concerning 1968, 1989, and post-communist transformation show how quickly current events become archival responsibilities. Contemporary history also had to negotiate proximity to living participants and unfinished political conflicts. Its authority could not rest on distance alone, but on transparent methods, plural sources, and willingness to revise early judgements. The founding act therefore converted a suppressed field into a continuing public responsibility. In this case, the AV ČR inherited a historical deficit and responded by building an institution capable of remembering what the ČSAV had been structurally unable or unwilling to study.

Oral testimony became particularly important where official files recorded the voice of institutions more fully than the experience of those governed by them. Interviews could recover everyday life, professional exclusion, migration, minority histories, military service, cultural practice, and the ambiguities of adaptation under dictatorship. Yet spoken memory is not a transparent substitute for missing documents. It is produced in an encounter between interviewer and narrator, shaped by later knowledge, present identity, silence, and the social conditions of recall. The post-1989 development of oral history therefore required ethical protocols, recording standards, transcription practices, contextual research, and secure long-term preservation. These competences turned ephemeral recollection into evidence that could be questioned by later scholars. They also broadened the social range of academic history beyond state elites and formally organised opposition. The Institute of Contemporary History's changing thematic structure, which now includes power and institutions, identities and environments, and knowledge and expertise, reflects this enlargement of the field (*Institute of Contemporary History of the Czech Academy of Sciences, n.d.*). Its library's large collection of exile books and periodicals further reconnects published and remembered experiences once divided by borders and censorship (*Institute of Contemporary History of the Czech Academy of Sciences, n.d.*). Methodological self-awareness prevents the interview archive from becoming a substitute orthodoxy. The result is not a single recovered national memory but an archive of competing perspectives. Institutional continuity here is created by ensuring that testimony remains available after the founding generation and its witnesses have gone.

The Masaryk Institute and Archives of the Czech Academy of Sciences embodies continuity through institutional recombination. The Archives of the ČSAV began work in 1953, collecting records of scientific societies, Academy institutes, national committees, and prominent scholars, while also developing research in archival science, codicology, and the history of science. The Masaryk Institute of the Academy was established in 1995 after the T. G. Masaryk Institute had been reinstated as a foundation in 1990. It assumed responsibility for Masaryk's archive and library and placed research on his life, thought, and political world in a broader scholarly setting. In 2006 the two workplaces were joined, and from 2008 the combined body bore its present name (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This merger did not simply reduce administrative duplication. It brought the documentary memory of Czech science into sustained contact with research on modern political and intellectual history. It also reunited forms of work that political regimes had repeatedly separated: custodianship, source editing, institutional history, and biographical interpretation. The resulting institute carries both ČSAV records and collections whose genealogies precede or challenge the socialist Academy. Its identity is therefore layered rather than linear. By holding these layers together, it makes the history of the Academy investigable within the larger

history of Czech learned culture and democratic thought. Such recombination shows that post-1993 continuity could be built by rearranging inherited components around a newly legitimate scholarly purpose.

The physical history of the combined archive warns against treating inherited collections as abstractions. Part of the Academy archive and library was damaged by the Prague flood of 2002, demonstrating that institutional memory can be lost through water, mould, disordered storage, and broken description as readily as through censorship. A new archival building opened in 2005, and later extensions and repositories strengthened the material conditions of preservation. These investments converted an emergency into a more resilient custodial system. The present holdings comprise 711 archival fonds and collections extending to approximately 5,900 linear metres (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). Their scale matters, but the number alone says little about accessibility. Researchers need arrangement, finding aids, authority records, conservation, and advice from archivists who understand how institutional files were created. The online Vademecum and specialist databases extend that mediation into a digital research environment (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). They allow dispersed users to identify relevant holdings without suggesting that a search result exhausts the meanings of a file. The archive also guides records management across the Academy, shaping the evidence that future historians will inherit. Preservation is consequently prospective as well as retrospective. The institute's response to material vulnerability reveals continuity as organised care for records before, during, and after their scholarly use.

Masaryk's papers and libraries further show how political history can be inscribed in the movement of collections. The original T. G. Masaryk Institute was founded in 1932 to manage his archive and library, edit his writings, and support research, but its assets passed through institutional arrangements shaped by later regimes. Restitution after 1989 restored ownership and symbolic legitimacy, yet sustainable scholarly access required cooperation between a foundation, the Academy, and other public institutions. The Academy's Masaryk Institute began managing the collections in 1995, while long-term editorial series transformed personal documents into critically established sources. In 2017, Charles University placed the so-called Masaryk professorial library in permanent deposit with the Masaryk Institute and Archives. That library had itself been transferred in 1990 from the abolished Institute of Marxism-Leninism, a provenance that condensed the ideological reversals of the 20th century. Bringing the books into a democratic research setting did not cleanse their history; it made that history legible. The arrangement also demonstrates that cultural restitution is often custodial and collaborative rather than a simple return to an original room. Cataloguing, provenance research, and editorial commentary mediate between recovered ownership and public knowledge. The Masaryk collections can now be studied alongside the records of the institutions that once marginalised, appropriated, or reinterpreted his legacy. This juxtaposition gives the archive unusual reflexive power. It transforms inherited material from a national relic into evidence about the changing political uses of intellectual heritage (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*).

Archaeology depends on an even more exacting chain between event and record, because excavation destroys the stratigraphic arrangement it seeks to understand. Once a trench has been opened and deposits removed, field notebooks, context sheets, drawings, samples, photographs, coordinates, and finds become the principal means by which the site can be re-examined. The Prague Institute of Archaeology therefore carries continuity not only through

famous discoveries but through the cumulative archive of ordinary fieldwork. It houses the country's largest specialist archaeological library as well as excavation reports, photographs, maps, plans, and aerial imagery (*Institute of Archaeology of the Czech Academy of Sciences, Prague, n.d.*). These holdings connect basic research with a public responsibility for archaeological heritage. They also preserve the uneven development of field methods, from descriptive reports and analogue plans to geospatial datasets and laboratory analyses. Later scholars may ask environmental, demographic, or network questions that the original excavators could not formulate. Their answers remain credible only if new measurements can be traced to old contexts. This is why archaeological continuity is procedural before it is interpretative. Political administrations may redefine the division between research institutes, heritage bodies, museums, and commercial units, but the evidential chain cannot safely be fragmented. The Academy's continuing role has been to maintain national-scale standards and scholarly depth across those organisational boundaries. In archaeology, institutional memory is quite literally the condition under which a vanished material context remains open to science.

The Archaeological Information System of the Czech Republic converts this inherited documentary responsibility into a shared digital infrastructure. It integrates information on planned, continuing, and completed fieldwork with records of archaeological sites, results, documents, and related data. The Archaeological Map and Digital Archive are not simply electronic catalogues placed beside older shelves. They establish a common framework through which researchers, heritage authorities, public administration, students, developers, and interested citizens can meet different obligations. The system also seeks out older fieldwork results that were never properly archived, edits or verifies them, and protects information that might otherwise disappear (*Ministry of Education, Youth and Sports of the Czech Republic, n.d.*). This retrospective work is as important as the intake of newly born-digital records. Data integration reveals duplications, gaps, uncertain locations, and incompatible terminology inherited from earlier institutional periods. Standardisation consequently involves historical judgement rather than mechanical conversion. It must preserve enough of the original record to show why a later harmonised description was made. Open access enlarges the scholarly community, but sensitive locations and legal duties still require calibrated governance. The Prague and Brno institutes' joint responsibility for the infrastructure also turns a historically divided territorial organisation into a collaborative national service. AIS CR thus exemplifies how the AV ČR can renew inherited scientific capital by making it interoperable, accountable, and reusable without erasing provenance.

Archaeological journals offer a parallel continuity of argument and disclosure. *Památky archeologické* first appeared in 1854, long before the ČSAV, while *Archeologické rozhledy* has been published since 1949 and now presents open-access research across periods and methods. The survival of these titles spans learned-society, state-socialist, and democratic academic environments. Their contents, however, register large changes in theory, field technique, scientific analysis, international orientation, and editorial scrutiny. A long title is therefore best understood as a durable venue for revision rather than evidence of an unchanging school. The Prague institute also publishes *Excavations in Bohemia*, whose reports have been generated from an archaeological database since the volume covering 1988–1989. This link between field reporting, database structure, and publication shows how continuity can move from print compilation to reproducible data workflows (*Institute of Archaeology of the Czech Academy of Sciences, Prague, n.d.*). Older volumes retain observations that may

acquire new significance when combined with radiocarbon dates, archaeobotanical evidence, or spatial modelling. Open digital availability also changes who can test those observations. Yet editorial continuity remains necessary because abundance without selection and explanation can obscure rather than clarify the record. Journals provide a disciplined public chronology of what a research community believed it knew at different moments. Through them, archaeological heritage includes the history of interpretation as well as the material traces of the past.

The Brno Institute of Archaeology displays continuity through place-based research programmes that have survived profound organisational contraction and renewal. Originating as a Moravian branch and becoming an independent ČSAV institute in 1970, it underwent major structural and conceptual change between 1990 and 1995. Personnel fell to less than half as much rescue excavation work was transferred elsewhere, while the institute concentrated more clearly on basic research. That rupture nevertheless preserved long-term engagement with the Palaeolithic sites below the Pavlov Hills, the Great Moravian centre at Mikulčice, and the Roman military complex near Mušov. Systematic work at Mikulčice, begun after Josef Poulík's discovery of the stronghold in 1954, continues as a multi-generational programme. Research bases, conserved finds, plans, environmental samples, and local knowledge make such continuity possible. The institute's contemporary centres for Palaeolithic and palaeoanthropological research, Roman and Migration-period archaeology, and Slavic and medieval archaeology give inherited strengths a clearer analytical structure (*Institute of Archaeology of the Czech Academy of Sciences, Brno, n.d.*). New visitor and research facilities at Pavlov, Mikulčice, and Mušov add public interpretation to the older field tradition. They also expose the research process to local communities whose landscapes contain the sites. The continuity of site-based inquiry also protects knowledge that cannot be recreated once a landscape has changed. The post-socialist institute therefore did not simply keep excavating where its predecessor had worked. It transformed accumulated territorial expertise into programmes that combine basic research, conservation, international comparison, and public stewardship.

Across both archaeological institutes, methodological change has widened rather than dissolved the value of inherited records. Archaeometry, palaeogenetics, isotope analysis, remote sensing, environmental reconstruction, and three-dimensional documentation can return to questions first framed through typology and stratigraphy. These techniques often depend on samples or contextual information collected decades earlier. Their use demands caution because earlier excavation and storage practices may not meet present standards, and missing metadata can sharply limit inference. The most productive teams treat such limitations as part of the evidence rather than concealing them. Interdisciplinary work also creates new institutional relationships among archaeologists, physicists, chemists, biologists, historians, conservators, and data specialists. Those relationships echo the broader pattern described in "Chemistry, Physics, and Materials Research" and "Biology, Medicine, and Environmental Research", where inherited collections gain value through new analytical combinations. Archaeology is distinctive, however, because the object of study is both a scientific resource and a legally protected, non-renewable heritage. Public programmes such as Archaeological Summer make that double status visible by bringing citizens to sites and explaining how conclusions are built. Such engagement does more than popularise finished results. It teaches why recording, restraint, and professional standards matter before material traces are removed or destroyed. Institutional continuity is strengthened when the public

understands the archive not as bureaucratic residue but as the surviving form of excavated landscapes.

The Czech Language Institute offers perhaps the clearest example of a corpus becoming an institution. The Office of the Dictionary of the Czech Language was established in 1911 within the Czech Academy of Sciences and Arts and immediately began collecting lexical material. Its work supported the nine-volume *Příruční slovník jazyka českého*, published between 1935 and 1957. After the Second World War, the office was transformed into the Czech Language Institute, whose remit expanded to dialects, language history, and contemporary standard Czech. The institute entered the ČSAV as one of its anchor workplaces, while its Prague and Brno departments developed complementary forms of linguistic expertise. Following 1989, the institution retained its accumulated files and authority but worked within a more plural public and a rapidly changing media environment. This genealogy matters because a dictionary archive is never completed at a single political moment. Citations gathered under one regime may document vocabulary that later scholarship interprets differently, and exclusions may expose the assumptions of earlier lexicography. Successive directors and teams inherited not only words but decisions about headwords, usage labels, norm, and evidence. The institute's own history presents the dictionary project as the durable thread connecting academy forms before and after the ČSAV (*Czech Language Institute, n.d.*). Every new dictionary project consequently tests the adequacy of inherited categories against living evidence. Its continuity lies in preserving a national linguistic record while repeatedly reconsidering what kind of description and guidance that record can support.

Dialectology makes the temporal depth of that record audible. The Brno Department of Dialectology has developed the Archive of Folk Speech since 1952, combining material from older dictionaries, handwritten sources, correspondents, dissertations, and direct fieldwork. Its approximately 1.5 million entries underlie the electronic *Dictionary of Czech Dialects*, which covers vocabulary recorded across Bohemia, Moravia, and Silesia over roughly a century and a half. A separate sound archive preserves dialect speech collected for the Czech Linguistic Atlas and later projects, including recordings originally stored on tape and digitised with Czech Radio. These resources capture linguistic forms that migration, schooling, mass media, and generational change may weaken or transform. They also record the categories through which earlier fieldworkers heard regional speech. The six-volume Czech Linguistic Atlas, published in print between 1992 and 2011 and later issued in revised electronic forms, bridges the end of the ČSAV and the mature AV ČR (*Czech Language Institute, n.d.*). Its chronology is institutionally revealing, because much of the field material and preparation preceded the political transition while publication and digital renewal followed it. The atlas is neither a socialist survival nor an entirely post-socialist creation. It is a cumulative work whose scientific meaning changed as data, methods, and users changed. Current mapping projects add crowdsourced responses and machine-learning methods while retaining links to historical surveys. Linguistic continuity therefore emerges as comparison across time, not the conservation of an imagined unchanging national speech.

The Institute's public language services reveal another transformation of inherited authority. Czech linguistic scholarship has long combined description with language cultivation, a role made politically sensitive by the association between standard language, education, administration, and national identity. In a democratic media environment, authority cannot rely on institutional prestige alone. It must explain evidence, distinguish convention from prohibition, and respond to usage that develops faster than printed handbooks. The Internet

Language Reference Book embodies this shift through a searchable wordlist and reference section created by Institute staff and operated in cooperation with Masaryk University. Successive LINDAT and LINDAT/CLARIAH projects have supported its maintenance and reuse in language-technology applications (*Czech Language Institute, n.d.*). The resource translates decades of lexicographical and grammatical scholarship into an interface used by specialists and the broad public. It also creates a feedback loop, because language enquiries reveal where established descriptions are unclear or where new forms are emerging. The Academic Dictionary of Contemporary Czech and other electronic resources continue the older dictionary mission without treating the printed volume as its final form. Digital publication permits revision, linkage, and wider access, but it increases expectations of speed and transparency. Public trust depends on making change intelligible rather than presenting every recommendation as timeless. Here institutional continuity succeeds when a traditional cultural responsibility is redefined as an open, evidence-based conversation with speakers.

The Institute of Czech Literature likewise inherited a national scholarly mission whose content could not remain politically or aesthetically fixed. Founded by the Czech Academy of Sciences and Arts in 1947, it entered the ČSAV in 1953 and later absorbed work on Czech theatre. In 1970 it was recast as the Institute for Czech and World Literature, a change that reflected both intellectual ambitions and the administrative logic of normalisation. The present name was adopted in 1993 when the institute returned to a Czech-studies conception (*Digital Humanities in the Czech Academy of Sciences, n.d.*). That return did not mean a retreat to a narrow canon sealed at the national border. It required Czech literature to be reconstructed in its multilingual, transnational, exile, samizdat, popular, theatrical, and media contexts. Earlier scholarship had produced editions, histories, lexicons, journals, and bibliographical files even while political control distorted selection and evaluation. After 1989, the inherited apparatus could be used to expose precisely those exclusions. The challenge was to enlarge the field without discarding the descriptive labour on which a fuller history depended. Literary continuity thus resides in the ability to keep texts, authors, editions, reception, and institutions connected across changing canons. It also depends on preserving disagreements, because no democratic literary history can reduce cultural value to a final authorised list. The institute's post-socialist identity emerged from this combination of disciplinary restitution and methodological expansion.

The Czech Literary Bibliography is the most visible infrastructure supporting that expansion. It continues almost seven decades of specialised bibliographical work and maps literary life from the National Revival to the present. Its interconnected resources include retrospective records, current literary scholarship, biographical data, digital libraries, literary prizes, book editions, exile publishing, samizdat, and the literary internet. The retrospective component alone grew from systematic excerpting of Czech, German, and Slovak periodicals published in the Czech lands, with approximately 1.7 million digitised catalogue cards available through its older interface (*Digital Humanities in the Czech Academy of Sciences, n.d.*). Such scale turns modest individual entries into a map of cultural circulation. A review, polemic, obituary, translation, or publisher's notice can connect writers to institutions and readers more precisely than a later canonical summary. Integrating previously heterogeneous databases on a common platform is therefore an epistemic task, not merely a technical upgrade. Names must be reconciled, duplicate records identified, changing periodical titles traced, and historical categories retained where they explain provenance. The Ministry's research-infrastructure description emphasises continuous updating, open online access, software

development, and the recovery of previously neglected corpora (*Ministry of Education, Youth and Sports of the Czech Republic, n.d.*). These functions convert an institute-based card catalogue into a national and internationally usable research environment. They also make visible the cumulative labour of bibliographers whose names seldom appear in synthetic literary histories. Through the bibliography, the continuity of Czech literary studies becomes searchable without being simplified into a single narrative.

Literary scholarship also persists through editions and journals that preserve the changing terms of critical debate. A critical edition fixes neither the meaning of a work nor the limits of a canon, but it establishes a documented basis from which interpretations can diverge. Editorial choices concerning variants, censorship, pseudonyms, exile printings, and posthumous interventions often reveal the political history of a text. After 1989, scholars could reconnect domestic publication histories with works circulated abroad or unofficially, but that recovery required bibliographical and textual expertise accumulated inside and outside official institutions. The Institute's databases of literary figures, metres, rhymes, prizes, book editions, post-1945 literature, popular literature, and digitised periodicals now place different kinds of evidence in productive proximity (*Digital Humanities in the Czech Academy of Sciences, n.d.*). Computational tools can identify patterns across these corpora that close reading alone would miss. Close reading, in turn, remains necessary to prevent frequency and network measures from becoming substitutes for historical interpretation. The result is not a contest between traditional philology and digital humanities. It is a renewal in which older exactitude supplies the provenance and structure required by new methods. Journals and seminars sustain the argumentative culture around these tools, while cooperation with universities brings doctoral researchers into the chain of transmission. Cultural continuity here is generated by repeated acts of editing, contesting, and teaching rather than by reverence for an inherited canon. The institute remains valuable because it can preserve literary evidence while allowing the definition of literature itself to change.

The Institute of Slavonic Studies offers a sharper example of rupture followed by deliberate institutional reconstruction. Founded in 1922 and incorporated into the ČSAV in 1953, it once encompassed languages, literatures, archaeology, ethnography, history, and Byzantine studies. Reorganisation in 1963 effectively liquidated the institute, distributing its scholars and fields among several Academy workplaces. This did more than alter an organisational chart, because it weakened the intellectual setting in which comparative Slavonic research had connected philology, history, and cultural exchange. The institute was re-established in 1992 in greatly reduced form and initially lacked legal personality. It first operated as a joint Academy–university workplace, then became attached to the Academy Archives in 1995, and regained independent status only in 1998 (*Institute of Slavonic Studies of the Czech Academy of Sciences, n.d.*). Such a sequence makes any claim of seamless continuity untenable. Yet reconstruction was possible because disciplines, scholars, publications, and unfinished projects had survived the abolished body in dispersed form. The Archives supplied an institutional shelter while a viable programme and legal position were rebuilt. The episode shows that continuity can depend on temporary dependence rather than immediate autonomy. It also demonstrates how the AV ČR could acknowledge a pre-socialist and early-ČSAV inheritance that later socialist reorganisation had fragmented. Revival in this case meant reassembling a comparative scholarly space, not reproducing the broad interwar institute exactly.

The renewed Slavonic Institute justified its existence by turning inherited specialisms towards a post-Cold War European field. Its research connects early Slavonic writings with Byzantine and Latin medieval traditions, while contemporary lexicology documents changes in Eastern and Southern Slavic languages and their Czech equivalents. Work on Carpatho-Rusyn dialects preserves records of a vulnerable linguistic heritage. Research on Russian emigration in interwar Czechoslovakia reopens transnational histories once constrained by political alignments. The comparative method remains a disciplinary inheritance, but it no longer needs to serve a predetermined ideology of Slavic affinity. Instead, it can investigate asymmetry, conflict, translation, cultural transfer, and relations between Slavic and non-Slavic environments. The journals *Slavia*, *Byzantinoslavica*, and *Germanoslavica* carry scholarly networks across institutional breaks and changing borders. Since 1998, the New Series of Works of the Institute has provided another continuing publication channel (*Institute of Slavonic Studies of the Czech Academy of Sciences, n.d.*). Digital resources such as the GORAZD Old Church Slavonic hub and electronic bilingual dictionaries move lexicographical labour into reusable online forms. These projects retain the slow disciplines of textual criticism and semantic comparison while widening access and interoperability. Their international value depends precisely on local competence sustained across generations. The institute's history therefore demonstrates that a restored institution becomes credible not by celebrating its resurrection but by making dispersed inheritance scientifically productive again.

Ethnology carries continuity through collections formed even earlier than most Academy institutes. The Institute of Ethnology was created in 1954 from Academy departments devoted to ethnography and folk song, whose collecting traditions reach into the first half of the 19th century. Its present name dates from 1999, but its documentary holdings preserve many earlier institutional and personal layers (*Digital Humanities in the Czech Academy of Sciences, n.d.*). The Centre of Scientific Information contains written records, photographs, plans, sound and video materials, song and folklore collections, and scholars' estates. These holdings were assembled through organised campaigns, individual fieldwork, donations, purchases, and the contributions of amateur collectors. They are consequently records not only of cultural practice but of changing relationships between professional researchers and communities. The collections are registered as part of the national archival heritage and continue to serve external researchers as well as institute staff (*Institute of Ethnology of the Czech Academy of Sciences, n.d.*). Their geographical division between Prague and Brno also carries the historical differentiation of research on Bohemia, Moravia, and Silesia. Music manuscripts and song records associated with long collecting traditions preserve performance repertories that cannot be reduced to written melody alone. Audio and visual documentation adds voice, gesture, tempo, setting, and the presence of the fieldworker. Ethnological continuity therefore depends on keeping multiple media and their contextual documentation together. A song, custom, or craft survives scientifically not as a timeless folk object but as a situated record of performance, collection, and later interpretation.

The political history of folklore makes that contextualisation essential. State-socialist institutions could celebrate selected traditions as expressions of the people while reshaping them for festivals, ensembles, cultural policy, tourism, or ideological display. Researchers working within this environment nevertheless documented practices, biographies, local knowledge, and regional variation that exceed the official frame. Post-1989 ethnology could neither accept the inherited category of "folk culture" unchanged nor dismiss the archives created under it. Instead, it expanded towards memory studies, migration, ecological

anthropology, critical heritage studies, and the anthropology of contemporary institutions. Projects on the folklore movement have examined both its continuity and its ideological ambivalence through oral history, textual analysis, and the study of music and dance. Research on ethnography between 1945 and 1989 has similarly asked how state planning, personal networks, international influence, and limited niches of scholarly freedom interacted (*Institute of Ethnology of the Czech Academy of Sciences, n.d.*). Digitisation of broadside ballads, song catalogues, photographic documentation, and old prints extends access while demanding renewed attention to consent, provenance, and community knowledge. The archive can then support critical accounts of collecting rather than merely reproducing collectors' categories. Collaboration with historians, linguists, musicologists, museums, and regional specialists further loosens inherited disciplinary boundaries. Continuity becomes dialogical when the people represented in collections are treated as historical agents rather than passive bearers of tradition. The institutional achievement lies in preserving difficult evidence long enough for more self-critical questions to become possible.

Art history reveals how inventories and images can connect scientific continuity directly to the fate of buildings and objects. The Institute of Art History dates its Academy form to the creation of the Cabinet for Art Theory and Art History in 1953, yet it also claims the earlier tradition of the Czech Academy's Archaeological Commission and absorbed important collections from the Kondakov Institute. Its library, bibliography, photographic archive, studio, and documentation department were established as integral parts of research rather than auxiliary storage. Even during the restrictive 1970s and 1980s, the main scholarly programme was not completely extinguished, although its possibilities depended heavily on individual researchers and leadership (*Institute of Art History of the Czech Academy of Sciences, n.d.*). After 1992, inherited documentation supported broader European comparison, provenance research, revised art-historical narratives, and renewed engagement with modern and previously marginalised art. The long-running inventories of artistic heritage make this continuity visible at the scale of regions, towns, buildings, and individual works. A topographical department established in 1993 completed the multi-volume *Artistic Heritage of Prague* series and has been converting accumulated research into an openly accessible architectural guide (*Institute of Art History of the Czech Academy of Sciences, n.d.*). The photographic collection now contains more than 140,000 registered items, including important bodies of work by Josef Sudek, Josef Ehm, and Emila Medková. Conservation and digitisation preserve not only depicted artworks but historical ways of framing, lighting, and classifying them (*Institute of Art History of the Czech Academy of Sciences, n.d.*). Because monuments are altered, relocated, damaged, or destroyed, an old photograph or plan may become primary evidence rather than mere illustration. Art-historical continuity thus joins scholarship to public decisions about conservation, restitution, exhibition, and the meaning of cultural loss. Its strongest form preserves documentation while remaining prepared to revise the value systems that originally directed the camera.

The mature AV ČR increasingly connects these inherited resources through centres and infrastructures that cross institutional boundaries. The Centre for Medieval Studies, founded in 1998 as a joint workplace of the Institute of Philosophy and Charles University, brings history, archaeology, legal history, theology, philosophy, literary history, art history, and philology into a shared research and doctoral environment (*Centre for Medieval Studies, n.d.*). Its structure recognises that medieval evidence was divided by modern disciplines more sharply than by the societies that produced it. A charter, church, burial, sermon, and painted manuscript can

therefore be investigated through complementary skills without dissolving specialist standards. Digital infrastructure extends this collaborative logic on a larger scale. LINDAT/CLARIAH-CZ provides tools and repositories for language technologies, arts, humanities, and social-science data while linking Czech resources to European networks. Its support for archiving, processing, management, accessibility, and FAIR-oriented reuse changes the practical reach of institute collections (*LINDAT/CLARIAH-CZ, n.d.*). Yet interoperability is never a neutral merger of data. Different archives encode persons, places, dates, genres, uncertainty, and access rights according to distinct disciplinary histories. Productive integration must therefore preserve the provenance of those differences while enabling comparison. Shared infrastructure succeeds when it makes collections more connected without making them falsely identical. In this way, the Academy's institutional continuity becomes a networked capacity rather than the property of isolated institutes.

Thus, continuity in Czech historical, archaeological, linguistic, and cultural research is best understood as the critical transmission of evidence, competence, and unfinished obligation. Institutes survived, disappeared, returned, merged, changed names, narrowed their remits, and opened new programmes, but these organisational events acquired meaning through the resources and practices they carried. Medieval regesta, Academy fonds, excavation archives, dialect recordings, literary bibliographies, Slavonic dictionaries, ethnographic collections, and art-historical photographs each preserve a different relation between past inquiry and future use. None is politically neutral, and none can remain scientifically alive through storage alone. Their renewal after 1989 required restored autonomy, scrutiny of ideological inheritances, recovery of excluded people and subjects, and new connections with universities, regional institutions, international partners, and publics. Digitisation enlarged access but also made provenance, standards, curatorship, and long-term maintenance more important. New methods gained authority when they remained traceable to the evidence and descriptive labour accumulated by earlier generations. At the same time, inherited categories became objects of criticism rather than unquestioned foundations. The transition from the ČSAV to the AV ČR was therefore neither a clean beginning nor the passive continuation of a settled scholarly order. It was a transformation through inheritance in which institutional memory became most valuable when it could disclose its own ruptures. The Academy acts as a custodian of scientific heritage precisely by keeping that heritage open to correction, recombination, and responsible public use. Its continuity is ultimately measured not by how little its disciplines change, but by how reliably they enable new generations to ask freer questions of evidence that might otherwise have been lost.

The Academy as an Institution of Scientific Heritage

1. Archives and libraries as foundations of academic memory

An academy remembers differently from an individual, because its memory must survive the departure of those who once knew how its rooms, instruments, committees, and arguments fitted together. It does so through records that can be revisited and publications that can be

read beyond the circumstances of their production. Archives and libraries are therefore not ornamental appendages to research institutions, nor are they merely storehouses filled after the supposedly creative work has ended. They are working systems through which evidence is selected, described, related, retrieved, criticised, and handed to successors. The archive preserves traces of action, while the library gathers organised bodies of knowledge against which those actions and their results can be understood. Together they turn fragile recollection into an inspectable, if always incomplete, institutional memory. Their catalogues, classifications, finding aids, accession registers, conservation routines, and reading rooms form part of the Academy's intellectual machinery. Such arrangements allow a later chemist to reconstruct an experimental lineage, a historian to examine a governing decision, or a linguist to locate an edition that shaped an earlier argument. Memory in this institutional sense is neither nostalgia nor a stable narrative of achievement. It is a capacity to recover contexts, test claims, expose exclusions, and reopen unfinished work. Studies of cultural and scientific memory have consequently stressed that durable remembrance depends upon material supports and repeated practices rather than upon information simply remaining somewhere (*Assmann, 2011*; *Bowker, 2005*). Within the Czech Academy of Sciences, archives and libraries became foundations of continuity precisely because they preserved enough order for successive political and disciplinary worlds to question one another.

The distinction between an archive and a library clarifies why both were needed, even though their holdings often meet in the same research room. A library normally acquires publications as works intended for circulation, groups them by bibliographical conventions, and enables comparison across authors, places, languages, and disciplines. An archive generally retains records because they arose from an activity, and it preserves their provenance and relationships so that a file can be read as part of an organisational process. The first privileges the recoverability of texts, whereas the second privileges the evidential bonds among documents. Yet Academy practice repeatedly blurred this division in productive ways. A scientist's annotated monograph may be a library item and evidence of an intellectual biography at the same time. A journal series is published literature, but the correspondence of its editors and referees belongs to the archival history of a discipline. Laboratory notebooks may explain a publication, while the publication supplies terminology needed to interpret the notebooks. The meaning of either object thus grows through relations that catalogues and archival descriptions must make visible without pretending to exhaust them. Archival scholars have shown that records acquire changing meanings through successive acts of creation, custody, arrangement, description, and use (*Ketelaar, 2001*). Libraries similarly organise not only books but pathways through knowledge, making classification a historical intellectual act rather than a neutral clerical convenience (*Borgman, 2007*). Academic memory emerges most fully where the archive of scientific practice and the library of scientific communication can be read together.

The oldest documentary layers inherited by the modern Academy were formed long before the ČSAV created its institute system in 1952. Learned societies accumulated minutes, membership files, correspondence, prize submissions, exchange publications, catalogues, and book collections because sociability and documentation were inseparable parts of learned life. The Royal Bohemian Society of Sciences, the Czech Academy of Sciences and Arts, and the Masaryk Academy of Labour each left records of how knowledge was sponsored, evaluated, and circulated. When the new socialist Academy absorbed or abolished these organisations, their documentary assets crossed a political boundary that radically altered

their institutional meaning. The Basic Library established in 1953 inherited book collections from several dissolved predecessors, including those three bodies, while their organisational records became early foundations of the Academy archive (*Library of the Czech Academy of Sciences, n.d.*; *Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This transfer was simultaneously an act of preservation and an act of appropriation. Collections survived, yet the independent corporate worlds that had created them were displaced by a centralised state institution. Shelf marks, accession decisions, and archival groupings could therefore carry traces of both continuity and conquest. The materials also outlived the official judgements through which the socialist order had subordinated older learned traditions. After 1989, they made it possible to reconstruct those traditions from more than retrospective commemoration. They provided evidence of networks, disputes, languages, and civic ambitions that no successor institution could simply claim as an uncomplicated genealogy. The Academy's documentary inheritance thus began as a layered legacy whose survival demanded later historical criticism of the very transfers that had preserved it.

The creation of the Basic Library of the ČSAV on 1 January 1953 answered the practical requirements of a large institute-based research organisation. Central acquisition, bibliographical control, document delivery, and access to foreign scientific literature were essential in a system expected to coordinate research on a national scale. In 1967, the library merged with the Scientific Information Department to form a combined library and scientific-information workplace (*Library of the Czech Academy of Sciences, n.d.*). This change reflected a broader 20th-century movement from the custodianship of books towards active information management. Abstracting, indexing, translation, current-awareness services, and the circulation of journals shortened the distance between a discovery abroad and its use in a Czech laboratory or seminar. Under state socialism, however, information was never distributed in an entirely open intellectual environment. Foreign-currency shortages, centrally determined priorities, restricted travel, censorship, and differentiated access to Western publications shaped the practical horizons of readers. Librarians and information specialists worked within these constraints, sometimes compensating for scarcity through exchange networks, interlibrary cooperation, personal contacts, and careful retention. Their labour could sustain disciplinary awareness even when political controls narrowed the legitimate interpretation of what was read. It would therefore be misleading either to describe the ČSAV information system as a politically neutral service or to reduce it to an instrument of ideological regulation. Its collections embodied the contradiction of socialist science: a demand for internationally credible knowledge operating within a regime anxious about uncontrolled intellectual circulation. Academic memory was built within that contradiction, preserving foreign and domestic literature whose later uses could not be predicted by those who selected it.

The transition to the Academy of Sciences of the Czech Republic did not require the central library to invent a new mission from nothing. It required a reinterpretation of inherited capacity under conditions of autonomy, competition, electronic communication, and public accountability. The Library of the Academy of Sciences of the Czech Republic was created with the new Academy at the end of 1992, carrying forward staff, holdings, cataloguing expertise, and a location on Národní Street (*Library of the Czech Academy of Sciences, n.d.*). The decisive continuity lay not in retaining every administrative arrangement but in keeping accumulated literature and bibliographical labour usable while research governance changed around them. Reconstruction of the former bank hall and library premises in 1998–1999 gave this renewal a

visible architectural form. The reopened study room signalled that a formerly centralised information service would also operate as an accessible scholarly space. In 2004, the establishment of a digitisation centre at Jenštejn expanded preservation from paper conservation and microform towards systematic digital reproduction. In 2007, the library became a public research institution, confirming that it was not simply a service office within the Academy. Its own research in book history, library science, digital humanities, and software development connected custodial expertise with knowledge production. Meanwhile, electronic resources altered acquisition from the ownership of physical copies towards negotiated access to databases, journals, and ebooks. These changes made the post-1993 library more networked and outward-facing without erasing its ČSAV foundations. Transformation through inheritance here meant converting a central information organ into a research library able to mediate between historical collections, current science, and a wider public.

The setting of the Academy library on Národní Street gives institutional memory an unusually public spatial presence. Its principal reading room occupies the former hall of the Czech Savings Bank, a building whose successive uses connect finance, civic modernity, learned administration, and public scholarship. Architecture does not itself guarantee openness, but it frames the encounter between an institution and its readers. Desks, catalogues, staff assistance, controlled storage, and the movement of requested volumes translate a collection into a social practice of study. The library's official mission primarily supports scientists and researchers, yet its services are also open to the public (*Library of the Czech Academy of Sciences, n.d.*). That combination matters for the legitimacy of an Academy funded as a public institution. A citizen entering the study room encounters scientific heritage not as a ceremonial display but as material available for informed use. Researchers from outside the Academy can test its publications, consult rare works under appropriate conditions, and trace questions beyond institutional boundaries. The reading room also preserves a tempo of concentration that differs from the instantaneity of online search. Its apparent quiet depends upon invisible flows of cataloguing, retrieval, conservation, licensing, and reader guidance. Libraries have been described as infrastructures precisely because their cultural importance arises from the coordination of spaces, people, standards, technologies, and publics (*Mattern, 2014*). In this setting, academic memory becomes civic when preservation is joined to regulated but genuine access.

The central library is only one node in a more dispersed Academy ecology. Individual institutes maintain specialised libraries shaped by their research traditions, languages, international partners, and long-running programmes. A physics institute needs journal runs and technical reference works different from those required by an archaeological, philosophical, or ethnological workplace. Local librarians often know not merely that an item exists but why a particular edition, conference proceeding, translation, report, or offprint mattered to a research group. This proximity makes the institute library a form of disciplinary memory embedded in everyday work. At the same time, decentralisation risks duplication, uneven cataloguing, isolation, and vulnerability when institutes merge or budgets contract. The collective catalogue of the libraries of Academy institutes provides a common discovery layer without dissolving the distinct collections behind it (*Library of the Czech Academy of Sciences, n.d.*). Its continuing coexistence with digitised card catalogues is revealing. Retrospective conversion cannot always be completed quickly, and older descriptive systems may retain information that a modern minimal record omits. A researcher may therefore move between

electronic search, scanned cards, local shelf knowledge, and consultation with staff. Such movement is not evidence of simple backwardness but of an infrastructure built in historical layers. The strength of the network lies in connecting those layers while preserving the specialist context that made each local collection scientifically meaningful.

Selection within a specialised library records the intellectual biography of an institute even when no formal institutional history has been written. Successive subscriptions show which foreign centres a discipline watched, while withdrawn titles can reveal changes in method, language, or political orientation. Donations and scholars' estates mark personal networks that acquisition ledgers may only partially explain. Conference proceedings preserve communities that existed before their work entered widely indexed journals. Grey literature, internal reports, standards, maps, data manuals, and separately printed articles often document research pathways invisible in ordinary book publishing. During periods of scarcity, a single imported journal or photocopied article might have circulated through an entire team and influenced work far beyond the copy's physical modesty. Marginal notes, inserted letters, and ownership stamps can add another evidential layer when privacy and conservation rules permit their study. The catalogue record rarely captures all these histories, which means that librarians' tacit knowledge remains an important component of access. Scientific-memory research has emphasised that classification systems and routine standards determine what later users can recover from accumulated information (*Bowker, 2005*). Staff succession therefore matters almost as much as media preservation. Handovers, local manuals, authority files, and shared professional networks prevent a collection from becoming an unintelligible remainder after an experienced librarian retires. An institute library carries continuity most effectively when its historical particularity is documented well enough to be translated for readers who did not inhabit its original disciplinary world.

Journals and publication exchange gave Academy libraries a transnational function well before digital licensing. Learned societies and institutes sent their own proceedings abroad in return for periodicals that were expensive, scarce, or unavailable through ordinary commercial purchase. Each bound run consequently records a durable relationship between institutions as well as a sequence of articles. Political borders could slow or censor exchange, but they seldom eliminated the scientific need for comparison with work elsewhere. Library stamps and exchange annotations sometimes reveal routes through which knowledge moved despite diplomatic tension. After 1989, commercial databases and international consortia expanded access, yet they also exposed institutes to rising subscription costs and contractual dependence. The material logic shifted from possessing a volume to leasing authenticated entry to a platform. Interlibrary services continued to mitigate gaps by obtaining documents and copies from Czech and foreign libraries, thereby treating the absence of local ownership as a solvable network problem (*Library of the Czech Academy of Sciences, n.d.*). This service is a form of memory in motion rather than a static collection. It allows an older citation, obscure regional journal, or foreign monograph to re-enter present research when a new question makes it relevant. Internationalisation is therefore not only measured by travel, joint projects, or co-authorship. It also rests on the quiet ability of libraries to keep documentary routes across borders open. The Academy's scholarly autonomy depends partly on this plural access, because researchers who can consult competing literatures are less confined by any single national, commercial, or political information regime.

The historical collection of the Academy library creates a bridge between modern research support and the longer history of learned reading. It contains approximately 25,000 books from

the 16th to the 19th centuries, about one hundred incunabula, and a comparable number of manuscripts (*Library of the Czech Academy of Sciences, n.d.*). Some items entered through the libraries of predecessor institutions, while others came through antiquarian purchases, estates, and the absorption of dissolved collections between 1953 and 1967. The resulting whole is not a single historically grown aristocratic or monastic library. It is a composite research collection whose internal provenance must be reconstructed item by item and subcollection by subcollection. That composite character is itself historically significant. It records the redistribution of cultural property through institutional reform, state centralisation, collecting policy, and scholarly opportunity. Early ownership marks, bindings, handwritten additions, and shelving traces can reveal journeys that a title-level catalogue alone cannot show. The collection includes works that predate modern disciplinary divisions and can support inquiries in theology, medicine, natural philosophy, law, travel, philology, and material bibliography. Selective digitisation increases visibility, but consultation of the physical object remains essential where paper, ink, format, binding, or annotation carries evidence. Preservation thus protects more than textual content. It retains the layered materiality through which books testify to communities of production, possession, censorship, and reading. In the Academy's institutional memory, these rare holdings connect present research not only to predecessor organisations but to the broader European republic of letters from which Czech learned culture emerged.

Custody becomes intellectually productive when a library researches the collections for which it is responsible. The Book History Department of the Academy library exemplifies this union of preservation, bibliography, and historical inquiry. It studies printing, publishers, libraries, illustration, and the circulation of books while curating early and rare printed materials. Its major continuing responsibility is the Bibliography of Foreign-Language Printed Bohemica up to 1800. The database records books printed in the Czech lands, works concerning them, and works by Bohemian authors issued abroad in languages other than Czech. With approximately 32,000 records and continual updating, it complements the Knihopis database of Czech-language production to form a national retrospective bibliography (*Library of the Czech Academy of Sciences, n.d.*). This work demonstrates that a bibliography is not a passive list. Each entry requires decisions about authorship, place, variant editions, language, printer, provenance, and the boundaries of Bohemica. Revised attribution or a newly located copy can alter the map of early modern intellectual exchange. Digital access makes the cumulative result searchable across categories that card files could not easily combine. Yet the database remains dependent on inspection, specialist languages, comparison of copies, and the correction of inherited descriptions. The Academy library thereby acts not only as a keeper of old books but as a producer of the scholarly memory through which those books can be related and reinterpreted.

The Academy archive developed alongside the Basic Library but preserved a different evidential order. It began work on 1 January 1953 within the Czechoslovak archival system, became a special archive in 1956, and was designated an archive of special importance in 1974. In 1966, it was renamed the Central Archive of the ČSAV, reflecting the growing coordination of records across the Academy. Its first holdings included the papers of the Royal Bohemian Society of Sciences, the Czech Academy of Sciences and Arts, the Masaryk Academy of Labour, and the Czechoslovak National Research Council. The archive also built photographic and art collections and conducted research in archival science, codicology, and the history of science (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). Its first published

guide in 1962 described forty-eight fonds and collections. Later specialist sections distinguished predecessor bodies, personal papers, and ČSAV records. The contemporary overview retains comparable divisions among institutional fonds, personal fonds, collections, and the deposited archive of the T. G. Masaryk Institute (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). The resulting system now encompasses hundreds of holdings extending across thousands of linear metres (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This differentiation made the archive better able to preserve provenance while accommodating very different creators. The institutional genealogy held in its repositories was therefore broader than the current Academy and older than the socialist state. Even when official public narratives privileged 1952 as a founding moment, the arrangement of fonds preserved evidence of alternative beginnings. The archive could thus sustain a longue durée of Czech organised science that no single political regime fully controlled. Its own institutional continuity rested on retaining distinctions among creators rather than merging every predecessor into an undifferentiated story of the ČSAV.

The preserved records of Academy governance make institutional memory answerable to evidence rather than dependent upon the recollections of former leaders. Minutes of general assemblies, Presidium papers, committee files, correspondence, reports, personnel materials, budgets, and foreign-relations documents reveal how scientific priorities were translated into decisions. They show not only what an institution announced but how proposals moved, where objections appeared, and which matters disappeared between draft and resolution. The archival overview deliberately lists ČSAV and AV ČR institutes together when organisational continuities make that relationship meaningful (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This arrangement assists research into transformation without asserting that unchanged names guarantee unchanged institutions. Secretariats of successive presidents and vice-presidents document distinctive political periods, including the reform era and normalisation. Contacts with the Communist Party, ministries, universities, foreign academies, and institutes expose the multiple authorities within which the ČSAV operated. After 1989, elected bodies, evaluations, property questions, restructuring, and new forms of accountability produced another documentary landscape. Reading across these series allows historians to compare the vocabulary and mechanics of control rather than treating regime labels as complete explanations. It also recovers the administrative labour through which policies reached laboratories, libraries, expeditions, and careers. The record is uneven, because controversial decisions may be euphemised and informal pressure may leave only indirect traces. Nevertheless, institutional archives provide the indispensable ground on which claims about autonomy, compromise, resistance, and reform can be tested.

An Academy archive does not begin its work only when old boxes arrive at a repository. It intervenes earlier by advising institutes how records should be created, registered, retained, appraised, transferred, or lawfully destroyed. The Masaryk Institute and Archives supervises records management across the Czech Academy and receives both institutional records and personal papers (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This prospective role makes archival memory a dimension of present governance. File plans, retention schedules, metadata requirements, and staff training influence what future researchers will be able to reconstruct. If email threads are dispersed across private accounts, if project documentation lacks stable identifiers, or if datasets lose contextual files, later preservation becomes uncertain. Conversely, indiscriminate retention can produce an

unmanageable mass in which significant evidence is effectively concealed by volume. Appraisal is therefore an exercise of judgement rather than a mechanical separation of valuable from valueless paper. It must consider legal obligations, scientific reproducibility, administrative accountability, personal rights, and historical significance. The archive's dual position as an Academy workplace and an accredited specialised repository gives it both proximity and professional responsibility. Proximity supplies knowledge of institutional functions, while archival standards require evidence to remain usable beyond the needs of current managers. This balance guards against treating records merely as short-term administrative property. The foundations of academic memory are laid when today's documentary practices are designed with tomorrow's questions in view.

Personal fonds add the scale of lived scholarly experience to the formal memory of councils and institutes. The archive holds the papers of prominent scientists and public figures, including Jaroslav Heyrovský and Otto Wichterle, alongside the extensive documentary worlds of Tomáš Garrigue Masaryk and Edvard Beneš. Its personal holdings number in the hundreds and extend across a substantial physical volume (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). Correspondence, drafts, notebooks, diaries, lecture notes, photographs, travel papers, and offprints can reveal how a discovery or institutional initiative actually developed. They disclose failed experiments, abandoned formulations, intellectual debts, and informal collaborations that finished publications tend to conceal. Personal archives also connect Academy careers to universities, industry, political movements, exile communities, families, and international networks. Their acquisition depends upon relationships with originators and heirs, who may donate, sell, bequeath, or deposit material under agreed conditions. Access restrictions can protect privacy and legitimate donor interests, but they also shape the timing and scope of historical interpretation. Archivists must therefore document contractual limits as carefully as the materials themselves. The scientific self represented in a personal fonds is never complete, because individuals curate their papers and families make further selections. Even so, the juxtaposition of personal and institutional records permits discrepancies to become analytically productive. Academic memory gains depth when a polished decision can be read against draft notes, private hesitation, technical collaboration, and the unequal distribution of recognition.

No archive records an institution in its entirety, and a mature history must take its silences as seriously as its surviving documents. Technicians, secretaries, translators, librarians, instrument makers, field assistants, and junior researchers often appear only at the margins of files created by senior officials. Women's scientific labour may be visible in routine correspondence while absent from narratives of leadership. Scholars excluded after 1948 or 1968 sometimes carried papers into private custody or exile, leaving domestic institutional series deceptively orderly. Informal political pressure might be delivered orally, while cautious administrators recorded a neutral formula rather than a coercive conversation. Destruction could be deliberate, legally scheduled, accidental, or simply the result of neglect during organisational change. Archival power resides partly in these prior processes of naming, classification, and preservation (*Schwartz & Cook, 2002*). Expanding personal-fonds acquisition and collecting records of societies can mitigate some absences, but it cannot recreate what was never documented. Oral history, foreign archives, family collections, samizdat, security-service records, and university holdings may therefore be needed to challenge the institutional archive from outside. The archivist's description should disclose gaps, uncertain provenance, and imposed order instead of converting incompleteness into an

illusion of coherence. Researchers, for their part, must ask why one voice is abundant while another is barely recoverable. Such criticism does not diminish the archive's value. It transforms academic memory from a self-congratulatory inventory into an inquiry about who was authorised to leave evidence and whose contribution must be reconstructed indirectly.

The T. G. Masaryk Library offers a particularly vivid example of how a scholarly collection can become a political object without losing its research identity. Masaryk gave his personal collection of approximately 70,000 volumes to the institute bearing his name in 1932, and the holdings continued to grow through donations and purchases. By the institute's closure in 1954, the collection had exceeded 200,000 volumes (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). War had already forced the books into protective displacement, and some were appropriated during the German occupation. The communist dissolution then broke the library apart as a functional whole. Masaryk's personal books and archive went to the Institute of the History of the Communist Party, while other volumes entered the Basic Library of the ČSAV or the National and University Library. This division disregarded parts of the original classification and separated runs, subjects, and provenance relationships. Physical survival therefore coexisted with intellectual damage. Restitution after 1989 recovered legal and symbolic continuity, but the renewed institute initially lacked sufficient money, buildings, and repository space. The Academy's Masaryk Institute assumed management in 1995, and later institutional cooperation gradually reunited dispersed components. The history of this library condenses occupation, ideological repudiation, state custody, democratic restitution, and scholarly reconstruction into the movement of books. It shows that preservation is not complete when volumes remain extant, because the relationships that made a collection meaningful may also have to be recovered.

The later cataloguing of the Masaryk Library illustrates how description can become an act of historical repair. After suitable repository space was prepared, systematic work could address a collection whose scale and disrupted order had long obstructed full access. Cataloguers retained the original subject division by carrying it into modern shelf marks rather than replacing it with a wholly contemporary scheme. They also recorded Masaryk family signatures, dedications from artistic and political figures, ownership marks, inserted texts, and the Greek psi used to indicate books Masaryk had read. Such details allow the catalogue to function as a map of intellectual practice rather than a list of titles. Government support launched an intensive phase in 2017, and Academy resources sustained work when the second phase lacked the expected state funding (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). By late 2023, more than 159,000 volumes had been catalogued (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). The numerical achievement is important, but its deeper value lies in reconnecting items with persons, subjects, subcollections, and historical arrangements. A standardised record enables national catalogue discovery, while local notes preserve features specific to this library. The process also makes visible the limits of restitution, including missing books, altered sequences, and traces of earlier institutional custody. Cataloguing here is neither the final stage of rescue nor a neutral administrative operation. It is a scholarly reconstruction that respects historical order while translating it into forms usable by present researchers. Through that translation, a collection once fragmented for political reasons becomes an open but critically documented archive of reading.

Material catastrophe reminds institutions that memory depends upon vulnerable physical environments. The Prague flood of 2002 damaged parts of the Academy archive and its library

holdings, requiring rescue, drying, conservation, reorganisation, and prolonged recataloguing. The event exposed the consequences of repository location, emergency planning, environmental control, and incomplete inventories. A purpose-designed archival building opened in Gabčíkova Street in 2005, strengthening storage and professional access (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). The central Academy library faced a different shock when a gas explosion in Divadelní Street damaged its study room and premises in 2013 (*Library of the Czech Academy of Sciences, n.d.*). Neither disaster was political, yet both threatened the evidence through which political and scientific history could be studied. Recovery depended on specialised staff, institutional funding, external cooperation, and reliable descriptions of what had been present before damage occurred. Conservation decisions had to weigh uniqueness, condition, research value, and the feasibility of treatment. Duplicate publications could sometimes be replaced, whereas annotations, archival originals, and provenance evidence could not. Digital surrogates could reduce handling and preserve informational content, but they could not restore every material feature. Disaster planning therefore belongs to the intellectual mission of an Academy rather than merely to facilities management. Resilient academic memory requires buildings, environmental systems, inventories, backups, trained people, and rehearsed procedures to support one another before an emergency begins.

Digitisation is often described as preservation, but it is more accurately a transformation that can support preservation under specified conditions. Scanning converts an object into images or machine-readable text, making remote access and new forms of search possible. The process can reduce handling of fragile originals and create a recoverable representation if the physical item deteriorates. Yet a digital surrogate selects resolution, colour profile, cropping, sequence, file format, and metadata, each of which affects what later users can perceive. Optical character recognition may unlock full-text searching while introducing errors that are patterned by typeface, language, page damage, and layout. A page image cannot reproduce paper texture, binding structure, watermarks, marginal depth, or the evidence of sheets concealed by sewing. Files themselves require storage, integrity checking, migration, documentation, and redundant copies. Digital preservation is therefore an ongoing institutional commitment, not the one-time act of pressing a scanner button. Scholarship on mass digitisation has warned that access, preservation, selection, and authenticity remain distinct problems even when they are technically connected (*Conway, 2010*). The original and the surrogate should be understood as related research objects rather than interchangeable containers of the same content. Good digitisation preserves a traceable bond between image, catalogue record, provenance, rights information, and physical source. Academic memory expands through digitisation only when this bond remains intelligible across future technological change.

The digitisation policy of the Masaryk Institute and Archives makes these dependencies explicit. Archival photographs are scanned only in conjunction with cataloguing, and documentary files must first be processed or carefully re-inventoried. Digital images are then linked to descriptive units in the archival finding aids and released through the Vademecum portal. The institute aims gradually to digitise photographic collections, whereas the far larger mass of documentary records is selected according to condition, historical value, research demand, and prior arrangement (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). This policy rejects the seductive but impractical promise that everything can immediately be placed online. Selection creates a new visibility hierarchy, making some fonds

easier to encounter than others. Transparent criteria and published descriptive context are therefore essential. A photograph detached from its series can invite false certainty about date, subject, authorship, or institutional purpose. Conversely, a well-linked surrogate can bring dispersed visual evidence into comparison without repeated travel or handling. Digitisation also enables researchers to prepare more focused visits for materials that remain accessible only in the reading room. Its greatest value is not the disappearance of mediation but the improvement of mediation. Archivists remain responsible for explaining structure, gaps, restrictions, and the relation between an online representation and the record it represents. The digital archive becomes a foundation of academic memory when it enlarges critical access without concealing the choices that produced it.

The Digital Library of the Czech Academy of Sciences preserves another layer: the Academy's own published voice. It contains digitised periodicals and monographs produced by current institutes and by predecessor institutions, as well as more recent born-digital publications. Its long-term strategy is to make documents issued by all Academy units accessible through a common environment (*Library of the Czech Academy of Sciences, n.d.*). This ambition turns scattered institute publishing into a reconstructable corpus. A journal that changed title, publisher, disciplinary scope, or political vocabulary can be followed across organisational breaks. Searchable runs make it possible to examine not only celebrated discoveries but routine reviews, bibliographies, reports, and debates through which disciplinary standards were formed. The platform also distinguishes digitised objects from born-digital ones, a difference important for authenticity and preservation. Academy units are required to submit electronic publications for collection and long-term archiving. Mandatory deposit recognises that future memory cannot rely upon publishers' websites, personal drives, or commercial platforms remaining available. Participation in the Czech Digital Library and Europeana further places Academy production within national and European cultural-heritage networks. These connections increase discovery while making consistent metadata and rights statements more consequential. The digital library thus joins institutional self-documentation to public circulation, ensuring that the Academy's published inheritance can be studied as a changing whole rather than as isolated successes.

Digital availability nevertheless remains legally and ethically graduated rather than absolute. Public-domain works and licensed items may be read, downloaded, and printed freely, while other protected materials are available only after authentication or on designated library computers. Czech arrangements for works unavailable on the market extend controlled reading access to certain protected monographs and periodicals without removing copyright restrictions (*Library of the Czech Academy of Sciences, n.d.*). Such layers can frustrate users accustomed to equating digitisation with unrestricted possession. Yet they expose a genuine conflict among preservation, authors' rights, publishers' interests, institutional licences, and the public value of research. An Academy committed to heritage must negotiate this conflict rather than deny it. Rights metadata becomes part of the scholarly record because it explains why access differs among apparently similar objects. Restrictions may also protect personal data, confidential peer review, sensitive field information, or donor conditions in archival collections. At the same time, over-cautious or opaque restriction can reproduce inequalities by favouring researchers able to travel, register, or enter particular institutional networks. Regular review is therefore necessary as copyright expires, agreements change, and ethical standards develop. The democratic value of digital memory depends upon clear explanations of what is accessible, to whom, where, and why. Openness should be pursued as a reasoned

institutional policy, not used as a slogan that ignores legitimate limits. The credibility of the Academy rests on making both access and restriction accountable.

The ASEP system adds a bibliographical memory of research results created within the post-1993 Academy. Its database contains records of publications from Academy institutes since 1993, giving the new institution a documentary sequence beginning with its legal creation. Full texts could be attached from 2012, and research data with metadata from 2018 (*Library of the Czech Academy of Sciences, n.d.*). The system therefore evolved from publication evidence towards an institutional repository linking descriptions, outputs, and supporting data. Local data entry and central coordination distribute responsibility between institutes and the Academy library. Standardised records allow searches by researcher, department, institute, field, document type, and year. They make small or dispersed contributions visible beside prominent monographs and highly cited articles. They can also trace changes in collaboration, language, publication venue, and disciplinary balance over time. Unlike a conventional archive received after closure, ASEP captures an institution's intellectual output while that institution is active. This immediacy creates opportunities for correction but also makes completeness dependent on current reporting routines. The database cannot preserve tacit knowledge, failed work, unreported activity, or the full conditions under which a publication emerged. Its strength lies instead in providing a stable spine around which other records, texts, datasets, and personal archives can later be organised. ASEP is thus both an administrative system and a consciously constructed memory of what the AV ČR has produced.

The same bibliographical memory can become reductive when it is treated chiefly as a source of metrics. ASEP Analytics can generate bibliographic, statistical, graphical, and bibliometric overviews for institutes, departments, fields, and individuals (*Library of the Czech Academy of Sciences, n.d.*). Such tools support evaluation, reporting, strategic planning, and the identification of collaboration patterns. They also permit historical comparisons that would be laborious in dispersed annual reports. Yet a record designed to preserve the existence of a scholarly contribution is not identical to a measure of its quality or social value. Citation counts vary by field, language, document type, career stage, database coverage, and the tempo at which influence appears. Critical editions, dictionaries, long datasets, regional studies, and infrastructure work may generate forms of value poorly captured by short-term indicators. If evaluation incentives determine what enters the record or how outputs are classified, the archive begins to mirror the policy that uses it. Future historians could then mistake a metric-facing representation of science for science itself. Responsible bibliometrics requires transparent data, field-sensitive interpretation, and the retention of contextual evidence. The library's position is important because bibliographical expertise can expose ambiguities that administrative dashboards tend to flatten. Institutional memory should make comparison possible without converting diverse scholarly lives into a single league table. Its task is to preserve enough richness for later judgements, including judgements that differ from those rewarded at the time of recording.

The extension of library responsibility to research data brings archival thinking into the beginning of a project. Digital observations, code, images, models, transcripts, and laboratory measurements can be more difficult to preserve than a printed article because their intelligibility depends on software, documentation, formats, and workflows. The Academy library supports open access and FAIR-oriented data management through consultation, repositories, and a tool for preparing data-management plans (*Library of the Czech Academy of Sciences, n.d.*). The FAIR principles require data to be findable, accessible, interoperable,

and reusable, qualities that depend heavily on metadata and stewardship (*Wilkinson et al., 2016*). These principles do not mean that every dataset must be open to everyone. Sensitive personal, medical, ecological, security-related, or contractual information may require controlled access. They do mean that restrictions and conditions should be documented so the existence and status of data are not lost. A plan made early can clarify file naming, version control, responsibilities, consent, licences, storage, and the selection of material for long-term retention. Such planning turns memory from an afterthought into part of research design. It also reveals that reproducibility is institutional as well as methodological. A result cannot be effectively revisited if the files survive without code, calibration records, variable definitions, or the sequence of transformations applied to them. By teaching these practices, the library helps present researchers create the future archives of Czech science.

Born-digital institutional records present an even wider preservation challenge. Email, shared documents, databases, websites, videoconferences, electronic laboratory notebooks, and messaging platforms rarely possess the self-contained stability of a bound volume. Their evidential relationships may depend on permissions, links, dynamic content, proprietary software, or server structures that disappear during migration. A printed memorandum usually fixes one version, whereas a collaborative file can be overwritten continuously unless version history is deliberately retained. Hybrid meetings may generate recordings, transcripts, chat messages, slide decks, and formal minutes that differ in authority and content. Personal devices and cloud services blur the boundary between institutional and private custody. Large volumes make manual appraisal impossible, but automated selection may reproduce undocumented biases. Cybersecurity and data-protection duties further complicate transfer to an archive. Knowledge-infrastructure research emphasises that durable access depends on coordinated technical, organisational, and social arrangements rather than on storage alone (*Edwards et al., 2013*). The Academy must therefore align records policy, information technology, legal expertise, research-data management, and archival description. Preservation formats and integrity checks address only part of the problem. The deeper task is to retain context well enough that a future user can understand what a digital object did within a scientific or administrative process. Academic memory will increasingly be won or lost in these ordinary systems long before a historian requests access.

Networked discovery allows the Academy's archives and libraries to participate in a memory landscape larger than the institution itself. The collective catalogue connects institute holdings, while national catalogues and interlibrary systems place them alongside university, public, museum, and specialist libraries. The Digital Library contributes content to the Czech Digital Library and, through it, to Europeana (*Library of the Czech Academy of Sciences, n.d.*). Manuscript catalogues, correspondence portals, and archival Vademecum records similarly make Academy expertise useful beyond the walls of a single repository. These connections can reunite intellectually related materials that political borders, inheritance, war, or institutional reorganisation dispersed. A scholar may follow one correspondence across Prague, Brno, London, Moscow, and an émigré collection without expecting the objects to be physically centralised. Interoperability makes such research possible by aligning identifiers, names, dates, places, formats, and rights statements. It can also conceal difference if aggregated records strip away local terminology, uncertainty, or provenance. The best network therefore enables comparison while preserving a route back to the responsible institution and the fuller local description. Digital abundance increases rather than eliminates the need for authoritative mediation. Cataloguers, archivists, and subject specialists must negotiate multilingual

names, changing borders, institutional renamings, and conflicting date conventions. The Academy's memory becomes internationally legible not by surrendering its historical particularity but by expressing that particularity through standards others can interpret.

Public use completes the cycle through which stored materials become academic memory. A closed repository may preserve objects physically, but it cannot fully perform the critical function of an archive or research library. Reading rooms, online catalogues, exhibitions, editions, educational programmes, and responses to enquiries place collections into encounters with new questions. Users frequently discover errors, unidentified persons, missing references, or relationships that custodians could not have anticipated. Their publications and annotations feed knowledge back into descriptions and guide later researchers. Access therefore produces memory collaboratively, although professional institutions retain responsibility for authenticity, conservation, rights, and equitable service. The Academy's openness also allows society to investigate the institution itself. Records of political accommodation, personnel exclusion, failed programmes, or contested evaluation should remain available beside accounts of discovery and achievement. This exposure can be uncomfortable, but it is a condition of credible scientific autonomy. An institution that preserves only a heroic self-image turns heritage into public relations. An institution that maintains evidence for criticism demonstrates confidence in scholarly method. Archives and libraries strengthen trust not because their holdings settle every dispute, but because they allow claims to be checked and interpretations to be revised. In this sense, stewardship of academic memory is one of the ways the Academy makes its public responsibility visible across generations.

Thus, archives and libraries form the foundations of academic memory because they join material survival to organised doubt. From the collections of early learned societies to the Basic Library and Central Archive of the ČSAV, and from those bodies to the Library and the Masaryk Institute and Archives of the AV ČR, continuity has always been mediated by transfer, rearrangement, and reinterpretation. Books, minutes, correspondence, photographs, journals, catalogues, datasets, and digital files endured under different conditions and with unequal degrees of completeness. Their preservation sometimes accompanied institutional appropriation, political exclusion, fragmentation, disaster, or restrictive access. For precisely that reason, custody cannot be separated from provenance and critical description. The central library and specialised institute libraries sustain disciplinary depth, while collective catalogues and interlibrary networks prevent that depth from becoming isolation. The Academy archive preserves governance and personal experience, yet its records-management role also determines what evidence will exist in the future. Digitisation, repositories, ASEP, and FAIR-oriented data stewardship expand the scale and speed of memory without abolishing the need for original objects, expert mediation, or ethical limits. Public reading rooms and online infrastructures convert inherited collections into shared opportunities for research rather than closed emblems of institutional prestige. The transition from the ČSAV to the AV ČR therefore appears here neither as archival amnesia nor as the untouched survival of a documentary order. It was a transformation through inheritance in which older holdings and competences acquired new democratic, technological, and scholarly purposes. The Academy acts as an institution of scientific heritage when it preserves not a single authorised past, but the evidential conditions under which successive generations can reconstruct, contest, and renew the history of knowledge.

2. Knowledge Transmission between Generations

Scientific heritage becomes a living institutional force only when people learn how to use, question, and transform what their predecessors have left. Archives, libraries, instruments, collections, and datasets may preserve possibilities, but they cannot by themselves recognise a significant anomaly or teach a newcomer why a familiar procedure sometimes fails. That capacity resides in relations among experienced researchers, early-career colleagues, doctoral candidates, technicians, librarians, and students. Intergenerational transmission is therefore not a ceremonial passing of a completed inheritance from old hands to young ones. It is a sustained process in which standards are demonstrated, judgements are discussed, errors are exposed, and unfinished questions acquire new owners. The recipient does not become a scientist by memorising the conclusions of an established school. He or she becomes one by learning how those conclusions were made vulnerable to evidence and how they might responsibly be revised. This distinction matters especially in an Academy whose institutional predecessors worked under monarchy, democracy, occupation, state socialism, and a renewed constitutional order. Each regime altered who could teach, who could learn, which careers were possible, and which intellectual affiliations could be acknowledged. Yet no political transition began with an empty laboratory or an entirely unformed generation. People carried methods and memories across ruptures, even when their institutional titles, public vocabularies, or personal loyalties changed. The history of knowledge transmission in the Czech Academy is consequently a history of critical succession rather than simple reproduction. Its central question is not whether one generation resembled another, but whether accumulated competence remained open enough to be inherited without becoming intellectually compulsory.

Much of what passes between generations cannot be fully detached from the circumstances in which it is practised. A protocol can specify quantities, temperatures, settings, or stages, yet it may not convey the sound of a properly running pump, the appearance of a contaminated culture, or the moment when an interview has reached productive silence. A catalogue can name a manuscript, while an experienced philologist notices the hand, abbreviation, or textual family that makes it relevant. A field manual may describe sampling, but local knowledge determines where water collects after unusual weather or which surface disturbance is modern. Michael Polanyi's account of tacit knowing captured this excess of skilled performance over explicit statement, although tacit knowledge should not be romanticised as mysterious intuition (*Polanyi, 1966*). Harry Collins later distinguished forms of tacit knowledge that arise from bodily skill, collective convention, and limits of articulation, showing why some can be converted into instructions while others remain socially embedded (*Collins, 2010*). Scientific continuity depends on knowing which elements should be codified and which require guided participation. Excessive reliance on oral custom can make an institute vulnerable when experienced staff leave. Excessive confidence in documentation can create the illusion that a procedure is transferable without the community that gives its terms practical meaning. The sound institutional response is therefore redundancy across people, records, demonstrations, and repeated use. Generations meet most productively when explicit documentation invites questions and tacit expertise is made available without being treated as private property. In this way, inheritance becomes both more durable and more contestable.

Research groups transmit knowledge through participation before they transmit it through formal authority. A newcomer often begins with bounded tasks whose significance becomes visible only after observing how a team frames problems, divides labour, checks results, and

reacts to uncertainty. Gradually, the learner moves from peripheral contribution towards responsibility for decisions that affect the whole inquiry. Lave and Wenger described this movement as legitimate peripheral participation, stressing that learning involves becoming a participant in a practice rather than merely receiving information (*Lave & Wenger, 1991*). Wenger's later account of communities of practice likewise connected learning with shared repertoires, negotiated meanings, and changing identities (*Wenger, 1998*). An Academy institute offers many such communities at once: the laboratory, department, seminar, editorial board, field team, doctoral programme, and international collaboration. Their boundaries overlap but do not coincide, allowing a young researcher to encounter several standards of competence. This plurality can protect intellectual development from dependence on a single senior figure. It can also generate conflict when a university programme, institute team, and external project expect different forms of loyalty or output. Good transmission does not eliminate those differences but teaches researchers how to navigate and explain them. The novice must learn when local convention embodies hard-won experience and when it merely reflects habit. The mature community proves its scientific character by permitting newcomers eventually to alter the practice through which they were trained.

The practical content of transmission varies among disciplines because their objects, instruments, timescales, and forms of proof differ. Experimental scientists learn calibration, controls, sample preparation, statistical caution, and the disciplined handling of negative results. Field researchers acquire bodily and environmental judgement that is inseparable from sites, seasons, organisms, landscapes, and relations with local collaborators. Historians and philologists develop source criticism through repeated encounters with scripts, languages, editions, archival silences, and conflicting provenance. Mathematicians and theoretical scientists learn to recognise which simplifications are fertile, which analogies conceal a flaw, and which proof strategy is elegant but unproductive. Such differences form what Karin Knorr Cetina called epistemic cultures: collective arrangements for making and warranting knowledge (*Knorr Cetina, 1999*). They also explain why a single Academy-wide training scheme cannot replace discipline-specific apprenticeship. Common instruction in integrity, writing, data management, and careers is valuable precisely because it supplements rather than flattens local practice. A laboratory meeting cannot be copied unchanged into an archaeological excavation, and an editorial workshop cannot be evaluated by the tempo of a short experimental cycle. Nevertheless, all these settings teach how evidence becomes accountable to a community of competent critics. Intergenerational continuity lies in that movement from exposure to responsible judgement. The Academy holds diverse disciplines together not by imposing one pedagogical culture, but by ensuring that each culture can explain its standards to others. Its heritage remains plural while its commitment to reasoned scrutiny is shared.

The language of a scientific school can illuminate this process, provided that a school is not reduced to a founder surrounded by loyal disciples. A durable school transmits a repertoire of questions, methods, standards, and intellectual ambitions that can survive the person with whom it became associated. It often gathers around a laboratory, seminar, journal, research site, instrument, or long programme rather than around doctrine alone. Thomas Kuhn emphasised the role of exemplars through which practitioners learn to solve recognised kinds of problems, but scientific development also depends on discovering when inherited exemplars no longer suffice (*Kuhn, 1970*). The authority of a respected teacher may accelerate learning because novices can trust guidance before they fully understand its grounds. The

same authority becomes dangerous when gratitude is converted into obedience or when disagreement is read as personal betrayal. Schools can reproduce tacit excellence, but they can also reproduce patronage, exclusion, narrow citation circles, and unexamined assumptions. Institutional safeguards are therefore part of intellectual transmission rather than external bureaucracy. Open recruitment, multiple supervisors, external examination, transparent authorship, and access to independent advice help separate mentorship from dependence. A school proves its fertility when its members establish distinct programmes, collaborate beyond the original circle, and criticise the premises they inherited. The successor need not imitate the founder's topics in order to continue the founder's seriousness of purpose. At its best, a Czech Academy tradition is recognisable through the quality of the questions it makes possible, not through the uniformity of answers it requires.

Before the ČSAV, intergenerational transmission in the Czech lands moved through universities, learned societies, museums, observatories, hospitals, private collections, editorial enterprises, and informal circles. The Royal Bohemian Society of Sciences and the Czech Academy of Sciences and Arts supplied recognition, publication, grants, and sociability, but they did not command a comprehensive institute system. Their members trained younger scholars largely through university chairs, research assistance, correspondence, expeditions, and collaborative work on dictionaries, editions, surveys, or collections. This distributed structure linked academic succession to the wider cultural labour of the national revival and the Czechoslovak state. It also made access dependent on social position, educational opportunity, language, gender, and proximity to recognised centres. The admission of women to full membership in the Czech Academy of Sciences and Arts only in the interwar period signalled how slowly formal inclusion followed women's participation in intellectual life (*Czech Academy of Sciences, n.d.*). Personal patronage could open a path where no stable junior position existed, yet it could equally preserve inherited privilege. Long projects nevertheless created practical chains of instruction across changing organisations. Lexicographers trained assistants in excerpting and definition, archaeologists passed on field and typological judgement, and experimentalists formed teams around new apparatus. These relationships helped specialised units emerge before the socialist Academy consolidated them after 1952. The later institute system therefore did not invent scientific succession, although it changed its scale, employment base, and relation to the state. Institutional heritage reaches further back than the legal genealogy of the present Academy because practices of teaching and collaboration preceded the organisations that later claimed them.

The establishment of the ČSAV in 1952 concentrated research careers within a powerful network of specialised institutes and made advanced scientific preparation a more explicit institutional responsibility. The Soviet-derived model combined a learned corporation, a coordinating authority, and a major employer of researchers. It could assemble large teams, maintain specialised equipment, sustain long projects, and offer younger scientists a workplace organised primarily around research. The system of scientific aspirantura connected postgraduate qualification with institute membership and the degrees of Candidate and Doctor of Sciences. In principle, this arrangement enabled a novice to enter an environment where research was not fitted around a heavy undergraduate teaching load. Daily proximity to senior scholars, technicians, collections, and seminars could accelerate the acquisition of disciplinary competence. Concentration also allowed institutes to reproduce rare specialisms that no single university department could easily support. Yet opportunity was inseparable from political selection, central planning, and a hierarchy in which the Party-state

could influence appointments and research priorities. The institution that created a strong material basis for succession also acquired strong means to decide whose succession would count. Careers could be opened to people from groups previously distant from academic life, while other candidates were excluded because of family origin, political judgement, religious commitment, or intellectual orientation. The ČSAV thus expanded the organised capacity to transmit knowledge without guaranteeing academic freedom in the choice of its transmitters or recipients. Its legacy cannot be assessed by treating professionalisation and political control as mutually exclusive descriptions.

Political intervention after 1948 reached into the generational structure of science because appointments determine more than the careers of those immediately selected or excluded. Removing a senior scholar also removes prospective supervision, correspondence networks, seminar authority, and access to a particular line of questions. Denying admission to a student interrupts a possible research trajectory before publications can make the loss visible. Promoting politically dependable staff may preserve routine work while narrowing the range of criticism that younger colleagues witness. In the early socialist decades, ideological tests affected disciplines unevenly, but none was entirely outside the personnel system of the state. Historical, legal, philosophical, economic, and sociological inquiry faced especially direct demands, whereas natural-science institutes could sometimes negotiate greater room through their technical value. Even there, international contacts, institutional leadership, and individual mobility remained politically mediated. A junior researcher learned not only methods but the boundaries of prudent speech, the risks attached to foreign relations, and the difference between a formal plan and the questions actually pursued. Such lessons constituted an unofficial curriculum of institutional survival. They could preserve teams under difficult conditions, yet they also normalised caution and unequal access. Intergenerational transmission under the ČSAV therefore included scientific competence, political adaptation, and moral ambiguity in proportions that varied from workplace to workplace. Any account that celebrates continuity without this dimension mistakes institutional survival for unqualified intellectual health.

The reform movement of the 1960s widened scientific horizons and encouraged many researchers to reconsider the relationship between expertise, public debate, and socialist governance. International travel, interdisciplinary discussion, and criticism of dogmatic control made younger scholars participants in a more open intellectual environment. The invasion of 1968 and the subsequent normalisation reversed that movement through leadership changes, reorganisations, dismissals, publication bans, restricted mobility, and reduced recruitment. Contemporary documentation records that the Academy's collegia and institute leadership were extensively replaced and that the intake of scientific aspirants was restricted (*Payne, 1972*). The damage was consequently generational as well as individual. When an experienced scientist was dismissed, imprisoned, forced into marginal work, or driven abroad, students lost daily access to a possible mentor. When a promising junior researcher was denied advancement, an institute lost a future supervisor and team builder. Some scientific lines continued under less visible arrangements, while others migrated into universities, hospitals, industrial laboratories, private study, or exile. The effects differed sharply between fields and institutes, so it would be misleading to imagine a single uniform rupture. Valuable work persisted during normalisation, sometimes through staff who navigated official structures with professional seriousness and sometimes through protected niches. Nevertheless, the narrowing of intellectual and personal choice changed what one generation

could legitimately hand to the next. A restored name after 1989 could acknowledge injustice, but it could not recreate the missed decades of shared work.

Informal transmission acquired particular importance when formal institutions became politically unreliable. Private seminars, trusted correspondence, unofficial reading groups, conversations during fieldwork, and assistance given without public acknowledgement could keep excluded knowledge in circulation. Such practices were especially visible in philosophy, history, sociology, literature, and other fields whose questions touched the legitimacy of the regime. They also appeared in natural sciences when foreign contacts, unpublished techniques, or politically suspect colleagues could not be discussed openly. Informality gave communities flexibility because teaching could continue without a recognised course, title, or office. It also imposed severe limits. Access depended on personal trust, geography, time, and the willingness of individuals to assume risk. Knowledge transmitted in a narrow circle could not easily acquire equipment, institutional memory, recognised credentials, or stable opportunities for younger participants. The heroic image of an underground seminar may therefore obscure those who lacked entry to it or could not afford the consequences of participation. Formal institutes likewise should not be portrayed only as empty shells, since many researchers preserved standards within compromised settings. Czech scientific continuity passed through an uneven mixture of official workplaces, private relations, and transnational contacts. Its survival was collective but not complete, and its moral geography cannot be captured by a simple opposition between collaboration and resistance. What mattered after 1989 was to reconnect separated circuits of competence without erasing their unequal histories.

The political transformation of 1989 and the creation of the AV ČR did not produce a balanced community in which all generations stood ready to begin again together. Senior scholars who had remained inside the ČSAV possessed institutional experience and control of laboratories, collections, and ongoing programmes. Some had defended professional standards under pressure, some had accommodated the regime to varying degrees, and some had exercised its authority over others. Dismissed or marginalised researchers returned with recovered standing but often without the time, health, teams, or recent resources required to resume the careers once denied to them. Émigré scientists brought international networks and alternative institutional experience, yet return was selective and sometimes temporary. Younger researchers entered an opening system with enthusiasm but faced financial uncertainty, organisational contraction, and limited experience of international competition. The missing or weakened middle in certain fields complicated supervision and succession. Rehabilitation could restore authorship, positions, and public memory, but it could not retrospectively supply the students who might have been trained. The new Academy therefore depended simultaneously on those who stayed, those who returned, and those newly recruited. Their encounters could be intellectually generative, but they also produced disputes about legitimacy, evaluation, and the ownership of institutional traditions. Post-socialist transmission was not the delivery of an intact democratic inheritance to a waiting generation. It was a negotiation among biographies marked differently by the same political past. The AV ČR became sustainable only by turning that contested human inheritance into transparent opportunities for new scientific work.

The post-1993 relationship between the Academy and universities became the principal legal and educational bridge through which that renewal could continue. The AV ČR is a research institution rather than a degree-awarding university, but its institutes possess laboratories,

collections, supervisors, and projects that are indispensable to advanced training. Universities confer degrees and provide accredited programmes, broader curricula, student representation, and formal quality assurance. Joint arrangements allow doctoral researchers to belong to both environments instead of forcing the Czech system to choose between teaching and research institutions. Helena Šebková identified this relationship as a central problem of the transitional period, when both universities and the Academy were redefining autonomy, qualifications, and institutional missions (*Šebková, 1994*). The solution that developed was cooperative rather than absorptive. Academy researchers teach at universities, serve on programme and examination boards, supervise dissertations, and host practical research in institutes. University scholars and students, in turn, bring teaching experience, disciplinary breadth, and new cohorts into Academy workplaces. This division can still create ambiguity about employment, scholarships, intellectual property, supervision, and responsibility for delays. It nevertheless protects a productive distinction between institutions while making their resources mutually available. The Academy's current mission explicitly treats doctoral education and university teaching as part of its role (*Czech Academy of Sciences, n.d.*). Knowledge transmission across generations is therefore also transmission across an institutional boundary that must be continually maintained rather than finally solved.

Academy-wide coordination gives this distributed partnership a visible centre without replacing institute or university responsibility. The Council for Cooperation with Universities and Graduate Study Programmes advises the Academy Council on educational relations and doctoral preparation. The Academy describes continuing education and research-based qualification development as part of its institutional responsibility (*Czech Academy of Sciences, n.d.*). Its annual Introduction to Research course addresses beginning doctoral researchers from different fields in a deliberately small cohort. Topics such as scientific writing, grant systems, integrity, information sources, open science, data management, patents, careers, and cybersecurity extend beyond what can be learned at a single laboratory bench or archive desk. The significance of such training lies less in transmitting settled rules than in making normally implicit institutional expectations discussable. A physicist and literary scholar may use different evidence, but both must understand authorship, peer review, conflicts of interest, and responsible record keeping. Cross-disciplinary instruction also allows students to see that local habits are not universal features of science. Its voluntary and short format, however, means that it cannot compensate for poor everyday supervision. Nor can a central course teach the full craft of any discipline. Its proper function is to supply a common civic vocabulary for research that local communities then make concrete. Academy-level education is strongest when it connects dispersed apprenticeships and provides routes beyond the immediate authority of a single team.

The Doctoral Study Programmes in Biomedicine offer a long-running example of how this partnership can be formalised across a broad scientific domain. Agreements between Charles University and the Academy in 1997 created a framework for coordinated doctoral study and research training, later renewed under a cooperation agreement concluded in 2018. The stated aim is a conceptually unified system for doctoral preparation in biology and medicine on a legally appropriate basis (*Doctoral Study Programmes in Biomedicine, n.d.*). Programme boards connect university faculties, Academy institutes, hospitals, and specialised research communities. Students can undertake daily experimental work in institute laboratories while remaining enrolled in an accredited university programme. Shared courses and seminars expose them to developments beyond the immediate project. Examination and defence

involve a wider disciplinary judgement than the supervisor alone can provide. This arrangement helps costly equipment, model organisms, and concentrated expertise serve an educational purpose without converting the Academy into a university. It also requires clear responsibility for the student's status as both learner and productive team member. Biomedical research can intensify dependence because experiments are collaborative, expensive, and governed by safety and ethical protocols. Multiple institutional anchors give the doctoral candidate more sources of advice and scrutiny. At the same time, coordination costs and divided administration can burden students if procedures are not aligned. The programme's durability shows that intergenerational transmission can itself become an institution whose rules evolve while its cooperative purpose remains.

Comparable arrangements across other fields reveal a shared legal architecture but no single model of scholarly formation. The Institute of Botany conducts doctoral programmes with several universities in botany, plant anatomy and physiology, and ecology, including programmes available in English (*Institute of Botany of the Czech Academy of Sciences, n.d.*). Students may learn through laboratories, herbaria, field sites, experimental gardens, long-term ecological plots, or computational analysis. At the Institute of Macromolecular Chemistry, doctoral research is performed in Academy laboratories through university accreditations because the institute itself does not award the degree (*Institute of Macromolecular Chemistry of the Czech Academy of Sciences, n.d.*). Here training may cross chemistry, physics, engineering, biomaterials, and advanced instrumentation. In philosophy and related humanities, joint doctoral programmes create another pattern built around seminars, texts, languages, archives, and sustained argument rather than an experimental production line. The Institute of Philosophy participates in programmes with Czech universities and in international co-supervision that links Prague with a foreign academic environment (*Institute of Philosophy of the Czech Academy of Sciences, n.d.*). These cases demonstrate why educational cooperation must be sufficiently standardised to protect students yet sufficiently flexible to respect epistemic difference. Accreditation provides public legitimacy, but the lived programme emerges from the quality of meetings, feedback, access, and intellectual community. A doctoral candidate needs both a formally recognised path and a research setting capable of teaching its craft. The Academy's contribution is strongest where specialised infrastructure is joined to a broad community of criticism. Cross-institutional doctoral study thus converts organisational difference into an educational resource rather than treating it as an administrative inconvenience.

At the centre of doctoral formation stands the supervisory relationship, which combines intellectual guidance with an unavoidable asymmetry of power. A supervisor opens access to questions, equipment, sources, collaborators, funding, publication, and professional recognition. The same person may influence whether a student's contract is renewed, work is credited, travel is approved, or a dissertation is judged ready. Mentorship can therefore accelerate independence or quietly postpone it. Effective supervisors make expectations explicit, give prompt and substantive criticism, recognise changing needs, and introduce students to several intellectual networks. They also explain failure as part of inquiry without using its inevitability to excuse poor planning or neglect. Research on mentorship stresses that productive relationships are reciprocal and culturally responsive, and that institutions rather than individual goodwill must support them (*National Academies of Sciences, Engineering, and Medicine, 2019*). Evidence from academic medicine likewise associates mentorship with career development while warning that access and outcomes are uneven (*Sambunjak et al.,*

2006). In an Academy institute, co-supervision and doctoral boards can reduce dependence by distributing advice and accountability. Clear authorship policies protect the student's work from absorption into a senior researcher's reputation. Confidential routes for resolving conflict are equally necessary because a doctoral candidate may reasonably fear retaliation. The measure of successful supervision is ultimately not the student's loyalty, but the emergence of a colleague capable of informed disagreement.

Research teams widen the educational setting beyond the dyad of supervisor and student. A doctoral candidate may learn one procedure from a technician, analytical caution from a postdoctoral researcher, theoretical context from a senior scientist, and project discipline from an administrator. Peers often transmit the most immediately usable knowledge because they remember the obstacles that experts have ceased to notice. Informal explanation beside an instrument or after a seminar can therefore matter as much as a scheduled supervisory meeting. Team membership also teaches how scientific labour is divided and how individual credit should relate to collective contribution. Junior researchers observe whether negative results are discussed honestly, whether disagreement is welcomed, and whether routine work is fairly allocated. These observations reveal an institute's ethics more accurately than a formal statement alone. The passage from apprentice to colleague requires increasing control over questions, methods, resources, and external relationships (*Laudel & Gläser, 2008*). A team that keeps promising researchers permanently in supporting roles may reproduce competence without renewing leadership. Conversely, premature independence can isolate a researcher before the necessary judgement and networks have formed. Good groups stage responsibility while making the criteria for progression visible. Intergenerational transmission is therefore multilayered, because an institute educates through the whole organisation of work rather than through its designated teachers alone.

Seminars provide the principal arena in which private guidance becomes collective intellectual scrutiny. Their value lies not merely in presenting finished results but in exposing the movement from question to claim. A strong seminar permits participants to identify an uncertain premise, request missing evidence, compare methods, and suggest a more productive formulation. Younger researchers learn how criticism can be exacting without becoming humiliating. They also learn that seniority does not convert an assertion into proof. Under authoritarian conditions, seminars may retain technical vitality while avoiding politically dangerous premises, so their apparent continuity can conceal a narrowed field of permissible questions. After 1989, opening discussion to foreign visitors, university partners, and previously excluded approaches expanded the range of comparison. Yet intellectual openness cannot be secured merely by replacing one orthodoxy with fashionable international vocabulary. It requires time for difficult work, space for minority positions, and a culture in which uncertainty is not punished. Journal clubs, methods workshops, internal colloquia, reading groups, and pre-publication discussions perform related functions. Their repeated rhythm creates a memory of arguments that rarely appears fully in minutes or articles. John Ziman's account of science as organised scepticism is realised in such ordinary encounters, where claims become communal without ceasing to be contestable (*Ziman, 2000*). An institute that neglects seminar life may continue producing outputs while weakening the social practice through which future researchers learn to judge them.

The transmission of scientific craft also depends on people whose work has often been hidden behind the names of principal investigators. Laboratory technicians, engineers, preparators, programmers, field assistants, conservators, photographers, translators, editors, and data

stewards preserve skills that cannot be replaced quickly by a new appointment. They know the histories of instruments, recurring faults, sample conventions, local suppliers, permissions, and practical compromises. Steven Shapin's description of the invisible technician showed how credit systems can separate acknowledged discovery from the skilled labour that made it possible (*Shapin, 1989*). Studies of technician careers further demonstrate that scientific and technical expertise develop through overlapping but unequally rewarded occupational paths (*Barley & Bechky, 1994*). In the ČSAV, stable institute employment sometimes allowed technical competence to accumulate across several generations of researchers. Post-1989 restructuring, outsourcing, and grant-based employment could modernise services but also disperse local knowledge. When a senior technician retires without an overlap period, an instrument may remain physically present while its reliable use declines. Manuals, maintenance logs, demonstrations, paired working, and recognition in publications can make this expertise more transmissible. Technical staff should also be included in seminars and planning where their judgement affects research design. The hierarchy between conceptual and practical labour is scientifically misleading when each depends on the other. Intergenerational continuity becomes more robust when institutes recognise multiple custodians of method rather than imagining knowledge descending only through academic rank.

Field sciences make the dependence on repeated presence especially visible. Long-term ecological plots, astronomical observatories, archaeological sites, hydrological stations, and geophysical networks acquire scientific value through measurements that outlast an individual project. Successive researchers must learn not only how to collect new data but how earlier instruments, boundaries, classifications, and interruptions shaped the series. A relocated sensor or changed taxonomic rule can create an apparent historical shift where the underlying phenomenon remained stable. Local staff may remember floods, construction, vegetation change, landowners, access routes, or repairs absent from formal datasets. Training in such settings often proceeds through shared seasons and journeys rather than through a short course. The learner acquires a sense of variability by seeing the same place under conditions that no protocol can schedule. Instrumental communities similarly form around the circulation of devices, calibration practices, and users who adapt them to different questions (*Mody, 2011*). Generational handover must therefore include metadata, site narratives, physical landmarks, and opportunities for overlapping observation. Political borders and property regimes can interrupt this continuity even when the scientific question remains. International networks can strengthen a site by providing comparison and alternative expertise, but they may also impose standards insensitive to local history. The Academy's field inheritance survives when global interoperability is joined to patient knowledge of place. Transmission in this domain is a covenant with future observers whose most important questions cannot yet be predicted.

Humanities research reveals a different but equally demanding form of slow intergenerational work. Dictionaries, critical editions, regesta, catalogues, bibliographies, archaeological corpora, and histories of literature may require several careers before reaching a stable public form. Younger scholars enter projects whose categories, abbreviations, and unresolved cases were shaped before they arrived. They must first understand why earlier decisions were made, then decide which remain defensible under new evidence and methods. This combination of fidelity and revision distinguishes scholarly continuity from clerical continuation. An editor who silently modernises an inherited transcription may erase evidence, while one who refuses all

change may preserve error as tradition. Team meetings, sample entries, style sheets, revision histories, and comparative checking become vehicles of intellectual formation. Senior scholars contribute memory of earlier debates, but junior colleagues may bring digital methods, new languages, or perspectives formed outside the established canon. Productive succession therefore runs in both directions. It allows the experienced researcher to transmit context and the newcomer to reveal assumptions that familiarity has naturalised. The resulting work often distributes authorship across generations more awkwardly than the journal article does. Institutes should recognise such cumulative labour in evaluation if they expect qualified scholars to undertake it. Scientific heritage in the humanities remains alive when unfinished collective obligations become occasions for methodological renewal rather than burdens inherited without explanation.

International mobility adds another dimension because generations learn not only from age difference but from movement between scientific cultures. A researcher returning from another country may bring a technique, seminar style, ethical expectation, collaborative norm, or sense of possible ambition. Visitors can identify assumptions invisible to a group whose members share the same training. Secord's formulation of knowledge in transit usefully emphasises that circulation changes knowledge rather than merely carrying an unchanged object between places (*Secord, 2004*). During the ČSAV period, access to travel and foreign collaboration was unevenly distributed and politically supervised. Western contacts could enhance prestige and capacity, yet they also functioned as privileges within the institutional hierarchy. After 1989, mobility expanded rapidly and became a central means of reconnecting Czech research with European and global communities. The risk then changed from enforced isolation to one-way departure, especially where salaries, equipment, and career prospects abroad were more attractive. Return programmes attempted to convert migration into circulation rather than permanent loss. The J. E. Purkyně Fellowship, open to applications until 2017, sought to attract both Czech researchers working abroad and outstanding foreign scientists to Academy institutes for periods of up to five years (*Czech Academy of Sciences, n.d.*). Its importance lay not only in individual recruitment but in the networks and expectations that returnees could embed locally. Collaboration research shows that scientific human capital is relational, accumulating through ties as well as individual credentials (*Bozeman & Corley, 2004*). Mobility renews an Academy tradition when those who travel gain enough institutional space to teach what they learned and enough humility to adapt it to a different setting.

Formal career structures translate this movement from learning to independence into institutional categories. The Academy's Career Development Rules distinguish research assistants, doctoral employees, postdoctoral fellows, independent scientists or scholars, senior researchers, and emeritus scientists. The postdoctoral category is explicitly transitional, while higher grades require progressively more independent and internationally significant work (*Czech Academy of Sciences, 2008*). Such categories can make expectations legible across institutes and protect advancement from purely personal favour. Regular evaluation can prompt reflection and identify whether a researcher has acquired the resources needed for a more demanding role. The rules also recognise teaching as important Academy work and preserve a place for emeritus scientists to remain connected with institute life. This combination offers a formal bridge between accumulated experience and new leadership. Yet no classification automatically creates a viable career. Criteria centred narrowly on publication totals or grant income may undervalue mentorship, software, editing,

infrastructure, negative results, and long-term team building. Fixed-term contracts can encourage mobility and renewal, but repeated insecurity can drive capable researchers away before they become mentors themselves. Senior status may acknowledge achievement while leaving succession unplanned. Career rules sustain transmission only when progression is accompanied by access to time, space, credit, funding, and real decision-making authority.

Awards aimed at younger researchers make generational renewal publicly visible, but their deeper effects depend on what follows the ceremony. The Otto Wichterle Award is intended for exceptionally promising Academy researchers whose work has already made a notable contribution to their field. Eligibility is normally limited to researchers no older than thirty-five in the year of nomination (*Czech Academy of Sciences, n.d.*). Institute directors submit nominations after consultation with institute boards, and Academy-level review determines the recipients. The award spans the Academy's three broad scientific divisions, thereby acknowledging that early distinction takes different forms in physics, biology, history, and other fields. Recognition can strengthen a young scholar's authority when seeking collaborators, resources, or responsibility within an established team. It can also tell a wider community that the institution expects intellectual leadership to emerge before senior rank. Yet a prize reaches only a small fraction of the researchers on whom continuity depends. Age thresholds may interact awkwardly with parental leave, illness, migration, disciplinary tempo, or careers begun through less direct routes. Nomination through existing leadership may also favour achievement that is already legible to established networks. A responsible award system must therefore be transparent about criteria and accompanied by broader career support for those not selected. The Otto Wichterle Award contributes to transmission when it marks a transition towards independence rather than substituting prestige for the conditions under which independence can grow.

The Lumina Quaeruntur fellowship addresses the more demanding transition from recognised promise to the creation of a new research group. It enables prospective researchers to establish teams within Academy institutes and develop conceptually new programmes, including work directed towards important applications (*Czech Academy of Sciences, n.d.*). This design treats generational renewal as an organisational event rather than solely an individual distinction. A new leader receives an opportunity to recruit, set questions, allocate resources, and form a culture of work. The host institute, meanwhile, accepts a degree of internal pluralism because the new programme may challenge established priorities. Such fellowships can interrupt closed succession in which laboratories pass only to candidates chosen within the dominant local lineage. They can also attract researchers trained elsewhere and combine inherited infrastructure with unfamiliar methods. The crucial test is whether the team remains scientifically and institutionally viable after the fellowship period. Short-term excellence funding can produce an impressive island that disappears when salaries, space, or bridging support end. Integration should not mean absorbing the new group into old habits, but neither should independence mean isolation from technicians, seminars, and common services. Senior colleagues can contribute advice and historical context while respecting the new leader's authority. Lumina Quaeruntur makes transmission reciprocal when inherited capacity helps a new programme begin and the programme, in turn, changes what the institute is capable of handing forward.

The Academy of the Future framework widens the focus from isolated moments of distinction to the conditions of an entire research career. Its declared aims include professional development, integration into the international scientific community, and compatibility

between research and personal life (*Czech Academy of Sciences, n.d.*). Planned or developing instruments address the beginning of independent careers, project leadership, return after a career break, recruitment from abroad, excellent groups, and pathways from ideas towards application. This breadth recognises that generational continuity can fail at several transitions. A doctoral researcher may complete excellent work but find no stable postdoctoral path. A postdoctoral fellow may win grants yet lack authority to build a team. A researcher returning from parental or other leave may possess strong competence but be judged against an uninterrupted productivity clock. An internationally recruited scientist may arrive successfully but leave if administrative, linguistic, or social integration is neglected. Support at one stage cannot compensate automatically for blockage at the next. The framework also implies that intellectual potential is wasted when employment conditions make a scientific life incompatible with care, health, or ordinary human obligations. Its effectiveness will depend on sustained funding, accessible procedures, institute-level implementation, and evaluation of actual career outcomes. As an institutional philosophy, it places continuity not in the passive availability of talent but in the deliberate construction of routes through which diverse researchers can remain, return, and lead.

No system of transmission is neutral, because established researchers control access to attention, recommendation, authorship, jobs, and the informal knowledge needed to compete for them. Studies of scientific careers have long shown tension between universalist ideals and particularistic processes shaped by networks, institutions, gender, and accumulated advantage (*Long & Fox, 1995*). Women's movement through scientific education and employment is especially revealing because participation at junior levels does not automatically yield proportional senior authority (*Fox, 2001*). Experimental evidence from faculty evaluation has also demonstrated how apparently small biases can affect judgements of competence and mentorship (*Moss-Racusin et al., 2012*). Within the Czech Academy, an official 2023 account reported that women formed more than a third of university-educated research staff but remained much less visible in top institute management (*Czech Academy of Sciences, 2023*). These figures describe more than representation. They indicate whose styles, topics, and life histories are likely to shape the next generation's image of a plausible scientific leader. Unequal transmission may also affect researchers from less advantaged social backgrounds, foreign staff without local networks, people with disabilities, carers, and those whose careers crossed political or geographic boundaries. Hierarchical dependence makes protection from bullying, harassment, retaliation, and appropriation central to research continuity. The Academy's Code of Conduct explicitly recognises that workplace power inequalities can be abused and that unsafe environments cause institutions to lose talent and creative potential (*Czech Academy of Sciences, 2024*). Inclusion is therefore not an external social addition to scientific heritage. It determines how much of each generation's capacity is allowed to become part of the inheritance.

Digital research changes both the substance of what must be transmitted and the means through which generations learn. A young scientist may arrive with programming, visualisation, or collaborative-platform skills that senior colleagues lack. An experienced researcher may understand the provenance, limitations, and historical irregularities of a dataset whose technical format a junior colleague can improve. Neither competence is sufficient alone. Reproducible workflows require code, version histories, metadata, software environments, calibration information, and explanations of the decisions that transformed raw material into an analytical object. The FAIR principles make findability, accessibility, interoperability, and

reuse explicit goals, but their implementation depends on trained judgement rather than slogans (*Wilkinson et al., 2016*). Open science similarly asks researchers to distinguish responsible transparency from the careless release of sensitive, copyrighted, medical, ecological, or personally identifiable material. These decisions should be taught during project design, not delegated to a repository at the end. The Academy's introductory doctoral training now places data management and open science beside integrity, writing, information sources, grants, and cybersecurity (*Czech Academy of Sciences, n.d.*). This combination is historically significant because the future archive of research is being shaped during everyday work. Reverse mentoring can be especially productive here, with younger staff demonstrating new tools while senior colleagues supply disciplinary context and caution. Digital transition sustains scientific heritage when generations document their different expertise well enough to make joint work inspectable, portable, and open to correction.

The chain of transmission begins before doctoral enrolment and extends beyond formal retirement. Academy internships allow secondary-school and university students to enter real research settings, observe professional routines, and test whether scientific work corresponds to their expectations. The Open Science internship scheme offers year-long placements for secondary-school students under Academy researchers, while the Radius Centre connects university students with institutes and partner organisations (*Czech Academy of Sciences, n.d.*). Such programmes should not be confused with recruitment campaigns alone. Their educational value lies in showing uncertainty, routine, collaboration, and revision rather than presenting science only through spectacular results. They can widen access when selection, travel, scheduling, and supervision do not quietly favour students who already possess academic connections. At the other end of a career, emeritus arrangements, handover periods, oral-history work, and continued seminar participation can preserve experience without preventing succession. Between these points, the scale of Academy involvement is substantial: the 2015 annual report recorded more than two thousand doctoral students trained or supervised in institutes and extensive university teaching by Academy staff (*Czech Academy of Sciences, 2015*). Numbers alone, however, do not reveal whether students received time, feedback, credit, or a viable path towards independence. Institute and Academy evaluations should therefore recognise supervision, technical training, seminar organisation, data stewardship, and successful succession as research-enabling achievements. Directors must identify vulnerable single-person competences before retirement or restructuring turns them into emergencies. Generational policy is strongest when it connects early access, doctoral formation, independent leadership, and dignified late-career contribution into one accountable institutional ecology.

Thus, knowledge transmission between generations is the process through which the Academy converts preserved resources into renewed scientific agency. Its indispensable media are people working together: supervisors and doctoral candidates, technicians and investigators, senior scholars and new group leaders, local experts and returning travellers. What passes among them includes explicit method, tacit judgement, ethical expectation, disciplinary language, practical memory, and the confidence to frame a different question. The ČSAV greatly expanded the institutional capacity for such transmission, yet political selection and normalisation also broke careers, restricted aspirant recruitment, and narrowed the communities entitled to define legitimate knowledge. After 1989, rehabilitation and return reopened connections but could not restore the years of apprenticeship and mentorship that had been lost. The AV ČR therefore inherited an uneven human landscape as well as institutes,

collections, and programmes. Cooperation with universities gave doctoral preparation a durable cross-institutional form, while seminars, teams, and technical workplaces continued to supply the daily education that accreditation cannot provide. Career rules, early-career awards, group fellowships, mobility schemes, and return support made succession a matter of policy rather than chance. Their value nevertheless depends on transparent access, secure working conditions, plural supervision, fair credit, and protection from abuses of hierarchy. Digital practice adds new reciprocal relations in which younger and older researchers often possess complementary kinds of expertise. Genuine continuity appears when a learner becomes a colleague and then a mentor without being required to reproduce the intellectual identity of a predecessor. The Academy preserves scientific heritage most faithfully when every generation receives both an inheritance substantial enough to use and the autonomy necessary to change it.

3. A Klironomical Interpretation of Scientific Continuity

The preceding accounts of repositories and generational learning have shown how scientific materials and competences can outlast their original makers. A klironomical interpretation asks a further question: when does what survives become an inheritance that a community recognises, regulates, and intentionally carries forward? This shift in emphasis matters because endurance alone proves very little. A disused instrument may remain in a storeroom, a research programme may persist through bureaucratic inertia, and a celebrated name may be repeated after its intellectual meaning has faded. Conversely, a method can be transformed almost beyond recognition while the problem it addressed remains fertile. Scientific continuity therefore cannot be measured simply by counting unchanged institutes, titles, buildings, or research themes. It arises when people attribute value to elements of the past and create defensible means of transmitting them into an uncertain future. Klironomy approaches cultural heritage as precisely such a historically constituted and normatively organised process rather than as a static inventory of protected things (*Buychik, 2025*). Applied to science, this perspective turns attention from possession to responsibility and from survival to justified succession. It asks who identifies scientific value, whose judgement becomes authoritative, which procedures stabilise that judgement, and which prospective users are imagined. The Czech Academy's long history is especially revealing because repeated political and organisational ruptures made every claim of continuity a practical achievement as well as a contested interpretation. Its scientific heritage consists neither in an untouched essence nor in everything that happened within predecessor institutions, but in the changing capacity to recognise, scrutinise, and renew what their work made possible.

The word inheritance can misleadingly suggest a completed property transferred intact from one owner to another. In scientific life, however, the object inherited is often unfinished, distributed, and inseparable from obligations. It may be a collection whose classification requires revision, a sequence of measurements whose future significance cannot yet be known, or a technique understood fully only by those who have practised it. It may also be a damaged reputation, a censored manuscript, or a laboratory culture whose achievements cannot be separated neatly from political accommodation. Klironomy supplies an analytical vocabulary for this complexity by joining questions of value, temporality, transmission, and social responsibility (*Buychik, 2025*). Its starting point is that heritage is produced through recognition rather than discovered as a self-evident residue. This does not mean that value is

arbitrary or that facts about provenance, rarity, scientific quality, and historical consequence cease to matter. It means that such facts acquire heritage force through interpretation, comparison, institutional decision, and public justification. Critical heritage scholarship has similarly argued that heritage is a cultural practice through which present communities authorise particular relations with the past (*Smith, 2006*). The point is not to deny material reality but to explain why some realities become protected, narrated, financed, and taught while others remain invisible. A scientific institution is consequently an active participant in inheritance even when it describes itself as a neutral custodian. The Academy's catalogues, appointments, evaluations, commemorations, and strategic programmes all help decide what parts of scientific time will remain available for further use.

Two connected dimensions organise this klironomical reading. The first is axiological, for it concerns the reasons why a scientific object, practice, institution, or tradition is considered worth preserving. The second is normative and procedural, for it concerns the rules, resources, offices, and routines through which recognised value is made durable. Without the axiological dimension, preservation can collapse into habit, nostalgia, or defence of organisational privilege. Without the procedural dimension, declarations of value remain ceremonial and disappear when staff, budgets, technologies, or governments change. The passage from judgement to repeatable practice creates what may be called an infrastructure of continuity (*Buychik, 2025*). In science, that infrastructure includes archives and catalogues, but also peer review, career pathways, maintenance schedules, data standards, ethical codes, legal mandates, succession plans, and international partnerships. These arrangements are not external scaffolding around an autonomous intellectual core. They determine whether evidence can be inspected, whether skills can be learned, whether disagreement is safe, and whether long-term questions can survive short political or funding cycles. Infrastructure becomes most visible when it fails, although its ordinary effectiveness depends on appearing routine (*Star & Ruhleder, 1996*). A klironomical analysis therefore studies both the proclaimed canon of achievement and the usually unnoticed work that makes future access possible. It evaluates continuity not as a mood of reverence but as the institutional conversion of defensible values into revisable practices.

Scientific heritage must be distinguished from the total accumulation of scientific remains. Laboratories continuously produce notebooks, samples, software, images, correspondence, unsuccessful trials, administrative files, and obsolete apparatus. No institution can keep every item indefinitely, reproduce every method, or continue every line of inquiry. Selection is unavoidable, whether it occurs deliberately through policy or silently through neglect, limited space, staff turnover, and technological obsolescence. UNESCO's definition of documentary heritage accordingly turns on significant and enduring value, while its guidance requires explicit, non-discriminatory policies for selection, preservation, accessibility, and even de-selection (*UNESCO, 2015*). This principle is particularly important for science because present usefulness is an unreliable predictor of future importance. A failed experiment may later expose a systematic error, an old environmental series may acquire new relevance under climate change, and routine correspondence may reveal how authority operated within a celebrated team. Decisions must therefore combine scientific appraisal with historical, legal, ethical, and social judgement. The danger lies in allowing prestige, novelty, or current citation counts to stand in for every other form of value. Such proxies privilege already visible success and tend to erase the slow, negative, local, collaborative, or technically enabling work on which discovery depends. Klironomical selection is responsible only when its criteria and losses can

themselves be documented and challenged. The goal is not comprehensive retention, which is impossible, but accountable incompleteness that preserves both major results and enough context to permit their future reinterpretation.

The resulting inheritance has several interdependent forms. Its material dimension includes buildings, observatories, instruments, specimens, excavation finds, manuscripts, books, photographs, and physical records. Its documentary and digital dimension includes catalogues, databases, source editions, code, audiovisual records, models, metadata, and the chains of provenance connecting them. Its embodied dimension consists of tacit skill, experimental judgement, linguistic competence, field knowledge, and the disciplined habits through which researchers recognise a credible result. Its relational dimension lies in teams, correspondence networks, university partnerships, technical services, international collaborations, and public communities that give knowledge circulation and trust. A programmatic dimension persists in long research questions, serial observations, editorial commitments, taxonomies, reference works, and infrastructures designed to serve users not yet known. These forms cannot be ranked through one universal measure because their values depend on different timescales and modes of verification. An instrument may be historically irreplaceable but scientifically superseded, whereas an unremarkable data series may remain analytically productive for centuries. Tacit knowledge can animate a collection, yet it becomes fragile when confined to one person or protected as local privilege (*Polanyi, 1966*; *Collins, 2010*). Relations can renew a programme, but they may also reproduce exclusion unless entry and credit are governed fairly. A klironomical account therefore treats scientific heritage as an ecology whose elements acquire meaning through one another. Preserving a specimen without its metadata, a codebase without its environment, or a school's reputation without its critical standards retains a fragment while losing much of the inheritance.

The future orientation of klironomy changes the meaning of preservation. A community safeguards scientific resources not merely because the past deserves respect, but because later investigators may ask questions that present custodians cannot formulate. This prospective uncertainty creates an option value that differs from immediate utility. Long observational series, rare biological samples, minor-language corpora, and detailed archaeological documentation may seem expensive beside fashionable projects, yet their temporal depth cannot be purchased retrospectively. Once destroyed, dispersed, or rendered technically unreadable, such resources cannot simply be recreated by a better-funded generation. The same applies to human capability, because a specialised language, preparation method, or instrument-building skill can vanish when no successor is trained. Heritage policy must therefore resist a funding horizon that recognises value only within the next grant cycle. Lowenthal observed that every act of preservation is shaped by present purposes, but present purpose need not mean present consumption (*Lowenthal, 1998*). It can include maintaining the freedom of future communities to evaluate evidence differently. Such freedom requires retaining context, not freezing conclusions. The Academy acts responsibly when it preserves the conditions for unforeseen inquiry while allowing current researchers to abandon obsolete explanations. Scientific continuity then becomes a promise of access and intelligibility rather than a command to repeat the past.

Institutions perform this temporal mediation because individual careers are too short and personal memory too vulnerable to sustain it alone. An academy can keep a site under observation, maintain a collection, protect a specialised team, or continue an edition across several generations. Yet longevity also gives it power to define which pasts receive institutional

dignity. A director may protect a threatened research line, an evaluation panel may declare it peripheral, and a budgetary rule may decide the matter without naming it as a heritage choice. Organisational charts are therefore maps of valuation as much as instruments of administration. The Academy's governing bodies distribute resources, authorise institutes, approve strategies, and determine the procedures through which performance is judged. Its Assembly formally combines institute representatives and directors with participants from academic, public, and industrial life, giving structural decisions a collective though not automatically inclusive arena (*Czech Academy of Sciences, n.d.*). Klironomical responsibility requires such decisions to state which kinds of value are being protected, transformed, or relinquished. Scientific quality is indispensable, but it is not exhausted by recent output, and historical significance cannot excuse permanently weak research. The appropriate question is how inherited capacity can be tested without forcing every discipline into the same temporal and bibliometric mould. Evaluation becomes part of heritage governance when it considers trajectory, infrastructure, disciplinary specificity, public service, and the possibility of renewal. Institutions preserve science best when they make their selective authority visible and contestable.

Selection nevertheless creates canons, and canons create margins. A gallery of famous directors, Nobel laureates, signature discoveries, and flagship institutes can offer an accessible institutional narrative. It can also make science appear to be the work of exceptional men standing above anonymous technicians, assistants, librarians, translators, sample collectors, and junior collaborators. The same narrative may privilege Prague over regional workplaces, Czech-language achievement over multilingual exchange, and internationally visible disciplines over locally indispensable scholarship. Heritage discourse becomes exclusionary when it presents these choices as natural rather than historical. Laurajane Smith's critique of authorised heritage discourse is useful here because it identifies how professional institutions can convert contingent values into apparently universal standards (*Smith, 2006*). Scientific institutions possess additional means of canonisation through citation, prizes, named laboratories, collected works, exhibitions, and anniversary publications. These practices are not inherently deceptive, for communities need exemplary stories and shared reference points. Their legitimacy depends on whether they remain open to new evidence about contribution, dependence, exclusion, and conflict. A klironomical catalogue should therefore record not only what was chosen but how and by whom the choice was made. It should permit neglected actors and alternative lineages to enter the story without merely adding decorative diversity to an unchanged hierarchy. The Academy's heritage becomes richer when the canon functions as a revisable map of collective labour rather than a closed pantheon.

Scientific inheritance also contains difficult and negative heritage. Political vetting, forced dismissals, censorship, compromised appointments, discriminatory access, ethically questionable experiments, and institutional silence do not cease to belong to the past because they embarrass the present. Nor should they be treated as external accidents that left the essential scientific tradition untouched. They altered who could work, what could be asked, which evidence circulated, and whose competence reached the next generation. Archives of repression and accommodation are therefore not merely political supplements to records of research. They explain the conditions under which the research record itself was produced. Critical heritage theory has increasingly emphasised that inheritance includes absences, conflicts, ruins, and unresolved responsibilities rather than only consensual treasures

(*Harrison, 2013*). For the Academy, acknowledging such material does not require retrospective moral certainty about every constrained decision. It requires resisting institutional narratives that confuse survival with innocence. Names removed from publications, interrupted projects, unavailable correspondence, and careers reconstructed after 1989 should be integrated into accounts of scientific development. So too should the work of those who preserved competence inside compromised organisations without possessing the power to reform them. A mature klironomical practice makes room for differentiated judgement, documentary uncertainty, and the testimony of people situated unequally within the same regime. Difficult heritage serves continuity when it teaches future institutions how scientific autonomy can be narrowed gradually through personnel, procedure, and silence.

This perspective complicates the long institutional line often drawn from early learned societies through the Czechoslovak Academy of Sciences to the present Czech Academy of Sciences. There is real continuity in ambitions to organise learned cooperation, publish research, support specialised inquiry, and connect knowledge with the needs of society. There are also decisive differences in legal form, territorial scope, membership, employment, disciplinary scale, political authority, and financial dependence. The Royal Bohemian Society of Sciences was not an embryonic ČSAV awaiting completion, and the Czech Academy of Sciences and Arts was not simply an earlier version of the AV ČR. The ČSAV created in 1952 absorbed selected people, institutes, collections, tasks, and symbolic claims, but it did so through a socialist reorganisation that displaced other arrangements. The AV ČR established after the dissolution of the federation inherited much of the Czech institute system, yet its legitimacy rested on democratic reconstruction, evaluation, and legal change rather than mere renaming. The visual history published by the Academy usefully assembles people, places, and transformations across this longue durée while making the institutional diversity of the sequence visible (*Franc & Mádlová, 2014*). A klironomical interpretation describes these transitions as successive regimes of inheritance. Each regime recognised certain predecessors, rejected others, redistributed their resources, and supplied new reasons for continuity. The line joining them is consequently layered and argumentative rather than corporate and unbroken. Its strength lies not in proving that one timeless Academy persisted through every constitution, but in showing how Czech scholarly communities repeatedly rebuilt infrastructures capable of receiving and redirecting earlier work. Institutional genealogy becomes historically credible when rupture is treated as part of inheritance rather than concealed beneath it.

The learned societies of the 18th and 19th centuries enacted an early axiological selection by defining scholarly inquiry as a public good within the Czech lands. They gathered natural history, antiquarian study, language, geography, statistics, and technical knowledge into communities whose resources were limited but whose symbolic reach was considerable. Publication, correspondence, prizes, collections, and meetings made particular forms of learning socially recognisable. During the national revival, linguistic and historical scholarship acquired value not only as specialised research but as evidence that Czech culture could sustain modern intellectual life. This convergence of scientific and national purposes created durable institutions, yet it also shaped what was collected, edited, translated, and commemorated. German-speaking and transnational contributions could be obscured when later narratives arranged the past around a single national ascent. A klironomical approach neither dismisses national mobilisation nor accepts its canon without examination. It asks how

a community under changing imperial and state conditions converted language, memory, and scholarship into an infrastructure of cultural continuity. Assmann's account of cultural memory clarifies how institutions stabilise selected knowledge through texts, rituals, and specialised carriers, although scientific communication also depends on organised criticism of inherited representations (*Assmann, 2011*). Czech learned culture combined these mnemonic and critical functions through dictionaries, editions, collections, experimental demonstrations, and learned debate. Its inheritance survives less in the uninterrupted existence of particular associations than in the value placed on institutionally supported inquiry. The later Academy tradition received this value, but each successor translated it into a different relation among nation, state, profession, and international science.

The establishment of the ČSAV transformed scattered inheritances into a centrally organised research system. It concentrated staff, premises, instruments, libraries, collections, and long-term programmes within specialised institutes on a scale earlier learned corporations had never commanded. This concentration preserved some vulnerable competences and enabled research whose technical demands exceeded the resources of voluntary societies or individual university chairs. It also appropriated institutional property, personnel, and authority through a political order that claimed to supersede the bourgeois past. The distinction between preservation and appropriation is therefore essential. A collection may have remained accessible while its provenance was redescribed, a research task may have continued while its intellectual ancestry was narrowed, and a scholar may have retained employment by adopting a new official vocabulary. At the same time, socialist investment genuinely expanded laboratories, professional research careers, regional facilities, and technical capacity. Treating the ČSAV only as ideological imposition would miss the durable scientific capital created within it. Treating it only as modernisation would miss the coercive selection that determined legitimate institutions, disciplines, and people. Bourdieu's conception of the scientific field helps explain why resources and scientific authority are never distributed outside relations of power, even though the field retains standards not reducible to political command (*Bourdieu, 2004*). The ČSAV embodied this tension in unusually concentrated form because it was simultaneously a producer of knowledge, an employer, a prestige hierarchy, and an instrument of state policy. Its klironomical legacy is consequently mixed: it enlarged the material and professional basis of continuity while subjecting inheritance to authoritative political classification.

State-socialist planning supplied a distinctive theory of scientific value. Research was expected to serve social construction, economic development, defence, public health, and an officially defined worldview. Long-term institutional funding could protect basic capacities from immediate market demand, and coordinated programmes could assemble teams around technically ambitious problems. Yet central plans also encouraged the belief that future scientific significance could be specified administratively. Disciplines closest to ideology faced direct pressure to align questions and interpretations with Marxism-Leninism, while natural and technical fields often justified autonomy through strategic usefulness. The boundary between useful and ideologically acceptable science varied over time, across institutes, and according to the negotiating power of directors. Scientific elites learned to translate local ambitions into the vocabulary of national plans, sometimes securing valuable work behind formulaic commitments. Such translation could be a prudent defence of research, but it could also reproduce distortions by making political conformity the entry price for resources. The klironomical issue is not simply whether planned programmes succeeded.

It is how the regime's axiological hierarchy determined which capacities became durable and which appeared unnecessary, suspect, or unscientific. Memory practices in science always classify and order the past, but under concentrated political authority those classifications can become unusually difficult to contest (*Bowker, 2005*). The ČSAV's achievements therefore belong to an institutional heritage whose enabling investments and governing constraints must be analysed together.

The reform years of the 1960s briefly widened the community entitled to reassess that hierarchy. Greater intellectual exchange, international contact, methodological debate, and public engagement allowed researchers to revalue questions previously constrained by dogma. The invasion of 1968 and the ensuing normalisation then imposed another selective regime. Leadership changes, dismissals, blocked promotion, restricted travel, censorship, and the narrowing of aspirant recruitment reclassified people as unreliable and topics as unsafe. Contemporary evidence shows that the purge penetrated Academy governance and institute life rather than remaining a distant change of political language (*Payne, 1972*). Klironomically, normalisation was a programme of organised devaluation. It did not destroy every laboratory, archive, or disciplinary school, but it altered which bearers of memory could speak with institutional authority. The removal of one senior scholar could interrupt several prospective lineages of mentorship, collaboration, and publication. The silencing of an entire topic could deprive later researchers of vocabulary as well as evidence. Continuity persisted, but it did so through unequal combinations of adaptation, discretion, professional solidarity, compromise, and exclusion. The scientific record of the period must therefore be read for its omissions, coded language, personnel discontinuities, and displaced networks. Normalisation demonstrates why an institute can remain administratively continuous while its intellectual inheritance is deliberately narrowed.

Official institutions did not possess a monopoly over inheritance during these decades. Dismissed scholars, émigré researchers, private seminar participants, trusted correspondents, and colleagues in universities or applied workplaces maintained alternative circuits of knowledge. Books crossed borders, manuscripts circulated without official publication, and personal conversation preserved questions that institutional agendas excluded. These practices formed a counter-infrastructure of continuity, although they rarely enjoyed secure finance, open recruitment, equipment, or formal recognition. Their value lay partly in keeping plural standards of judgement alive. Exile also connected Czech and Slovak scholars with research cultures whose methods and political assumptions differed from those of the ČSAV. Yet romanticising informal continuity would conceal its fragility and social selectivity. Participation required trust, access, time, and often the willingness to accept serious professional or personal risk. Some traditions survived only in fragments, and others were reconstructed after 1989 from correspondence, memory, and dispersed publications. The heritage community invoked by the Faro Convention is defined by the value people attach to aspects of heritage and by their wish to sustain them through public action (*Council of Europe, 2005*). Although devised for cultural heritage broadly, this formulation illuminates scientific communities that preserved value without controlling official institutions. The eventual democratic reintegration of such lineages required more than returning people to buildings; it required recognising that legitimate scientific inheritance had existed outside the sanctioned archive.

The Velvet Revolution opened a broad revaluation of people, programmes, institutions, and criteria of scientific legitimacy. Rehabilitation restored names and sometimes positions, while

renewed contact with émigré and Western communities challenged inherited intellectual boundaries. Political loyalty ceased to be an authorised measure of scientific worth, but the practical consequences of past selection could not be cancelled by decree. Missing generations, outdated equipment, distorted disciplinary balances, and damaged international ties shaped what could actually be renewed. The division of Czechoslovakia added a further problem because common federal resources, relationships, and symbolic claims had to be redistributed between successor states. Establishing the AV ČR in 1993 was therefore an act of prospective institutional design as well as legal succession. Observers of the transitional period stressed the simultaneous pressures of democratisation, economic constraint, reorganisation, and changing relations between the Academy and universities (*Šebková, 1994*). A klironomical interpretation describes this moment as selective restitution rather than restoration of a pre-socialist whole. Some earlier lines were recovered, some ČSAV capacities were retained because they remained scientifically valuable, and some organisational forms were deliberately abandoned. The legitimacy of the new Academy depended on its ability to distinguish inherited competence from inherited political privilege without pretending that the distinction was always obvious. Democratic continuity emerged through open argument about value, not through purification from every compromised past. The AV ČR became an heir by accepting both the utility and the burden of materials, people, and obligations formed under several regimes.

The evaluations and restructurings of the 1990s turned that argument into consequential procedure. Institutes had to justify programmes under conditions of budget reduction, international comparison, and a public debate about the place of a non-university research academy. Closure, merger, contraction, and renewal were not merely technical responses to scarcity. They determined which teams, infrastructures, collections, and disciplinary ambitions would have enough institutional support to reach another generation. The language of quality could challenge positions protected by the old hierarchy, but it could also undervalue work whose outputs were slow, local, infrastructural, or difficult to compare internationally. Klironomical governance therefore cannot identify preservation with keeping every inherited organisation unchanged. Nor can it assume that competitive selection is neutral simply because overt ideological tests have disappeared. Path-dependent institutions carry earlier investments and asymmetries into moments that appear open, which makes some options cheaper, more legible, and more politically defensible than others (*Mahoney, 2000*). Evaluation must recognise these inherited conditions without turning them into permanent entitlements. Since 1993, the Academy has made periodic institutional assessment a central instrument for connecting autonomy with accountability (*Czech Academy of Sciences, 2024*). The key heritage question is whether assessment can identify renewable capacity rather than reward only recent visibility. When review combines international peer judgement, disciplinary context, developmental trajectory, and attention to research infrastructure, it becomes a mechanism of critical inheritance. When it collapses value into a short numerical ranking, it risks selecting against precisely the temporal depth an academy exists to sustain.

An institute consequently carries continuity by adapting, not by remaining morphologically identical. Names change, departments divide, teams merge, buildings are repurposed, and research objects are redefined. Such changes can represent loss, but they can also rescue a valuable function from an arrangement that no longer supports it. Historical institutionalism distinguishes several modes of gradual transformation, including conversion, layering, displacement, and drift, which help explain why apparent stability can conceal change and

formal change can preserve underlying capacity (*Thelen, 2004*). A research collection transferred to a stronger custodian may gain better access even though its original institute disappears. A programme incorporated into a new interdisciplinary centre may lose a familiar title while acquiring methods and collaborators essential to survival. Conversely, retaining an old name can mask the erosion of staff, maintenance, and intellectual purpose. The relevant unit of inheritance must therefore be chosen carefully. Sometimes it is the institute, sometimes a research question, dataset, instrument, site, team, service, or disciplinary competence. Directors and governing bodies should articulate which function a reorganisation is meant to preserve and which inherited constraint it is meant to overcome. They should also document the transition so that later users can reconstruct changes in provenance and responsibility. Organisational discontinuity is klironomically legitimate when it improves the future intelligibility, accessibility, and scientific fertility of what is transferred. The institute remains a carrier of heritage precisely because it can change form without treating every change as amnesia.

Archives and libraries give this adaptive continuity an evidential base, as the discussion in “Archives and Libraries as Foundations of Academic Memory” demonstrated. They hold not a transparent institutional memory but records created, selected, arranged, described, restricted, and used under particular conditions. Their catalogues make some relations visible while leaving others difficult to trace. Schwartz and Cook have shown that archival practice participates in the production of social memory because records and their ordering embody power (*Schwartz & Cook, 2002*). For a scientific academy, this means that laboratory notebooks and council minutes, datasets and personnel files, published monographs and rejected plans must be interpreted together where law and ethics permit. The repository should preserve evidence of decision as well as evidence of achievement. It should record migrations between analogue and digital systems, changes of institute responsibility, and the provenance of reassembled collections. UNESCO’s documentary-heritage guidance likewise joins preservation with long-term accessibility, metadata, professional care, and international cooperation for entangled holdings (*UNESCO, 2015*). Such provisions transform memory from a possession into an accountable service. They also protect the possibility that future historians or scientists will dispute the Academy’s current self-description. A repository loyal only to celebratory memory weakens scientific heritage by narrowing verification. Archives and libraries form a klironomical foundation when they preserve enough context for inheritance to remain open to correction.

People convert that evidential possibility into practice, as “Knowledge Transmission between Generations” showed. No catalogue can replace the experienced judgement through which a researcher learns why a procedure was adopted, where an edition remains uncertain, or how a damaged instrument behaves. Yet no tradition should depend entirely on the unrecorded authority of a senior colleague. Generational continuity is strongest when demonstration, documentation, shared work, and critical discussion reinforce one another. Communities of practice transmit identities and repertoires through participation, but newcomers also change the community as they move towards fuller responsibility (*Lave & Wenger, 1991*). From a klironomical perspective, this movement is not completed when the learner reproduces an inherited competence. It is completed when the learner gains the authority and resources to test, revise, and redirect it. Mentorship that demands loyalty to a founder preserves dependence rather than scientific heritage. Succession planning should therefore include plural supervision, transparent authorship, cross-team contact, and genuine opportunities for

younger researchers to lead. Retiring scholars can provide context without retaining veto power over future questions. Junior and internationally recruited researchers can introduce unfamiliar methods without dismissing local knowledge as mere backwardness. The inheritance becomes living when generational difference creates an organised encounter between memory and possibility.

The inherited scientific capital of the ČSAV and earlier institutions should not be imagined as a treasure chest available for straightforward conversion after 1993. Laboratories, land, collections, instruments, qualifications, reputations, and networks possessed value only in relation to people and institutions capable of using them. Some apparatus required replacement, some specialisms required international reconnection, and some prestigious arrangements had lost intellectual fertility. Other resources were underestimated because their importance appeared only through patient maintenance or later research questions. Bourdieu's language of capital is helpful because it draws attention to accumulated resources and recognised authority, but scientific capital remains field-dependent and unevenly convertible (*Bourdieu, 2004*). A title honoured inside the ČSAV might carry little authority in a newly internationalised field, while a neglected skill could become central to an emerging programme. Knowledge infrastructures likewise acquire durability through linked technical, organisational, and social components rather than through equipment alone (*Edwards et al., 2013*). Transformation therefore required investment as well as selection. New funding, digital systems, international partnerships, governance rules, and career opportunities made inherited capacities usable under different conditions. This process also redistributed authority because those able to connect local resources with new standards became brokers of continuity. A klironomical assessment asks whether conversion enlarged the community able to use the inheritance or merely transferred control from one elite to another. Scientific capital becomes heritage when its accumulated advantages are opened to critical reuse and its hidden dependencies are acknowledged.

The Academy's national role and international orientation are often presented as competing claims, yet a klironomical perspective reveals their mutual dependence. Research on Czech language, history, biodiversity, landscapes, legal culture, and material collections necessarily grows from sustained attention to particular places and communities. Its significance does not end at the border, because comparison, method, and shared problems connect local evidence with wider knowledge. Conversely, participation in international science gives inherited resources new users, critics, standards, and interpretative possibilities. The present Academy defines its mission through both advancement of knowledge at an international level and attention to the specific needs of Czech society and national culture (*Czech Academy of Sciences, n.d.*). This dual commitment should not be reduced to a compromise between excellence and service. International recognition can help protect a local research line from parochial political judgement, while national responsibility can sustain evidence that global funding fashions overlook. Problems arise when internationalisation is treated as linguistic or bibliometric homogenisation. Czech-language reference works, regional datasets, long editions, and public expertise may have forms of value that an international journal metric only partially records. At the same time, appeals to national heritage must not shield research from external criticism or exclude scholars who enter Czech institutions from elsewhere. Klironomical continuity is strongest when belonging is defined through responsible participation in the work rather than ancestry or language alone. The Academy then acts as a

junction where nationally grounded inheritance becomes internationally testable and international knowledge becomes locally answerable.

Different disciplines construct inheritance through different evidential and temporal regimes. Chemistry may preserve reference materials, synthetic routes, and instrument expertise while abandoning theories that no longer organise productive experimentation. Physics can renew a tradition through redesigned apparatus and international facilities even when the original local machine becomes historical. Biology carries living collections, field sites, genetic resources, and longitudinal observations whose care cannot be interrupted without loss. History and archaeology inherit provenance chains, excavation records, source criticism, and interpretative disputes that remain open as new evidence and ethical expectations emerge. Linguistics and literary scholarship may sustain corpora, dictionaries, critical editions, and knowledge of textual traditions whose completion spans several careers. Knorr Cetina's concept of epistemic cultures clarifies why knowledge-making arrangements differ materially and socially across fields (*Knorr Cetina, 1999*). Klironomy should therefore identify multiple scenarios of scientific inheritance rather than apply a single conservation model. In one discipline, continuity may require continuous operation of a facility; in another, it may require periodic return to an archive with new questions. One programme may be preserved through exact replication, while another survives only through conceptual transformation. Academy-wide rules remain necessary for integrity, access, employment, and accountability, but they should protect rather than flatten this plurality. Disciplinary diversity becomes institutional heritage when different communities can explain their standards, temporal needs, and public value to one another.

Digital research greatly expands what can be preserved while making preservation newly precarious. Data can be copied at low marginal cost, shared across borders, searched at scale, and linked to publications, code, images, or physical specimens. Yet formats, software dependencies, platforms, licences, and storage systems change faster than many research questions. Abundance can also conceal loss because files without metadata, provenance, readable environments, or responsible custodians remain technically present but scientifically unusable. UNESCO warns that decisions about transient digital documents may be necessary at or before creation rather than postponed until an archive receives them (*UNESCO, 2015*). The Academy's Open Science Principles respond to this condition by connecting accessibility and reuse with FAIR data, trusted repositories, management plans, open formats, software availability, and the protection of legitimate restrictions (*Czech Academy of Sciences, 2024*). The FAIR framework is especially important because it treats reuse as a product of structured stewardship rather than mere online presence (*Wilkinson et al., 2016*). Klironomically, open science makes the prospective community of inheritors far larger than the employees of one institute. It also increases obligations to document consent, intellectual property, sensitive locations, personal data, and the reasons why some material cannot be fully open. Preservation without access can entomb knowledge, whereas access without context can invite misinterpretation. Digital continuity therefore depends on sustainable institutions, recurring maintenance, and professional roles that grant infrastructure work scientific recognition. The future scientific archive is being selected every day through file formats, naming practices, repository choices, and decisions about what a project regards as a meaningful output.

Research evaluation is another powerful technology of selection because it converts judgements of worth into careers, budgets, reorganisations, and future capacity. Metrics can

provide useful evidence about visibility, collaboration, productivity, or uptake, but they cannot supply a complete theory of scientific value. Citation patterns differ across disciplines, reward already accumulated attention, and often fail to register maintenance, curation, mentoring, public expertise, negative results, software, or long-term observation. The Leiden Manifesto consequently argues that quantitative indicators should support qualitative expert assessment and respect field-specific missions (*Hicks et al., 2015*). This principle has direct klironomical significance. It directs attention from isolated indicators towards the heterogeneous conditions under which a research tradition remains productive. If evaluation rewards only easily countable recent outputs, institutes will rationally neglect resources whose value matures slowly or appears outside standard publication channels. If historical importance becomes an automatic exemption, however, heritage language can protect stagnant authority and prevent necessary renewal. The Academy's assessment reform explicitly commits itself to diversity of research contributions, informed peer review, restraint in the use of publication metrics, and avoidance of organisational rankings (*Czech Academy of Sciences, 2024*). Its recent institute evaluation also emphasises disciplinary context, international panels, trajectory, formative feedback, and distinct methods for infrastructure-oriented bodies (*Czech Academy of Sciences, n.d.*). These provisions do not eliminate selective power, but they make its criteria more plural and discussable. Evaluation supports scientific continuity when it identifies the conditions under which past investment can generate better future inquiry, not when it merely rewards inherited prestige or fashionable output.

Scientific autonomy is itself part of the inheritance, but it is not a licence to escape public responsibility. The political history of the ČSAV shows how appointment, evaluation, mobility, and research planning can be used to narrow inquiry without abolishing institutions. The post-1989 answer cannot be the fiction that science operates outside law, finance, social need, or democratic debate. Autonomy should instead protect the capacity of competent communities to frame questions, assess evidence, appoint leaders, and publish unwelcome findings without partisan direction. Public accountability should require transparent use of resources, ethical conduct, reasoned priorities, and accessible explanation of benefits and uncertainties. These principles support one another when governance separates legitimate oversight from control of conclusions. The Academy Assembly's mixed representation and authority over structure, budgets, evaluation, and research conditions provide an institutional arena in which that boundary must continually be negotiated (*Czech Academy of Sciences, n.d.*). Directors likewise inherit a dual responsibility to defend scientific judgement externally and prevent local hierarchy from becoming unanswerable internally. Klironomically, governance preserves not a single policy but a constitutional habit of revisable, distributed authority. Procedures for open competition, conflict of interest, appeal, ethical review, and documented decision make that habit more resilient than personal virtue alone. They also enable future communities to understand why consequential choices were made. The heritage of autonomy survives when an institution can change leadership and strategy without surrendering either intellectual independence or its obligations to society.

Public access gives scientific heritage a civic life beyond the communities that produce it. Libraries, exhibitions, digital repositories, lectures, expert advice, school programmes, media work, and citizen science allow people to encounter the Academy as more than a budgetary abstraction. Access should not be imagined as a final act of simplification performed after serious knowledge has been completed. Questions from teachers, local communities,

patients, amateur naturalists, journalists, and policy makers can reveal neglected evidence and alternative understandings of relevance. The Faro Convention's emphasis on meanings, uses, communities, human rights, and democracy supports this participatory conception of heritage (*Council of Europe, 2005*). Scientific institutions nonetheless retain a duty to distinguish participation from the abandonment of expertise. Public trust is earned not by presenting every claim as equally valid, but by showing how evidence is tested, uncertainty is revised, and conflicts of interest are handled. Oreskes argues that trust in science rests significantly on the organised scrutiny of diverse expert communities rather than on the infallibility of individual scientists (*Oreskes, 2019*). The Academy can make this collective character visible through open methods, responsible data access, candid correction, and narratives that acknowledge disagreement. It should also explain why some collections or information require temporary restriction for privacy, conservation, security, or ethical reasons. A heritage institution that communicates only triumphs invites suspicion when failures inevitably appear. Democratic scientific memory is stronger when the public can inspect both accomplishment and the procedures by which the Academy learns from error.

A practical klironomical policy for the AV ČR would begin by mapping vulnerable inheritances across all institutes. Such a map would include unique collections, long datasets, rare skills, software dependencies, research sites, unfinished editions, key partnerships, and single-person competences. Each item would be accompanied by a statement of value that distinguishes scientific use, historical significance, public responsibility, legal obligation, and future option. The assessment would also identify the people and communities affected by preservation, transfer, restriction, or discontinuation. Decisions would then be attached to named custodians, realistic resources, review dates, metadata standards, succession measures, and procedures for appeal. Institutes planning mergers, closures, or major programme changes would prepare provenance and continuity plans before staff and materials dispersed. Evaluation panels would receive evidence about stewardship and long-term contribution without being asked to preserve weak work for sentimental reasons. Directors would report not only celebrated acquisitions but documented de-selection, technical migration, failed transfer, and competences at risk. Archives, libraries, researchers, technicians, legal specialists, data stewards, and external users would participate because none possesses the entire inheritance. UNESCO's insistence on research-based selection policies, professional care, accessibility, and clearly defined non-discriminatory criteria provides an important procedural baseline (*UNESCO, 2015*). The author's framework adds the demand that these procedures remain connected to an explicit philosophy of value and intergenerational responsibility (*Buychik, 2025*). The result would be an infrastructure of continuity whose losses, priorities, and revisions are recorded as carefully as its treasures.

Klironomy should nevertheless remain an interpretative framework rather than a universal substitute for the disciplines that study and govern science. It cannot establish the quality of a chemical result, date an archaeological layer, appraise an archival series, resolve employment law, or determine the optimal design of a research evaluation. Those tasks require domain expertise, historical method, archival science, ethics, sociology, law, economics, and policy analysis. The framework contributes by making visible the value judgements and transmission assumptions that these practices may otherwise leave implicit. Its language of continuity can become dangerous if institutions use it to portray themselves as natural heirs to every admirable predecessor. It can also become conservative if preservation is assumed to possess moral priority over experimentation, redistribution, or closure. Critical heritage studies warn

that claims made on behalf of the past often consolidate present authority (*Smith, 2006*; *Harrison, 2013*). A reflexive klironomy must therefore ask who benefits from a declared inheritance and who bears its costs. It must recognise that forgetting, deaccession, and discontinuation can sometimes be necessary, while insisting that such losses be reasoned and documented. It should welcome incompatible interpretations where evidence permits them instead of manufacturing consensus around institutional identity. Most importantly, it must not turn the suffering caused by political repression into a resource for uncomplicated organisational prestige. Its analytical value lies in keeping inheritance accountable to history, plural communities, and futures that no present custodian owns.

Thus, a klironomical interpretation recasts the scientific continuity of the Czech Academy as a sustained practice of value-based selection, normative consolidation, and critical transmission. The Academy inherited laboratories, archives, libraries, collections, research groups, questions, skills, reputations, and obligations, but none of these moved unchanged across political regimes. Learned societies, the ČSAV, and the AV ČR belonged to different institutional orders, and the connections among them were repeatedly reconstructed through appropriation, expansion, repression, rehabilitation, evaluation, and reform. Continuity was strongest where material resources, documentary context, embodied knowledge, and open communities remained connected. It was weakest where administrative survival concealed silenced people, broken mentorship, inaccessible evidence, or the loss of capacity behind an unchanged name. The transition after 1989 did not erase the socialist inheritance; it subjected inherited scientific capital to new forms of legitimacy and redirected much of it towards democratic governance and international exchange. Archives and libraries preserve the evidence through which such claims can be tested, while intergenerational work gives that evidence renewed scientific agency. Evaluation, open science, ethical governance, and public access now form part of the infrastructure by which contemporary choices become the possible heritage of later researchers. This infrastructure must protect slow and locally grounded work without insulating it from criticism, and it must pursue international quality without reducing value to visibility. Klironomy clarifies that the Academy is simultaneously an heir, a selector, a custodian, an interpreter, and a producer of future inheritances. Its responsibility is not to keep every inherited form alive, but to make decisions about preservation and change explicit, plural, documented, and scientifically defensible. Scientific heritage remains faithful to its past only when it enlarges the freedom of future generations to understand that past differently and to create knowledge beyond it.

References

Academy of Sciences of the Czech Republic. (2003). *Annual report 2003*. CAS.

Academy of Sciences of the Czech Republic. (2007). *Annual report 2007*. CAS.

Arnold, E., Good, B., Ohler, F., Thiefenthaler, B., & Vermeulen, N. (2011). *Institutional funding and research evaluation in the Czech Republic and abroad*. Technopolis Group.

Assmann, J. (2011). *Cultural memory and early civilization: Writing, remembrance, and political imagination*. Cambridge University Press.

Barley, S. R., & Bechky, B. A. (1994). In the backrooms of science: The work of technicians in science labs. *Work and Occupations, 21*(1), 85–126.

Beran, J. (2005). Vytváření členské základny ČSAV v roce 1952 [The formation of the membership base of the Czechoslovak Academy of Sciences in 1952]. *Soudobé dějiny, 12*(1), 102–139.

Biology Centre of the CAS. (2013). *Institute of Plant Molecular Biology*. CAS.

Biology Centre of the CAS. (2013). *Research activities of the Institute of Hydrobiology*. CAS.

Biology Centre of the CAS. (n.d.). *About us*. CAS.

Biology Centre of the CAS. (n.d.). *Institute of Parasitology*. CAS.

Biology Centre of the CAS. (n.d.). *Institute of Soil Biology and Biogeochemistry*. CAS.

Biology Centre of the CAS. (n.d.). *About us*. CAS.

Blažka, M. (2014). *1989 + 25 = Výzkum užitečný pro společnost: Nástin historie státní podpory výzkumu v ČR v letech 1989 až 2014* [*1989 + 25 = Research useful for society: An outline of the history of state support for research in the Czech Republic from 1989 to 2014*]. Technology Agency of the Czech Republic.

Borgman, C. L. (2007). *Scholarship in the digital age: Information, infrastructure, and the Internet*. MIT Press.

Bourdieu, P. (2004). *Science of science and reflexivity*. University of Chicago Press.

Bowker, G. C. (2005). *Memory practices in the sciences*. MIT Press.

Bozeman, B., & Corley, E. (2004). Scientists' collaboration strategies: Implications for scientific and technical human capital. *Research Policy, 33*(4), 599–616.

Buychik, A. (2025). *Philosophy of klironomy: Collection of the selected works on world cultural heritage* (Part 1). Tuculart Edition; European Institute for Innovation Development.

Central European Institute of Technology. (2020). *Partner institutions signed new consortium agreement validating the continuation of the CEITEC scientific centre*.

Centre for Medieval Studies. (n.d.). *About CMS*.

Cidlinská, K., & Linková, M. (2015). *Comparing national academies of sciences in Central and Eastern Europe: The Czech Academy of Sciences — Research careers in their academic setting, national topographies* (MTA Law Working Papers No. 2015/31). Hungarian Academy of Sciences.

Collins, H. (2010). *Tacit and explicit knowledge*. University of Chicago Press.

Collins, H. M. (1974). The TEA set: Tacit knowledge and scientific networks. *Science Studies, 4*(2), 165–186.

Conway, P. (2010). Preservation in the age of Google: Digitization, digital preservation, and dilemmas. *The Library Quarterly, 80*(1), 61–79.

Cook, T. (2013). Evidence, memory, identity, and community: Four shifting archival paradigms. *Archival Science, 13*(2–3), 95–120.

Council of Europe. (2005). *Council of Europe Framework Convention on the Value of Cultural Heritage for Society (Faro Convention)*.

Czech Academy of Sciences. (2006). *Statutes of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2008). *Career development rules for CAS employees with a university degree*. CAS.

Czech Academy of Sciences. (2015). *Annual report of the Czech Academy of Sciences 2015*. CAS.

Czech Academy of Sciences. (2017). *Strategy AV21: Top research in the public interest*. CAS.

Czech Academy of Sciences. (2021). *Report on the evaluation of the research and professional activities of CAS institutes for 2015–2019*. CAS.

Czech Academy of Sciences. (2022). *Annual report 2022*. CAS.
Czech Academy of Sciences. (2023). *Annual report 2023*. CAS.
Czech Academy of Sciences. (2023). *What's the situation of women in science in the Czech Republic today?* CAS.
Czech Academy of Sciences. (2024). *Annual report 2024*. CAS.
Czech Academy of Sciences. (2024). *Code of conduct of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (2024). *Open Science Principles of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (2024). *The Academy presents Action Plan to reform research evaluation at the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (2025). *New Center for Electron Microscopy in Brno opens its doors to global science*. CAS.
Czech Academy of Sciences. (2025). *Nine CAS researchers received the 2025 Praemium Academiae and Lumina Quaeruntur*. CAS.
Czech Academy of Sciences. (2025). *Open Science principles of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (2026). *Czech Academy of Sciences evaluation: Beyond metrics, accent on peer review*. CAS.
Czech Academy of Sciences. (n.d.). *Academy Assembly*. CAS.
Czech Academy of Sciences. (n.d.). *Academy of the Future*. CAS.
Czech Academy of Sciences. (n.d.). *Education*. CAS.
Czech Academy of Sciences. (n.d.). *Evaluations of CAS institutes*. CAS.
Czech Academy of Sciences. (n.d.). *Fellowship for prospective researchers—Lumina Quaeruntur*. CAS.
Czech Academy of Sciences. (n.d.). *Lumina Quaeruntur fellowship*. CAS.
Czech Academy of Sciences. (n.d.). *Mission of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (n.d.). *Open Science Principles of the Czech Academy of Sciences*. CAS.
Czech Academy of Sciences. (n.d.). *Otto Wichterle Award*. CAS.
Czech Academy of Sciences. (n.d.). *Representatives of the CAS and its predecessors*. CAS.
Czech Academy of Sciences. (n.d.). *Research areas*. CAS.
Czech Academy of Sciences. (n.d.). *Student internships*. CAS.
Czech Academy of Sciences. (n.d.). *The J. E. Purkyně Fellowship*. CAS.
Czech Language Institute. (n.d.). *Department of Contemporary Lexicology and Lexicography*. CAS.
Czech Language Institute. (n.d.). *Department of Dialectology*. CAS.
Czech Language Institute. (n.d.). *History*. CAS.
Czech Language Institute. (n.d.). *Internetová jazyková příručka [The Internet Language Reference Book]*.
Czech National Council. (1992). *Zákon č. 283/1992 Sb., o Akademii věd České republiky* [Act No. 283/1992 Coll., on the Czech Academy of Sciences].
Czech Republic. (1998). *Act No. 111/1998 Coll., on higher education institutions and on amendment to other acts*. Ministry of Education, Youth and Sports.
Czech Science Foundation. (2023). *Czech Science Foundation celebrates 30th anniversary*.
Czechoslovak Republic. (1952). Zákon č. 52/1952 Sb., o Československé akademii věd [Act No. 52/1952 Coll., on the Czechoslovak Academy of Sciences].
Daston, L. (Ed.). (2000). *Biographies of scientific objects*. University of Chicago Press.

Devátá, M., Olšáková, D., Sommer, V., & Dinuš, P. (2010). *Vědní koncepce KSČ a její institucionalizace po roce 1948* [*The Communist Party of Czechoslovakia's conception of science and its institutionalisation after 1948*]. Institute of Contemporary History of the CAS.

Digital Humanities in the CAS. (n.d.). *Institute of Archaeology of the CAS, Prague*.

Digital Humanities in the CAS. (n.d.). *Institute of Czech Literature of the CAS, v. v. i.*

Digital Humanities in the CAS. (n.d.). *Institute of Ethnology of the CAS, v. v. i.*

Digital Humanities in the CAS. (n.d.). *Retrospective Bibliography of Czech Literature of the Institute of Czech Literature of the CAS*.

Doctoral Study Programmes in Biomedicine. (n.d.). *Homepage*.

Edwards, P. N., Jackson, S. J., Chalmers, M. K., Bowker, G. C., Borgman, C. L., Ribes, D., Burton, M., & Calvert, S. (2013). *Knowledge infrastructures: Intellectual frameworks and research challenges*. University of Michigan.

ELI Beamlines. (n.d.). *Facility*.

European Parliament & Council of the European Union. (2010). Directive 2010/63/EU of the European Parliament and of the Council of 22 September 2010 on the protection of animals used for scientific purposes. *Official Journal of the European Union, L 276*, 33–79.

Fleck, L. (1979). *Genesis and development of a scientific fact*. University of Chicago Press. (Original work published 1935)

Fox, M. F. (2001). Women, science, and academia: Graduate education and careers. *Gender & Society, 15*(5), 654–666.

Franc, M., & Mádlová, V. (2013). *Dějiny Akademie věd ČR v obrazech* [The history of the Czech Academy of Sciences in images]. Academia.

Franc, M., & Mádlová, V. (2014). *The history of the Czech Academy of Sciences in pictures*. Academia.

Franc, M., Dvořáčková, V., et al. (2020). *Dějiny Československé akademie věd I (1952–1962)* [*History of the Czechoslovak Academy of Sciences I (1952–1962)*]. Academia; Masaryk Institute and Archives of the CAS.

Franc, M., Dvořáčková, V., et al. (2025). *Dějiny Československé akademie věd II (1963–1970)* [*History of the Czechoslovak Academy of Sciences II (1963–1970)*]. Academia; Masaryk Institute and Archives of the CAS.

Galison, P. (1997). *Image and logic: A material culture of microphysics*. University of Chicago Press.

Global Change Research Institute of the CAS. (n.d.). *About us*. CAS.

Good, B., Vermeulen, N., Tiefenthaler, B., & Arnold, E. (2015). Counting quality? The Czech performance-based research funding system. *Research Evaluation, 24*(2), 91–105.

Harrison, R. (2013). *Heritage: Critical approaches*. Routledge.

Heyrovský Institute. (2026). *Brief history of the institute*. CAS.

Hicks, D., Wouters, P., Waltman, L., de Rijcke, S., & Rafols, I. (2015). Bibliometrics: The Leiden Manifesto for research metrics. *Nature, 520*(7548), 429–431.

Hoppe, J., Škodová, M., Suk, J., & Caccamo, F. (2015). *„O nový československý model socialismu": Čtyři interdisciplinární vědecké týmy při ČSAV a UK v 60. letech* [*"Striving for a new Czechoslovak model of socialism": Four interdisciplinary scientific teams of the Czechoslovak Academy of Sciences and Charles University in the 1960s*]. Institute of Contemporary History of the CAS.

Institute of Analytical Chemistry of the CAS. (n.d.). *History*. CAS.

Institute of Animal Physiology and Genetics of the CAS. (n.d.). *About institute*. CAS.

Institute of Archaeology of the CAS, Brno. (n.d.). *History*. CAS.
Institute of Archaeology of the CAS, Prague. (n.d.). *Homepage*. CAS.
Institute of Archaeology of the CAS, Prague. (n.d.). *Publications*. CAS.
Institute of Archaeology of the CAS. (n.d.). *History*. CAS.
Institute of Archaeology of the CAS. (n.d.). *Surface and Use-wear Research of Tools Laboratory*. CAS.
Institute of Art History CAS. (n.d.). *History of the IAH*. CAS.
Institute of Art History of the CAS. (n.d.). *Basic information*. CAS.
Institute of Art History of the CAS. (n.d.). *Photolibrary and photostudio*.
Institute of Botany of the CAS. (n.d.). *About*. CAS.
Institute of Botany of the CAS. (n.d.). *Accredited programmes*. CAS.
Institute of Botany of the CAS. (n.d.). *Collection of autotrophic microorganisms CCALA*. CAS.
Institute of Botany of the CAS. (n.d.). *Herbarium*. CAS.
Institute of Botany of the CAS. (n.d.). *History*. CAS.
Institute of Chemical Process Fundamental of the CAS. (n.d.). *History*. CAS.
Institute of Chemical Process Fundamentals of the CAS. (n.d.). *Mandatory information*. CAS.
Institute of Chemical Process Fundamentals of the CAS. (n.d.). *Operational Programme Research, Development and Education*. CAS.
Institute of Contemporary History of the CAS. (n.d.). *About the library*. CAS.
Institute of Contemporary History of the CAS. (n.d.). *About us*. CAS.
Institute of Contemporary History of the CAS. (n.d.). *Research units*. CAS.
Institute of Ethnology of the CAS. (n.d.). *Center of Scientific Information*. CAS.
Institute of Ethnology of the CAS. (n.d.). *Past projects*. CAS.
Institute of Experimental Botany of the CAS. (n.d.). *History of IEB*. CAS.
Institute of Experimental Medicine of the CAS. (n.d.). *Basic information*. CAS.
Institute of History of the CAS. (n.d.). *Department of Medieval History*. CAS.
Institute of History of the CAS. (n.d.). *Folia Historica Bohemica [Historical papers of Bohemia]*. CAS.
Institute of History of the CAS. (n.d.). *History of the institute and specialisation*. CAS.
Institute of History of the CAS. (n.d.). *Historical Atlas of Czech Towns*.
Institute of History of the CAS. (n.d.). *Photographic collection of the Institute of History*.
Institute of Hydrodynamics of the CAS. (n.d.). *History*. CAS.
Institute of Macromolecular Chemistry of the CAS. (n.d.). *Institute history*. CAS.
Institute of Macromolecular Chemistry of the CAS. (n.d.). *Main research directions*. CAS.
Institute of Macromolecular Chemistry of the CAS. (n.d.). *PhD studies*.
Institute of Microbiology of the CAS. (n.d.). *Culture Collection of Basidiomycetes*. CAS.
Institute of Microbiology of the CAS. (n.d.). *History*. CAS.
Institute of Microbiology of the CAS. (n.d.). *Laboratory of Fungal Genetics and Metabolism*. CAS.
Institute of Molecular Genetics of the CAS. (2022). *The Institute of Molecular Genetics of the Czech Academy of Sciences celebrated its 60th anniversary*. CAS.
Institute of Molecular Genetics of the CAS. (n.d.). *History of the institute*. CAS.
Institute of Organic Chemistry and Biochemistry of the CAS. (n.d.). *History of IOCB Prague*. CAS.
Institute of Organic Chemistry and Biochemistry of the CAS. (n.d.). *History*. CAS.
Institute of Philosophy of the CAS. (n.d.). *PhD programmes*. CAS.
Institute of Photonics and Electronics of the CAS. (2026). *History of the institute*. CAS.

Institute of Physics of Materials of the CAS. (n.d.). *History*. CAS.
Institute of Physics of Materials of the CAS. (n.d.). *Institute of Physics of Materials*. CAS.
Institute of Physics of the CAS. (2024). *70 years of FZU*. CAS.
Institute of Physics of the CAS. (n.d.). *Brief history of FZU*. CAS.
Institute of Physics of the CAS. (n.d.). *Research activities*. CAS.
Institute of Physiology of the CAS. (n.d.). *History and present*. CAS.
Institute of Plasma Physics of the CAS. (n.d.). *History in short*. CAS.
Institute of Slavonic Studies of the CAS. (n.d.). *Activities*.
Institute of Slavonic Studies of the CAS. (n.d.). *History*.
Ketelaar, E. (2001). Tacit narratives: The meanings of archives. *Archival Science, 1*(2), 131–141.
Knorr Cetina, K. (1999). *Epistemic cultures: How the sciences make knowledge*. Harvard University Press.
Kostlán, A. (2010). Vědecký exil v období komunistického režimu: Emigrace z Československé akademie věd [Scientific exile in the era of the communist regime: Emigration from the Czechoslovak Academy of Sciences]. *Dějiny věd a techniky, 43*(3), 153–181.
Kuhn, T. S. (1970). *The structure of scientific revolutions* (2nd ed.). University of Chicago Press.
Lapka, M., & Gottlieb, M. (2022). A look into the history of landscape research in Czechia: Landscape in natural and social sciences, attempts at an interdisciplinary approach. *Journal of Landscape Ecology, 15*(1), 94–125.
Latour, B., & Woolgar, S. (1986). *Laboratory life: The construction of scientific facts* (2nd ed.). Princeton University Press.
Laudel, G., & Gläser, J. (2008). From apprentice to colleague: The metamorphosis of early career researchers. *Higher Education, 55*(3), 387–406.
Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
Library of the CAS. (n.d.). *About the library*. CAS.
Library of the CAS. (n.d.). *ASEP: Research results of the CAS*.
Library of the CAS. (n.d.). *Catalogues*. CAS.
Library of the CAS. (n.d.). *Digital Library of the CAS*. CAS.
Library of the CAS. (n.d.). *Open Science*. CAS.
Library of the CAS. (n.d.). *The Book History Department*. CAS.
Library of the CAS. (n.d.). *The collection of manuscripts, early and rare printed books*. CAS.
LINDAT/CLARIAH-CZ. (n.d.). *Research infrastructure for language technologies, arts and humanities*.
Long, J. S., & Fox, M. F. (1995). Scientific careers: Universalism and particularism. *Annual Review of Sociology, 21*, 45–71.
Lowenthal, D. (1998). *The heritage crusade and the spoils of history*. Cambridge University Press.
Mádlová, V. (2024). *Stálé vojsko vědecké: Česká akademie věd a umění 1891–1952* [*A permanent army of science: The Czech Academy of Sciences and Arts, 1891–1952*]. Academia; Masaryk Institute and Archives of the CAS.
Mahoney, J. (2000). Path dependence in historical sociology. *Theory and Society, 29*(4), 507–548.
Masaryk Institute and Archives of the CAS. (n.d.). *About the library*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *Acquisition of personal fonds*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *Archival collections and databases*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *Archival theory and practice*. CAS.

Masaryk Institute and Archives of the CAS. (n.d.). *Archive collections and databases*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *Cataloguing of the T. G. Masaryk Library*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *Department of Institutional Fonds*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *Digitization of archival materials*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *Fonds of the Czechoslovak Academy of Sciences and the Czech Academy of Sciences*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *Records management*. CAS.
Masaryk Institute and Archives of the CAS. (n.d.). *About the institute*. CAS.
Mattern, S. (2014). Library as infrastructure. *Places Journal*.
Merton, R. K. (1968). The Matthew effect in science. *Science, 159*(3810), 56–63.
Ministry of Education, Youth and Sports of the Czech Republic. (2014). *Research infrastructures of the Czech Republic in the context of ESFRI*.
Ministry of Education, Youth and Sports of the Czech Republic. (n.d.). *Archaeological Information System of the Czech Republic*.
Ministry of Education, Youth and Sports of the Czech Republic. (n.d.). *Czech Literary Bibliography*.
Míšková, A., Barvíková, H., & Šmidák, M. (1998). *Československá akademie věd 1969–1972: Restaurace komunistické moci ve vědě* [*The Czechoslovak Academy of Sciences, 1969–1972: The restoration of communist power in science*]. Institute of Contemporary History of the CAS.
Míšková, A., Franc, M., & Kostlán, A. (Eds.). (2018). *Bohemia docta: The historical roots of science and scholarship in the Czech lands*. Academia.
Mody, C. C. M. (2011). *Instrumental community: Probe microscopy and the path to nanotechnology*. MIT Press.
Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences, 109*(41), 16474–16479.
National Academies of Sciences, Engineering, and Medicine. (2019). *The science of effective mentorship in STEMM*. National Academies Press.
Nisonen-Trnka, R. (2008). The Prague Spring of science: Czechoslovak natural scientists reconsidering the Iron Curtain. *Europe-Asia Studies, 60*(10), 1749–1766.
Nuclear Physics Institute. (n.d.). *History*. CAS.
Oates-Indruchová, L. (2008). The limits of thought? The regulatory framework of social sciences and humanities in Czechoslovakia, 1968–1989. *Europe-Asia Studies, 60*(10), 1767–1782.
Oates-Indruchová, L. (2018). Self-censorship and Aesopian language of scholarly texts of late state socialism. *The Slavonic and East European Review, 96*(4), 614–641.
Olick, J. K., & Robbins, J. (1998). Social memory studies: From "collective memory" to the historical sociology of mnemonic practices. *Annual Review of Sociology, 24*, 105–140.
Oreskes, N. (2019). *Why trust science?* Princeton University Press.
Oriental Institute of the Czech Academy of Sciences. (2013). *Oriental Institute*. Czech Academy of Sciences. CAS.
Pačes, V. (1995). The transformation of research in the Czech Republic: The role of the Academy of Sciences. *Higher Education in Europe, 20*(4), 114–116.
Payne, P. (1972). Four years of 'normalisation': The academic purge in Czechoslovakia. *Index on Censorship, 1*(2), 33–52.
Polanyi, M. (1966). *The tacit dimension*. Doubleday.

Provazník, S., Filáček, A., Křížová-Frýdová, E., Loudín, J., & Machleidt, P. (1996). The transformation of the research system in the Czech Republic. *Science, Technology and Society, 1*(2), 311–331.

Provazník, S., Filáček, A., Křížová-Frýdová, E., Loudín, J., & Machleidt, P. (1998). Transformation of science and research in the Czech Republic: The emerging research system and its role in the country's economic and cultural life. *Science and Public Policy, 25*(1), 23–35.

Reichard, M., & Jurajda, P. (2013). Ústav biologie obratlovců Akademie věd ČR, v. v. i. [Institute of Vertebrate Biology of the Czech Academy of Sciences]. *Živa, 61*(6), CXXXVIII–CXXXIX.

Rheinberger, H.-J. (1997). *Toward a history of epistemic things: Synthesizing proteins in the test tube*. Stanford University Press.

Sambunjak, D., Straus, S. E., & Marušić, A. (2006). Mentoring in academic medicine: A systematic review. *JAMA, 296*(9), 1103–1115.

Schwartz, J. M., & Cook, T. (2002). Archives, records, and power: The making of modern memory. *Archival Science, 2*(1–2), 1–19.

Šebková, H. (1994). Institutions of higher education and the Czech Academy of Sciences in the transitional period. *European Journal of Education, 29*(1), 97–107.

Secord, J. A. (2004). Knowledge in transit. *Isis, 95*(4), 654–672.

Shapin, S. (1989). The invisible technician. *American Scientist, 77*(6), 554–563.

Šimůnek, M. V. (2025). *Narušená kontinuita: Česká věda, německá hegemonie a totální válka, 1939–1945* [*Disrupted continuity: Czech science, German hegemony, and total war, 1939–1945*]. Academia.

Šimůnek, M. V., & Kostlán, A. (Eds.). (2014). *Disappeared science: Biographical dictionary of Jewish scholars from Bohemia and Moravia — Victims of Nazism, 1939–1945*. Pavel Mervart.

Smith, L. (2006). *Uses of heritage*. Routledge.

Star, S. L., & Ruhleder, K. (1996). Steps toward an ecology of infrastructure: Design and access for large information spaces. *Information Systems Research, 7*(1), 111–134.

Štrbáňová, S., & Kostlán, A. (Eds.). (2011). *Sto českých vědců v exilu: Encyklopedie významných vědců z řad pracovníků Československé akademie věd v emigraci* [*One hundred Czech scholars in exile: An encyclopaedia of prominent scientists from the Czechoslovak Academy of Sciences in emigration*]. Academia.

Surman, J. (2019). *Universities in Imperial Austria, 1848–1918: A social history of a multilingual space*. Purdue University Press.

Thelen, K. (2004). *How institutions evolve: The political economy of skills in Germany, Britain, the United States, and Japan*. Cambridge University Press.

Tlaskalová-Hogenová, H., Hrnčíř, T., Štěpánková, R., Trebichavský, I., Hudcovic, T., Šplíchal, I., Šplíchalová, A., Šinkora, M., Funda, D., Sánchez, D., Kverka, M., Jirásková Zákostelská, Z., Kostovčíková, K., Coufal, Š., Procházková, P., Roubalová, R., Vannucci, L., & Miler, I. (2026). Gnotobiology: From 19th-century global foundations to 21st-century omics — Six decades of Czech contribution to microbiome research. *Folia Microbiologica*. Advance online publication.

UNESCO. (2015). *Recommendation concerning the preservation of, and access to, documentary heritage including in digital form*.

Walsh, J. P., & Ungson, G. R. (1991). Organizational memory. *Academy of Management Review, 16*(1), 57–91.

Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press.

Whitley, R. (2000). *The intellectual and social organization of the sciences* (2nd ed.). Oxford University Press.

Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J., Appleton, G., Axton, M., Baak, A., Blomberg, N., Boiten, J.-W., da Silva Santos, L. B., Bourne, P. E., Bouwman, J., Brookes, A. J., Clark, T., Crosas, M., Dillo, I., Dumon, O., Edmunds, S., Evelo, C. T., Finkers, R., … Mons, B. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data, 3*, Article 160018.

Wuchty, S., Jones, B. F., & Uzzi, B. (2007). The increasing dominance of teams in production of knowledge. *Science, 316*(5827), 1036–1039.

Ziman, J. (2000). *Real science: What it is, and what it means*. Cambridge University Press.

Part Eight

The Czech Academy of Sciences in the 21st Century: Challenges, Identity, and Future Prospects

Chapter 17

The Academy, Society, and the Public Value of Science

Science Communication and Public Trust

1. The Public Visibility of AV ČR

Public visibility is not an ornamental addition to the work of a modern scientific institution. For a publicly funded academy, it forms part of the relationship through which specialised knowledge becomes recognisable, discussable, and accountable beyond the boundaries of professional research. Visibility in this sense should not be confused with popularity, publicity, or the simple frequency with which an institutional name appears in the media. It concerns the capacity of citizens to recognise an institution, understand broadly what kinds of knowledge it produces, identify its experts, and connect its activities with questions that affect society. An academy can be highly respected within international scientific networks while remaining almost invisible to the population that finances it. Conversely, a research organisation can achieve considerable media exposure without creating a durable public understanding of its scientific role. Modern scholarship on science communication has therefore increasingly treated communication as a relationship rather than a one-directional transfer of simplified facts from experts to passive audiences (*Burns, O'Connor, & Stocklmayer, 2003*). This distinction is particularly important for AV ČR because its institutional design does not provide the forms of everyday visibility enjoyed by universities through students, campuses, examinations, graduation ceremonies, and teaching. Much Academy research takes place in laboratories, archives, observatories, specialised libraries, field stations, and institutes whose ordinary work remains physically and intellectually distant from most citizens. The institution must consequently translate a distributed network of specialised workplaces into a publicly intelligible image of Czech science. Its visibility has also developed under changing political conditions in which the social legitimacy of publicly financed research could no longer be taken for granted. The history of AV ČR after 1993 can therefore be read partly as the history of how an institution of expert knowledge learned to make itself present within a democratic public sphere.

This requirement acquired particular significance during the democratic reconstruction of Czech academic science after 1989. ČSAV had certainly been visible under state socialism, but visibility within an authoritarian political system carried a different meaning from visibility within a pluralist democracy. Official ceremonies, state media, public anniversaries, prestigious academicians, and representations of technological progress could present the Academy as an important national institution without permitting an equally open public debate about its organisation, financing, failures, or political subordination. The post-1989 transformation altered this relationship fundamentally. AV ČR could no longer derive its legitimacy from incorporation into a state ideology or from its formally privileged position within a centrally organised system of research. It had to justify itself before elected politicians, universities, journalists, taxpayers, competing research organisations, and a public

increasingly exposed to debates about the costs and purposes of science. Democratic self-government consequently created a paradox that would accompany the Academy throughout the following decades. Greater autonomy reduced political command over research, but it simultaneously increased the need to explain why autonomous research deserved public support. Institutional independence and public communication were therefore not opposing principles. They became mutually dependent conditions of democratic scientific authority. If researchers wished to protect intellectual freedom from short-term political or commercial demands, they also had to show that such freedom produced knowledge of broader and longer-term value. Public visibility thus became one of the means through which AV ČR converted the scientific capital inherited from ČSAV into democratic legitimacy. The problem was no longer simply whether the Academy could conduct good research, but whether society could see enough of that research to understand why the institution mattered.

The normative basis for this outward orientation eventually became explicit in the Academy's own constitutional language. The Statutes of the Czech Academy of Sciences describe its basic mission as enriching human knowledge while serving the welfare of the Czech Republic and its citizens. They also define the Academy as a democratically organised network of autonomous scientific institutions and require it to propagate and apply the results of its activities for education, culture, national competitiveness, and the solution of current social problems. The institutes are assigned responsibilities that extend beyond the production of publications for specialist audiences. They contribute to education, distribute scientific information, provide expert opinions and recommendations, organise scientific conferences, and may undertake broader educational activities (*Czech Academy of Sciences, 2006*). These provisions matter because they place communication inside the institutional mission rather than treating it as an optional promotional activity conducted only when resources permit. The Academy remains a research organisation rather than a museum, media company, or educational ministry. Nevertheless, the public character of its funding creates an expectation that knowledge generated within its institutes will circulate beyond them. This circulation includes scientific publications and university teaching, but it also includes expert commentary, public lectures, exhibitions, media interviews, educational materials, and accessible explanations of research. The statutory formulation consequently connects scientific autonomy with a duty of public usefulness without reducing usefulness to immediate commercial application. It also recognises culture and education as legitimate public outcomes of research alongside technology and economic competitiveness. Public visibility is therefore anchored in the Academy's understanding of itself as a national research institution whose responsibilities extend from the advancement of knowledge to the intellectual life of the society that sustains it.

The first years of AV ČR reveal how closely communication was connected with democratic institutional reconstruction. The inaugural issue of *Akademický bulletin* in 1993 explicitly presented itself as the successor to the bulletin that had chronicled the turbulent transformation of ČSAV after November 1989. Its editorial programme emphasised prompt information about the Academy and its institutes, but it also sought to provide room for discussion about Czech science, science policy, relations with universities, applied research, important results, and developments abroad (*Akademický bulletin, 1993*). The declared ambition to become as open and as little conventionally "academic" as possible was significant. It suggested that institutional communication should not merely reproduce formal resolutions from the leadership. The new Academy needed a forum in which its own scientific

community could debate what kind of institution had emerged from the collapse of the previous political order. Public visibility at this stage was therefore closely linked with internal transparency. Reports on meetings, organisational decisions, budgets, foreign contacts, and scientific achievements allowed researchers themselves to observe how the new self-governing system functioned. At the same time, these records made the Academy more legible to journalists, policymakers, historians, and other actors outside its institutes. The boundary between internal communication and public communication was consequently porous. A democratic Academy had to learn to speak about itself before it could develop the more professional and diversified public communication structures of later decades. In this sense, the modest institutional bulletin belonged to the same democratic transformation as competitive funding, elected academic bodies, and international evaluation. Openness about scientific administration became one of the cultural markers separating the new institution from the less transparent practices of the preceding regime.

Yet AV ČR faced a structural difficulty that has never disappeared completely: it is simultaneously one institution and a network of highly differentiated institutes. The official mission describes a complex of dozens of public research institutions spanning natural sciences, technical disciplines, life sciences, social sciences, and the humanities (*Czech Academy of Sciences, n.d.*). To scientists, this diversity represents one of the principal strengths of the Academy because it concentrates specialised communities that operate according to different epistemic traditions. To the general public, however, the same diversity can obscure institutional identity. A person who recognises the Institute of Organic Chemistry and Biochemistry, the Institute of Physics, the Institute of Archaeology, or the Institute of Sociology may not automatically connect its work with AV ČR as a whole. Conversely, the name "Academy of Sciences" may evoke a prestigious but rather abstract national institution without revealing what its individual workplaces actually do. Public visibility therefore has to operate on two levels at once. The central Academy provides a recognisable umbrella, common events, visual identity, strategic programmes, and institutional representation. Individual institutes provide the scientific stories, researchers, discoveries, collections, instruments, places, and controversies through which that umbrella becomes concrete. Excessive centralisation of communication could flatten disciplinary differences and make the institutes appear interchangeable. Excessive fragmentation, by contrast, could prevent the public from seeing how these workplaces collectively constitute a national research institution. The development of AV ČR's public presence has consequently been a continuing attempt to make diversity visible without losing institutional coherence.

Physical space has also contributed to this institutional visibility. The Academy's headquarters on Národní in Prague possesses a symbolic role that differs from the scientific function of individual research institutes. It provides a recognisable public address at which academic assemblies, ceremonies, exhibitions, debates, lectures, press events, and encounters with political representatives can be associated with the institution as a whole. Yet the geography of AV ČR cannot be reduced to this metropolitan centre. Major research communities operate in Brno, České Budějovice, Ostrava, and other locations, while individual institutes maintain observatories, field stations, laboratories, archives, and facilities beyond their principal seats. The Academy is therefore visible through a landscape of scientific places rather than through a single campus. This distinguishes it from universities whose identity may be closely tied to a coherent urban precinct. For AV ČR, public events that open normally specialised spaces perform an especially important symbolic function. A laboratory that is ordinarily accessible

only to employees and collaborators temporarily becomes a civic space in which citizens can observe how knowledge is produced. An archive or archaeological workplace ceases to appear as a distant administrative unit and becomes a place populated by identifiable researchers and material evidence. Such encounters can alter the meaning of the institution more effectively than a central advertising campaign. They demonstrate that "the Academy" is not merely a governing body in Prague but an extensive infrastructure of scientific work. The physical distribution of that infrastructure also helps connect the institution with regional identities and local communities. Visibility consequently has a spatial dimension: AV ČR becomes publicly intelligible when people can associate the abstract national institution with concrete places of research.

The post-socialist media environment initially made this task difficult. The transition to a market-based media system altered the institutions through which scientific information had previously reached readers and listeners. Traditional popular-science sections and publications did not always survive commercial pressures, while rapidly changing media organisations often preferred immediately attractive stories to slower explanations of research processes. Scientists, for their part, could regard journalistic simplification with suspicion and were not always trained to communicate specialised work outside their disciplines. Adolf Filáček's analysis of Czech science communication at the beginning of the 2010s described a field that was developing dynamically but still lacked sufficiently strong professional intermediaries between scientists and the public (*Filáček, 2011*). The difficulty was therefore not simply that researchers failed to speak or that journalists failed to listen. The emerging democratic knowledge environment required new occupations, routines, platforms, and institutional incentives capable of translating between different communicative cultures. Academic researchers were accustomed to caveats, methodological qualification, specialist terminology, and slow verification. News media worked with deadlines, limited space, personal stories, conflict, novelty, and clear conclusions. Neither logic could simply replace the other without loss. AV ČR gradually had to construct its own communication capacity while also learning how to work with external media. This development was part of a broader transformation of Czech science from a relatively enclosed professional system into an institutionally diverse and publicly contested sector. Public visibility thus depended increasingly on mediation rather than on the assumption that scientific achievement would automatically become socially visible.

One of the most important responses was the development of large-scale public science events. By the end of the first decade of the 21st century, the Week of Science and Technology organised by the Academy had already become one of the most successful Czech examples of science communication. The ninth edition in 2009 included dozens of lectures, exhibitions, science cafés, presentations, seminars, and conferences distributed across several Czech cities. It brought together biologists, philosophers, physicists, archaeologists, astronomers, geologists, historians, linguists, and researchers from other disciplines, demonstrating that public science need not be restricted to spectacular experiments in the natural sciences. More than thirty thousand visitors attended that edition, and online streaming extended its reach beyond physical venues (*Filáček, 2011*). The scale is important not only as a measure of audience size. A recurring festival creates expectation and memory. Citizens can encounter the Academy repeatedly rather than only when a major discovery or controversy attracts the news media. Repetition also forces institutes to develop communication skills, prepare accessible presentations, and think about the public meaning of their work. It creates an

institutional calendar in which public communication becomes predictable rather than exceptional. The festival format moreover makes the diversity of the Academy visible in one temporal frame. Research that ordinarily proceeds along separate disciplinary trajectories appears as part of a common scientific culture. The Week of Science and Technology therefore helped transform visibility from occasional publicity into a recurring institutional practice.

The political significance of public visibility became unmistakable during the funding conflict of 2009. Government proposals associated with the reform of research financing envisaged a dramatic decline in the Academy's institutional resources, producing fears that the organisation and its basic-research capacity could be severely weakened. The dispute did not remain inside meetings of the Academy Council, government advisory bodies, or parliamentary committees. Researchers and supporters carried the argument into public space through demonstrations, statements, media debates, and the activities of the Věda žije! initiative. The planned reductions were represented not simply as an internal budgetary disagreement but as a question concerning the future place of fundamental research in Czech society. The controversy made laboratories, institutes, evaluation methods, and research financing unexpectedly visible to audiences that might otherwise have encountered these subjects only intermittently. It also exposed competing definitions of public value. Critics asked whether the Academy received an appropriate share of state resources and whether research funding should be redirected towards more immediately measurable applications. Academy representatives and their supporters argued that long-term basic research generated capacities that could not be preserved under a narrowly short-term funding logic. The eventual political outcome did not remove all financial pressures, but the most destructive trajectory was not implemented, and Academy accounts later treated public mobilisation as an important part of the resistance to the cuts (*Czech Academy of Sciences, 2019*). The episode demonstrated that public visibility can become existential when institutional arrangements themselves are contested. A research organisation that cannot explain its function outside the scientific community is particularly vulnerable when its budget becomes a subject of political redistribution.

The 2009 conflict also revealed a deeper transformation in the relationship between Czech scientists and public advocacy. Researchers who had often regarded communication as secondary to research were compelled to explain why apparently abstract activities in mathematics, physics, history, philosophy, biology, or other fields deserved collective investment. This explanation required a vocabulary broader than publication counts or specialist prestige. It demanded arguments about education, intellectual independence, long-term innovation, cultural knowledge, expert capacity, and the possibility that useful discoveries cannot always be predicted in advance. Public mobilisation also showed that the defence of scientific autonomy could itself be a democratic public act rather than a withdrawal from society. Scientists were not asking to be exempted from public scrutiny. They were disputing the criteria through which the public value of research was being defined. The demonstrations inevitably simplified some of the underlying policy disagreements, just as political opponents sometimes simplified the Academy into a budgetary interest group. Yet simplification did not make the episode irrelevant to the institution's development. It taught a generation of researchers that institutional survival could depend on their capacity to communicate beyond professional networks. It also made the Academy a more familiar subject of mainstream political journalism. Public visibility thus emerged partly through conflict rather than only through carefully planned popularisation. The institution learned that

legitimacy had to be continuously renewed because democratic societies do not permanently settle the distribution of resources among science, education, welfare, infrastructure, defence, and other public priorities. This lesson would influence the more systematic public-facing strategy that developed during the following decade.

Professionalisation became one of the defining features of that later development. By the 2010s and 2020s, public communication could no longer be understood primarily as something undertaken voluntarily by an eloquent scientist after completing research. AV ČR developed specialised structures for press relations, popularisation, academic media, audiovisual production, educational projects, public relations, and related activities within the Centre of Administration and Operations. These units support both Academy-wide communication and the public work of individual institutes. The existence of dedicated staff changes the internal division of labour. Researchers remain indispensable because scientific content cannot be communicated credibly without disciplinary expertise. Communication professionals, however, help identify audiences, design formats, prepare events, work with journalists, produce visual materials, manage digital platforms, and translate institutional complexity into accessible narratives. This arrangement also reduces the risk that public presence will depend entirely on a small group of naturally charismatic researchers. It allows communication to become an organisational capacity rather than a personal accident. At the same time, professionalisation raises questions about how far institutional communication should resemble corporate public relations. A scientific academy cannot measure success solely through reach, branding, favourable coverage, or audience satisfaction. Its credibility ultimately depends on whether communication preserves uncertainty, evidence, disagreement, and the distinction between established knowledge and provisional interpretation. The increasingly elaborate communication infrastructure of AV ČR therefore reflects not merely a desire to be better known but a recognition that relations between science and society require specialised institutional competence.

The introduction of Strategy AV21 in 2014 marked another important stage in this process. The programme adopted the deliberately public-facing formula “Top research in the public interest”, linking scientific excellence with questions whose significance could be understood beyond individual disciplines (*Czech Academy of Sciences, 2017*). Its research programmes encouraged cooperation across institutes and, where appropriate, with universities, public bodies, firms, and other partners. The strategic innovation was not that Academy researchers had suddenly begun to investigate socially relevant problems. Health, environment, energy, language, history, materials, social change, and technology had always connected academic research with wider needs. What changed was the institutional framing of these relationships. Instead of leaving societal relevance dispersed among hundreds of specialised projects, Strategy AV21 created thematic structures through which different institutes could present coordinated responses to larger challenges. This made the Academy more legible to policymakers and citizens. A person unfamiliar with the organisational map of AV ČR could understand a programme concerned with energy, resilient society, health, environmental risks, or historical memory more readily than a list of institute departments. The strategy therefore had a communicative function alongside its research-coordination function. It offered a public narrative explaining how basic and interdisciplinary research could contribute to problems whose solutions exceed the competence of a single discipline. Crucially, the programme did not define public interest solely through immediate application. It retained the premise that

internationally competitive basic research could produce societal value through knowledge, expertise, methods, and long-term capacity.

Strategy AV21 also helped the Academy present interdisciplinarity itself as a form of public value. Contemporary societal problems rarely arrive in the neat disciplinary categories through which research institutions are organised. Climate adaptation involves atmospheric science, ecology, hydrology, economics, law, sociology, technology, and political decision-making. Population ageing involves biology and medicine, but also demography, economics, psychology, social policy, and cultural change. Energy transitions require materials research, engineering, environmental analysis, economic modelling, historical knowledge, and public acceptance. The public visibility of AV ČR is strengthened when citizens can see that its disciplinary breadth allows these perspectives to be assembled rather than merely housed beside one another. This does not mean that every research project must be justified by an immediate "grand challenge". Fundamental mathematics, textual scholarship, theoretical physics, taxonomy, philosophy, and other forms of inquiry retain value even when their eventual applications are unknown. The communicative achievement lies in explaining how a broad research ecosystem preserves capabilities that society may later need. Strategy AV21 provided one mechanism for making this ecosystem visible through selected coordinated programmes. Its publications, public events, and thematic materials also gave individual research findings a common institutional context. The Academy could therefore appear not only as a collection of excellent institutes but as an organisation capable of intellectual mobilisation around public questions. Such visibility became increasingly important as European research policy itself emphasised societal challenges and demonstrable impact. The Czech Academy was thereby translating international trends into a framework compatible with its own tradition of autonomous basic research.

Digital and audiovisual communication further changed the scale on which AV ČR could become visible. The animated educational series *NEZkreslená věda* began in 2014 and developed through successive series covering scientific "evergreens" as well as contemporary questions. Its short films combined professional scientific content with animation, narration, humour, and a format suitable for schools and online viewing. By 2024, ten series had been completed, with subtitles extending accessibility beyond Czech-speaking audiences and to viewers with hearing impairments (*Czech Academy of Sciences, n.d.*). The importance of such a project lies partly in its departure from the traditional public lecture. A lecture normally requires a visitor to attend at a particular time and place. A digital video can circulate repeatedly through classrooms, homes, social networks, and online archives. It can also reach young audiences who may never have visited an Academy institute. The format inevitably requires selection and simplification, but its institutional authorship provides a connection between accessible explanation and identifiable research expertise. This matters in an online environment where scientific-looking content can circulate without clear provenance. A recognisable Academy label can help viewers distinguish organised scientific communication from anonymous or commercially motivated information. Digital visibility therefore does not merely increase audience numbers. It changes the temporal life of science communication, allowing explanations to remain available after the event that produced them. In this respect, the Academy's public presence began to shift from episodic encounters towards a continuously accessible media environment.

The Science Fair, first organised by the Academy in 2015, developed another form of mass visibility. Unlike an institute open day, which invites visitors into the everyday spatial world of

research, the fair gathers many scientific institutions into a deliberately public exhibition environment. Interactive exhibits, models, demonstrations, workshops, lectures, and direct conversations with researchers allow scientific work to be encountered through movement, touch, questioning, and observation. The Academy acts as organiser, but universities, science centres, companies, and other research organisations also participate. This is institutionally significant because AV ČR gains visibility not by isolating itself from the rest of Czech science but by creating a platform on which a wider research system can appear together. The fair has grown into the country's largest popular-science event, and its expanding attendance demonstrates a substantial public appetite for direct encounters with scientific work. In 2024 it attracted a reported 55,000 visitors, while more than one hundred scientific workplaces, companies, and science centres were represented (*Czech Academy of Sciences, 2024*). Such scale inevitably produces a festival atmosphere that differs markedly from ordinary laboratory culture. Yet spectacle does not necessarily negate seriousness. A child attracted by an experiment may speak directly to a physicist, historian, biologist, or engineer, while an adult visitor may encounter a field previously known only through headlines. The fair therefore makes the Academy visible as both a producer of specialist knowledge and a host of national scientific culture. Repetition across successive years also allows the event to become part of the public calendar rather than a one-off promotional campaign.

By 2025, the scale and institutional character of the Science Fair had become even more revealing. The Academy's annual reporting recorded around 50,000 visitors and approximately one hundred exhibition spaces, with a large proportion prepared by AV ČR institutes themselves (*Czech Academy of Sciences, 2025*). Other Academy reports emphasised that almost the entire institutional network was represented and that the Academy's exhibitions occupied a substantial share of the available space. This concentration produces something that the dispersed geography of research normally cannot provide: a temporary physical image of AV ČR as a single scientific community. Visitors can move in minutes between archaeology, plasma physics, plant biology, artificial intelligence, history, chemistry, linguistics, materials science, and other fields that are otherwise separated by disciplinary institutions and kilometres of geography. The experience therefore communicates organisational breadth through juxtaposition rather than through an abstract organisational chart. Media partnerships and digital promotion extend that visibility further beyond those who physically attend the exhibition. At the same time, the event makes internal plurality visible to Academy employees themselves. Researchers from different institutes encounter one another in a setting organised around explanation to outsiders rather than around disciplinary peer exchange. Public communication can consequently strengthen internal institutional identity. The scientist who normally identifies primarily with a laboratory or institute is reminded that the workplace belongs to a much broader organisation. In this respect, mass public events perform both an external and an internal integrative function. They help transform AV ČR from an administrative affiliation into an experienced collective presence.

The transformation of the former Week of Science and Technology into the Week of the Czech Academy of Sciences reinforced the visibility of the Academy's name itself. The newer festival retained the established practice of lectures, exhibitions, workshops, film screenings, guided tours, open days, discussions, and other events, but placed the institutional identity more explicitly in the title. Almost all Academy workplaces participate, while programmes take place throughout the Czech Republic rather than solely in Prague. In 2024, approximately four hundred events were organised, with around twenty thousand visitors or viewers recorded

across the programme. The 2025 edition offered around 350 events in twenty-two cities, involving forty-nine Academy workplaces and seven scientific partners (*Czech Academy of Sciences, 2025*). These numbers indicate more than the popularity of a festival. They reveal the capacity of a decentralised research network to act publicly in a coordinated manner. The event allows institutes to preserve their own disciplinary character while appearing under a common institutional frame. Its free admission is also symbolically important because it presents publicly financed knowledge as something citizens can approach without a commercial barrier. Open laboratories and guided tours reduce the psychological distance between scientific institutions and everyday life. Public discussion events, meanwhile, permit researchers to address subjects already circulating through political and media debate. The festival therefore creates a temporary nationwide interface between AV ČR and Czech society.

Print and digital periodicals have supplied a less spectacular but more continuous form of presence. Since 2017, *A / Věda a výzkum*, later renamed *A / Magazín*, has presented research projects and scientific developments from Academy workplaces in a quarterly format. A second publication, originally *AΩ / Věda pro každého* and later *A / Easy*, has addressed visitors to public events and audiences seeking a more introductory presentation of science (*Czech Academy of Sciences, n.d.*). These publications occupy an intermediate position between scientific journals and ordinary news media. They are produced within the Academy but written for readers who are not expected to possess specialist expertise in the subject. This creates advantages and responsibilities. The Academy can devote more space to context than a brief news report normally allows. Researchers can explain methods, uncertainties, and longer histories of a problem without relying entirely on an external journalist's editorial priorities. At the same time, institutional publishing must avoid becoming self-congratulatory. A credible popular-science magazine should communicate scientific processes, unanswered questions, failures, and disagreement as well as achievements. Its value lies precisely in showing that research is a practice of inquiry rather than an uninterrupted series of discoveries. Regular publication also permits the Academy to maintain visibility between major festivals and crises. Readers encounter scientists as continuing participants in public intellectual life rather than only as emergency commentators.

Audio formats further widened this communicative ecology. During the first phase of the COVID-19 pandemic in 2020, the Academy produced the *Věda na doma* podcast series, followed from the autumn by *Věda na dosah*. The later format developed into recurring profile interviews with researchers from across the Academy's principal scientific areas (*Czech Academy of Sciences, n.d.*). Podcasting offers a different form of visibility from both a press release and a science festival. The listener spends extended time with the voice and reasoning of a scientist rather than simply encountering a quotation embedded in a journalist's report. Personal biography, motivation, uncertainty, research routines, and broader interpretations can enter the conversation alongside results. This can humanise scientific work without necessarily turning scientists into celebrities. The timing was also important because the pandemic accelerated an already existing shift towards remotely accessible public communication. Closed venues and restrictions on physical meetings made digital communication indispensable rather than supplementary. Institutes learned to stream lectures, produce online materials, conduct interviews remotely, and maintain contact with audiences who could not visit scientific workplaces. Some of these practices survived the return of ordinary public events because they reached people outside the geographic radius of major Czech research centres. Digital communication thereby reduced, though it did not

eliminate, the metropolitan advantage of Prague-based institutions. By the early 2020s, AV ČR's visibility could no longer be understood without considering a hybrid public sphere in which physical and digital encounters constantly reinforced one another.

The Academy's website and associated digital infrastructure have similarly become part of its permanent public architecture. The contemporary site distinguishes information intended for researchers, the general public, and the media while connecting these audiences to a common institutional source. Public-facing sections contain events, exhibitions, magazines, podcasts, videos, educational materials, student opportunities, citizen-science initiatives, and interactive resources. Media sections provide press releases, visual materials, contact details, and lists of researchers available as experts. Strategic documents, annual reports, governance information, evaluation materials, ethical regulations, and legal foundations are also publicly accessible. This arrangement combines promotion with accountability. A visitor may arrive because of an attractive story about a scientific discovery and continue towards information about how the Academy is governed or financed. A journalist may begin with a news release and then identify a specialist capable of commenting on a wider issue. A student may enter through educational content and discover an internship programme or a particular institute. Digital visibility is therefore built through pathways rather than through a single institutional message. The Academy's public image emerges from the relationship among research news, people, documents, events, and organisational information. Such infrastructure is easily taken for granted because websites have become ordinary features of institutional life. Historically, however, it represents a major change from a period when access to Academy information depended much more heavily on printed bulletins, telephone contact, or physical attendance.

The creation of an organised expert directory for journalists illustrates particularly clearly how visibility is linked with public expertise. The Academy lists specialists across fields ranging from physics, climate science, mathematics, chemistry, medicine, and biology to history, economics, sociology, language, and other humanities and social-science subjects. The practical purpose is simple: journalists working under time pressure need to find credible people who can explain a technical problem or place an event in context. Institutionally, however, the directory performs a broader function. It presents AV ČR as a reservoir of expertise available to the public sphere. The Academy becomes visible not only when one of its own projects generates news but when external events create a demand for interpretation. An earthquake can bring a geophysicist into the media, an epidemic a biologist or social scientist, an election an analyst of political behaviour, a linguistic dispute a language specialist, and an archaeological discovery a historian or archaeologist. The resulting visibility is therefore event-driven but institutionally supported. It also differs from formal scientific advice delivered to government because the audience is potentially the whole population. Media accessibility can help prevent public debate from being dominated by commentators whose confidence exceeds their relevant expertise. Yet appearing under the Academy's institutional affiliation also creates responsibility. Researchers must distinguish professional knowledge from personal opinion and make clear where evidence ends and interpretation begins. A well-organised media interface consequently increases visibility while simultaneously raising the standards expected from publicly identifiable experts.

Regional visibility is another essential element of this story. Czech scientific life has long been strongly concentrated in Prague and Brno, but AV ČR's research network extends into multiple regions and operates facilities whose relevance is often closely connected with local environments. Ecological research in South Bohemia, geological and mining-related expertise

in Moravian-Silesian areas, archaeological work across the country, astronomical observatories, field stations, historical research, and numerous other activities create relationships between institutes and places that cannot be understood solely through national administration. Academy festivals deliberately exploit this geography by organising events in many Czech towns and cities. The 2025 Week of the Czech Academy of Sciences, for example, distributed hundreds of activities across twenty-two cities rather than concentrating the entire programme in the capital. Such distribution matters for democratic reasons as well as educational ones. A national research institution financed from the state budget should not appear to belong only to a metropolitan professional elite. Regional events allow residents to encounter scientific workplaces as part of their own social and cultural environment. They can also strengthen relationships with schools, museums, municipalities, regional universities, firms, and cultural organisations. In some places, the local Academy institute may be one of the most internationally connected institutions in the region. Its visibility can therefore contribute to a local sense that advanced research is not something that happens only abroad or in Prague. Public communication thus helps national science acquire a genuinely territorial presence.

The breadth of disciplines represented within AV ČR also complicates and enriches its public image. Popular science is often visually associated with telescopes, microscopes, chemical reactions, robots, fossils, or spectacular physical experiments. These subjects are readily transformed into photographs, demonstrations, and interactive exhibits. Historical scholarship, philosophy, linguistics, law, economics, sociology, literary studies, and other humanities and social sciences may be less immediately spectacular, although their subjects often connect more directly with political and cultural debate. A national academy has to resist allowing the communicative advantages of certain disciplines to define science as a whole. Its public visibility should demonstrate that research includes the critical examination of documents, concepts, institutions, languages, identities, social inequalities, demographic processes, and collective memory alongside experimental investigation of the physical and biological world. Large Academy festivals have increasingly placed these fields beside one another rather than treating the humanities as peripheral additions. Strategy AV21 similarly makes social, cultural, and historical questions part of research organised around public problems. This balance is especially important in the Czech context because the genealogy of academy-based scholarship has always included both science and national cultural research. The Academy inherited dictionaries, archives, historical projects, archaeological traditions, and philological scholarship alongside laboratories and experimental programmes. Making this breadth visible protects institutional memory as well as disciplinary diversity. It reminds the public that the value of an academy cannot be measured solely through patents, medical therapies, or technological devices. A society also requires professionally produced knowledge about itself. Public visibility is therefore partly a struggle over the meaning of science and scholarship.

Individual scientists inevitably become important carriers of institutional visibility. Large organisations are difficult for the public to imagine without human faces, voices, and biographies. Presidents of the Academy can personify its institutional positions, particularly during budget negotiations, national commemorations, crises, or debates over research policy. Directors can perform a similar role for individual institutes. Researchers who communicate frequently through television, radio, newspapers, podcasts, public lectures, or books may become more familiar to the public than the administrative structures employing

them. This personalisation can be beneficial because trust and curiosity often develop through encounters with identifiable people rather than abstract organisations. A scientist explaining how a measurement was made or why a historical source is difficult to interpret can make institutional competence visible through practice. Yet excessive dependence on a small number of public personalities creates risks. Media familiarity does not necessarily correspond to the breadth of an institution's expertise. Charismatic communicators can unintentionally eclipse colleagues or entire disciplines whose work is less easily translated into mass media. Public controversy surrounding one scientist can also be projected onto the Academy as a whole. AV ČR therefore needs both recognisable scientific voices and institutional mechanisms that continually widen the range of people able to participate in public communication. The strongest public identity is not one dominated by a few celebrities but one in which audiences repeatedly encounter competent researchers from different generations, disciplines, regions, and professional backgrounds.

Visibility also exposes science to disagreement, criticism, and political contestation. This is not a malfunction of public communication but one of its inevitable consequences in a democratic society. Research on climate change, vaccination, energy, migration, economic policy, historical memory, language, artificial intelligence, environmental regulation, or social inequality can intersect with deeply held interests and identities. Once Academy researchers enter such debates, they may be praised by one group and attacked by another. Institutional temptation can then move in two opposite directions. One response is retreat: scientists may conclude that public controversy threatens neutrality and should therefore be avoided. The opposite response is overconfidence: institutional prestige may be used as if it transformed every expert judgement into an unquestionable public command. Neither approach is sustainable. Scientific institutions have authority because their claims are produced through specialised methods, criticism, evidence, and revisability, not because academies possess political sovereignty. Public communication must therefore show both the strength and the limits of expert knowledge. Researchers should be capable of saying that evidence is robust, that evidence is incomplete, or that a question ultimately requires a political or ethical choice beyond the competence of science alone. Such distinctions may appear less dramatic than categorical statements, but they protect long-term credibility. Public visibility is consequently valuable precisely because it allows citizens to observe scientific reasoning rather than merely receive scientific conclusions.

The Academy's public character also means that visibility is inseparable from accountability for public resources. The institution is financed primarily through the state budget and administers a large network of public research organisations. Annual reports, evaluations, statutes, strategic documents, governance information, research outputs, and financial data therefore have a communicative importance even when they are not conventional instruments of popularisation. They permit citizens, journalists, policymakers, and other researchers to examine what the Academy claims to do and how its structures operate. The distinction between transparency and publicity is important here. A science fair makes research attractive and accessible, whereas an annual report provides evidence about institutional activity. A podcast may humanise a researcher, whereas an evaluation document reveals how research quality is assessed. A press release may draw attention to a discovery, whereas open governance documents show how responsibility is distributed. Together these forms create a more mature public visibility than promotional communication alone could achieve. The Statutes themselves explicitly connect the Academy with the welfare, education, culture, and

competitiveness of the Czech Republic and require the dissemination of scientific information and expert recommendations (*Czech Academy of Sciences, 2006*). This makes the public relationship reciprocal. Society provides resources and institutional protection for relatively autonomous research, while the Academy makes knowledge, expertise, and information about its own operation available to society. Accountability does not mean that citizens should decide the technical content of every research programme by plebiscite. It means that the institution must remain intelligible enough for democratic society to judge the broad purposes for which autonomy and funding are granted.

The evolution of AV ČR's public communication therefore reflects a broader transformation in the culture of Czech research. In the early 1990s, the immediate priority was to reconstruct legitimacy after the political collapse of the system within which ČSAV had operated. Communication centred strongly on institutional reform, scientific policy, internal openness, international reintegration, and the defence of the Academy's place within the new research system. During the following decade, larger public events and educational projects made direct encounters with science more systematic. The funding crisis of 2009 showed how quickly questions of basic research could become questions of public politics. The 2010s then brought more professional communication structures, thematic research strategies, digital educational formats, increasingly ambitious festivals, and new institutional media. The pandemic accelerated digital communication and demonstrated the societal demand for accessible expert interpretation under conditions of uncertainty. By the middle of the 2020s, AV ČR operated simultaneously through face-to-face events, print publications, websites, podcasts, video, social media, media expertise, public debates, school-oriented resources, and extensive institute-level communication. No single medium defines its visibility. The institution appears to different groups through different channels and for different reasons. A school pupil may first encounter it through an animation, a journalist through an expert list, a family through the Science Fair, a policymaker through an expert report, and a local resident through an institute open day. Public presence has thus become a distributed institutional system much like the Academy's research itself.

This development should not be interpreted as a linear story in which more communication automatically produces more understanding. Large audience figures demonstrate reach, but they do not reveal what visitors remember or how their attitudes change. Social-media impressions show exposure but not necessarily comprehension. A successful press release may increase recognition of an institute while reinforcing an unrealistic image of science as a sequence of sudden breakthroughs. Public events can inspire visitors but tend to attract people who already possess some curiosity about science. Communication professionals therefore increasingly need research about audiences rather than relying only on intuition. The Centre of Administration and Operations has itself supported studies of public attitudes towards science and evaluations of major popularisation events. Earlier sociological work conducted within the Academy had already examined how Czech citizens perceived science, scientists, institutions, usefulness, risks, and public support (*Šamanová, Škodová, & Vinopal, 2006*). Such research introduces reflexivity into popularisation. The Academy becomes not merely a sender of information but an institution that studies how scientific knowledge is socially perceived. This is especially important because visibility can be unevenly distributed across age, education, region, political interest, and prior scientific literacy. The people easiest to reach are not necessarily those for whom communication would be most socially valuable.

Public visibility is therefore a continuing research problem as well as a communication objective.

The Academy must also negotiate the changing economics of attention. Scientific institutions now communicate in an environment saturated with entertainment, advertising, political messaging, influencers, institutional brands, algorithmically selected news, and vast quantities of user-generated information. Merely placing accurate information online does not ensure that it will be encountered. Communication therefore requires attractive headlines, imagery, narrative structure, concise formats, and an awareness of how audiences move between platforms. These requirements can create tension with scientific norms. Research often becomes interesting precisely where the answer is uncertain, conditional, or difficult to summarise. Digital media tend to reward confidence, novelty, conflict, and rapid reaction. An Academy that ignores these media conditions risks invisibility, yet one that imitates them uncritically risks damaging the epistemic virtues on which its authority rests. The solution cannot be a return to specialist language inaccessible to non-experts. Rather, it requires a professional culture capable of simplifying form without falsifying substance. Scientists need to understand that clarity is not the enemy of complexity, while communicators need to understand that uncertainty is not a defect to be removed from every story. The institutional investment in specialised media and popularisation staff becomes particularly important under these conditions. Public visibility in the digital age is therefore an exercise in maintaining scientific identity while competing for scarce human attention.

A further characteristic of AV ČR's public visibility is that it operates through partnerships. The Academy works with universities, schools, museums, media organisations, science centres, government institutions, cultural organisations, municipalities, companies, and scientific societies. These relationships expand the audiences that individual Academy institutes could reach on their own. They also prevent the institution from presenting Czech science as an Academy monopoly. The Science Fair is particularly instructive because the Academy organises a national platform in which other research actors are highly visible. Týden Akademie věd similarly includes scientific partners outside the Academy network. Media collaborations bring researchers into programmes whose audiences are much larger and more socially diverse than the readership of Academy publications. Cooperation with schools creates repeated contact with teachers and pupils rather than relying only on families who voluntarily attend science events. Partnerships with cultural institutions can make historical, archaeological, linguistic, and artistic research visible to audiences who would not necessarily identify themselves as consumers of science communication. Such networks turn public visibility into an ecosystem. The Academy remains recognisable as an institution, but its public value is demonstrated partly through the relationships it creates around knowledge. This corresponds to the broader shift from an image of science as an isolated expert domain towards science as one component of a democratic knowledge society. Visibility becomes strongest when institutional identity and openness reinforce rather than exclude one another.

There remains, nevertheless, a persistent asymmetry between the visibility of scientific results and the visibility of the conditions that make those results possible. News stories naturally favour discoveries, awards, new technologies, spectacular images, and conclusions with immediate relevance. The public sees much less of the slow accumulation of competence on which such outcomes depend. Instrument maintenance, data curation, long-term observations, fieldwork, archival cataloguing, methodological replication, negative results, software development, technical labour, doctoral training, peer review, and failed experiments

rarely become central communication narratives. Yet the previous chapter's discussion of laboratories, archives, collections, research groups, directors, and disciplinary cultures demonstrates that these less visible structures are precisely what allow scientific continuity to exist. Public visibility therefore has an historical responsibility as well as a promotional one. It should explain that discoveries emerge from institutions capable of sustaining questions over years or decades. This is especially important for defending basic research, whose public value may lie in maintaining intellectual and technical capacities before their eventual use can be known. A society that sees only spectacular outcomes may become impatient with the ordinary infrastructure that produces them. AV ČR's communication challenge is consequently to make processes visible alongside results. The laboratory should appear not merely at the moment of breakthrough but as a place of repeated measurement, correction, training, and accumulated expertise. Such communication supports a more realistic understanding of why long-term research institutions exist.

The same principle applies to the visibility of failure and uncertainty. Scientific institutions understandably prefer to publicise successful projects, prestigious publications, international awards, and discoveries with positive implications. Yet research advances through many hypotheses that prove incomplete, experiments that do not confirm expectations, interpretations that are revised, and technologies that take longer to mature than initially hoped. If public communication systematically removes these elements, audiences may develop an unrealistic expectation that credible science should always produce immediate certainty. This expectation becomes dangerous during crises when knowledge is necessarily provisional and expert recommendations may change as new evidence appears. A mature public image therefore cannot be constructed entirely from success stories. It must communicate something about how researchers discover error, why replication matters, how disagreement is evaluated, and why changing a conclusion can represent scientific strength rather than incompetence. The Academy's visibility is especially suited to this task because it represents long-term institutional science rather than a single product or commercial technology. It can show inquiry as a process embedded in professional communities and standards. Doing so may make communication less triumphalist, but it can deepen public understanding. It also connects public visibility with research integrity. An institution willing to explain the limitations of its knowledge demonstrates that its authority rests on procedures rather than infallibility. Such an image is more demanding to communicate, yet more resilient when science enters controversial public debates.

By 2025, AV ČR had therefore acquired a much more extensive and diversified public presence than the institution that emerged in 1993. Its name was associated with nationwide festivals, major science fairs, educational videos, magazines, podcasts, expert commentary, school activities, exhibitions, strategic programmes, and a dense flow of digital communication. Individual institutes had developed their own media identities while participating in common Academy-wide platforms. Professional communication departments supplied organisational continuity that earlier popularisation had often lacked. The institutional slogan of research in the public interest provided a language through which scientific excellence could be linked with wider societal needs without abandoning the autonomy of fundamental inquiry. Large visitor numbers demonstrated that Czech society contained a substantial audience willing to encounter science voluntarily. Yet visibility remained uneven and required constant renewal as media habits, political controversies, technologies, and social expectations changed. The Academy could never assume that a reputation built by one generation would automatically be

inherited by the next. Every cohort of citizens encounters a different media environment and a different set of public problems. Public visibility is therefore a form of institutional continuity that must continually be recreated. It connects the historical Academy with present society not through ceremonial memory alone but through repeated acts of explanation. In this respect, communication has become one of the mechanisms through which AV ČR maintains its place in democratic Czech life.

Thus, the public visibility of AV ČR developed from a relatively narrow problem of post-socialist institutional legitimacy into a permanent dimension of the Academy's public mission. The democratic institution founded in 1993 inherited formidable scientific capacities, but those capacities had to become understandable outside the professional community if they were to retain public and political support. Early transparency, institutional publications, debates over science policy, and the experience of financial conflict demonstrated that autonomy without communication could leave research politically vulnerable. Large public festivals subsequently gave the Academy a recurring physical presence throughout the country, while Strategy AV21 created a language connecting scientific excellence with the public interest. Magazines, educational videos, podcasts, websites, audiovisual production, social media, and professional media relations expanded this presence into a continuous digital environment. At the same time, the network character of AV ČR ensured that institutional visibility remained dependent on the work and identities of individual institutes and researchers. The central Academy could provide coherence, but credibility had to be generated through concrete encounters with expertise. Public visibility therefore became neither simple promotion nor a substitute for scientific quality. It became a mechanism through which quality could be socially recognised, questioned, explained, and connected with the uses of public resources. Its most important achievement was not that more citizens knew the Academy's name, but that a larger range of citizens could encounter what Academy researchers actually do and why long-term research institutions matter. The next question is consequently not merely how visible AV ČR has become, but what kinds of relationships this visibility creates through popularisation, education, and direct participation. That movement from institutional presence to active engagement forms the subject of "Popularisation, Education, and Citizen Engagement."

2. Popularisation, Education, and Citizen Engagement

If public visibility determines whether a scientific institution can be recognised within society, popularisation, education, and citizen engagement determine the depth of the relationship that follows recognition. These concepts overlap, but they are not identical. Popularisation seeks to render specialised knowledge intelligible and interesting to audiences outside a particular discipline. Education involves a more sustained process through which knowledge, methods, intellectual habits, and sometimes professional skills are transmitted. Citizen engagement goes further still, because members of the public cease to be merely recipients of information and become interlocutors, collaborators, observers, data providers, critics, or even participants in research. The distinction is important for the Czech Academy of Sciences because its public mission has gradually expanded across all three levels. The Academy no longer communicates with society only through occasional lectures, publications, or announcements of discoveries. It increasingly organises settings in which researchers and citizens encounter one another repeatedly and in which the boundaries between

communication, education, and participation become more permeable. This development corresponds to a broader international transformation in science communication away from the older assumption that public misunderstanding could be corrected simply by transferring more information from experts to laypeople. Contemporary approaches emphasise dialogue, context, participation, and the reciprocal formation of relationships between research institutions and their publics (*Burns, O'Connor, & Stocklmayer, 2003*; *Bucchi & Trench, 2014*). For AV ČR, this shift has been particularly significant because the Academy is not primarily a teaching institution and therefore cannot rely on formal enrolment to create everyday contact with younger generations or the wider population. Popularisation and engagement consequently perform some of the social functions that ordinary teaching performs within universities, while preserving the Academy's distinctive orientation towards research. As the earlier discussion in "Public Communication and Visibility of Science" indicated, public events, student internships, educational initiatives, and citizen science have consequently become increasingly important components of the Academy's modern public-interest identity.

The Czech tradition of popular science, however, long predates the contemporary language of science communication. During the 19th century, the development of Czech scientific culture was closely connected with efforts to create a modern vocabulary through which knowledge could circulate beyond narrow professional circles. Natural scientists, physicians, linguists, historians, and other scholars participated in a broader project of cultural and educational formation associated with the Czech National Revival. Scientific communication was therefore never simply a matter of simplifying discoveries already produced elsewhere. Writing about nature, technology, history, and society in Czech contributed to the construction of Czech as a language capable of expressing modern knowledge. One particularly enduring example is *Živa*, founded by Jan Evangelista Purkyně in 1853. Its earliest issues combined articles on plants, animals, geology, meteorology, astronomy, medicine, naturalists, collections, and scientific books in a format intended to broaden access to knowledge. Although the journal passed through different institutional and historical phases, its modern series has been published continuously since 1953 and is today issued by Academia with the support of AV ČR. It retains a specifically educational dimension through material intended for the teaching of biology and through articles connecting contemporary research with schools and interested non-specialists. This longevity gives popularisation within the Academy an historical depth that would be obscured if it were treated merely as a response to 21st-century media conditions. The modern institution inherited a Czech intellectual culture in which the public circulation of knowledge had long been connected with language, national education, and cultural modernisation. In this respect, the movement from scholarly work towards broader audiences belongs to the Academy's institutional genealogy rather than constituting a recent addition to it. (*Živa, n.d.*).

The socialist period added another layer to this inheritance, although one marked by the contradictions' characteristic of ČSAV itself. Scientific popularisation was extensively supported in socialist Czechoslovakia because science possessed a prominent place in official narratives of modernity, industrialisation, technological progress, and social development. Public lectures, books, magazines, radio and television programmes, museums, exhibitions, competitions, and youth activities familiarised large audiences with scientific subjects. Academy researchers participated in many of these forms of communication, and important popular-science traditions continued despite political constraints. At the same time, the institutional environment placed certain forms of public scientific discourse within

an ideological framework in which Marxism-Leninism and state policy could determine which interpretations were publicly acceptable. The extent of this influence varied greatly among disciplines. Astronomy, mathematics, much of physics, chemistry, biology, and technical research could often be popularised without constant explicit political intervention, although they remained embedded in the rhetoric of socialist progress. History, sociology, economics, philosophy, and other fields dealing directly with society or ideology faced substantially stronger restrictions. Public education therefore combined genuine transmission of scientific knowledge with the representational needs of the political regime. This history mattered after 1989 because democratic popularisation required more than preserving successful formats. It required changing the relationship between the expert, the institution, and the audience. Citizens could no longer be treated primarily as recipients of officially authorised knowledge. Researchers increasingly had to communicate within an environment in which disagreement, scepticism, competing institutions, critical journalism, and alternative interpretations were legitimate components of public life. The democratic reconstruction of scientific communication thus paralleled the institutional reconstruction of the Academy itself.

After the establishment of AV ČR in 1993, education occupied a distinctive position within the Academy's mission. The institution was neither transformed into a university nor separated from the education system. Instead, it developed a complementary relationship with higher education in which research institutes participated extensively in doctoral supervision, university teaching, joint research, specialised courses, laboratory training, and the preparation of younger researchers. Jiří Drahoš, writing while President of the Academy, emphasised that cooperation between Academy institutes and universities created essential synergies for the development of Czech science and education (*Drahoš, 2011*). This relationship challenged any simplistic division according to which universities teach while the Academy merely conducts research. In practice, advanced scientific education frequently occurs precisely where research is performed. A doctoral student learning an experimental method in an Academy laboratory, an archaeologist being trained on an excavation, or a young historian working with an archival collection encounters knowledge at the stage of its production rather than after it has been consolidated into a textbook. AV ČR therefore participates in education most intensively at the point where education becomes research training. Yet this highly specialised function does not exhaust its educational role. Public lectures, school programmes, science festivals, teacher training, publications, audiovisual materials, student placements, competitions, and citizen-science projects have progressively expanded the institution's educational reach far beyond formal postgraduate training. The Academy has consequently developed what might be described as a layered educational function. At one end stands professional scientific reproduction through the training of researchers; at the other stands the cultivation of curiosity and scientific literacy among citizens who may never pursue scientific careers. Between them lies a wide spectrum of encounters through which the boundaries between research and education become productive rather than rigid.

Large public festivals constitute the most visible layer of this educational architecture. The Week of the Czech Academy of Sciences, continuing the earlier Week of Science and Technology, deliberately combines lectures, exhibitions, documentaries, workshops, excursions, discussions, science shows, and open days across the country. Its structure recognises that different audiences learn in different ways. A secondary-school student attending a morning lecture has different expectations from a family visiting a laboratory on

Saturday, just as an adult attending an evening debate differs from a child participating in an interactive experiment. The festival therefore does not assume the existence of one undifferentiated "public". It creates parallel points of entry into science according to age, prior knowledge, geographical location, and preferred mode of participation. Particularly important is the possibility of visiting research workplaces themselves. Laboratories, libraries, archives, observatories, field facilities, and other specialised spaces acquire educational meaning when researchers explain not only what they have discovered but how they work. The public encounters instruments, specimens, documents, experimental procedures, data, and scientific uncertainty within the places where these elements normally belong to professional practice. The festival explicitly targets secondary-school students through lectures and excursions while offering afternoon and evening programmes to the wider public. Its activities extend beyond Prague, thereby giving the Academy's educational mission a national rather than exclusively metropolitan character. By the mid-2020s, hundreds of events were being organised in more than twenty Czech cities, with most Academy institutes participating. The Week consequently functions simultaneously as popularisation, informal education, and institutional opening. (*Czech Academy of Sciences, n.d.*).

The Science Fair represents a related but pedagogically distinct model. Whereas an open day invites the public into a research environment, the fair reconstructs elements of research within a deliberately interactive exhibition space. Models, experiments, instruments, demonstrations, games, virtual environments, workshops, specimens, and direct conversations with researchers enable visitors to move rapidly among scientific disciplines. This format is particularly effective for children and adolescents because it allows curiosity to precede formal understanding. A visitor does not need to know the conceptual background of plasma physics, molecular biology, archaeology, mathematics, or linguistics before approaching a stand. The encounter may begin with a visual phenomenon, a puzzle, an object, a question, or an experimental demonstration and only subsequently acquire explanatory depth. This reverses the traditional classroom order in which a body of theory frequently precedes practical experience. It also allows scientific institutions to show that research is not restricted to spectacular technology. Humanities and social-science institutes can use manuscripts, maps, linguistic puzzles, historical objects, digital reconstructions, and interpretative exercises to make their methods tangible. The Science Fair thus becomes a large-scale experiment in informal learning as well as a public-relations event. Its substantial attendance demonstrates that there is a mass audience for science when access is free, formats are varied, and researchers are physically present. The educational value lies less in the number of facts that visitors retain than in the possibility of replacing an abstract image of science with a concrete experience of inquiry. A child who remembers manipulating an instrument or arguing through a historical puzzle may carry away something more durable than a list of conclusions: the idea that knowledge is produced through questions and methods. (*Czech Academy of Sciences, 2024*).

Smaller and more specialised events complement these large festivals by demonstrating that sustained engagement can be built around particular research fields. Brain Awareness Week provides a particularly instructive example. The Czech version, *Týden mozku*, was initiated by neuroscientist Josef Syka in 1998 and became part of the international Brain Awareness Week movement. It brings researchers and members of the public together around neuroscience, brain function, neurological disease, psychology, and related topics through lectures and other educational formats. Its longevity illustrates the importance of continuity in popularisation. A

scientific institution does not create a durable relationship with society simply by launching new projects each year. Recurring formats develop their own reputation, audiences, organisational knowledge, and intergenerational memory. They also permit scientific change itself to become visible. A person who attends neuroscience lectures over several years can observe how methods, interpretations, and therapeutic possibilities develop rather than encountering science as a finished body of information. The thematic concentration of such events enables greater depth than a general science fair can normally provide. It also allows cooperation among Academy institutes, universities, clinical specialists, scientific societies, and other institutions. In this sense, specialised festivals create public communities around fields of knowledge. They show that popularisation need not always mean simplifying a subject to its most elementary level. It can also provide non-specialists with repeated opportunities to follow an evolving domain of research. (*Czech Academy of Sciences, n.d.*).

Open days at individual institutes provide perhaps the most direct form of encounter between professional research culture and the public. Their pedagogical power lies precisely in their apparent ordinariness. Visitors see workplaces not designed primarily as museums but as environments in which researchers conduct everyday scientific labour. Laboratories contain instruments whose operation requires training; archaeological institutes contain storage and documentation systems; humanities institutes contain specialised libraries, corpora, archives, and editorial projects; observatories connect abstract astronomy with physical instruments and long-term measurement. Researchers can explain why apparently routine activities such as calibration, cataloguing, sampling, transcription, coding, or cleaning data matter. Such explanations help correct one of the most persistent distortions of popular science: the impression that research consists primarily of dramatic discoveries. In reality, scientific achievement depends upon long periods of technically demanding, repetitive, collaborative, and often inconclusive work. Open laboratories and study rooms make this invisible infrastructure tangible. They also allow visitors to ask questions that would rarely appear in a formal lecture. How does a scientist choose a problem? How much does an instrument cost? What happens when an experiment fails? How is an archaeological object identified? Who maintains a database? How does a historian decide whether a source can be trusted? When researchers answer such questions in their own working environments, popularisation approaches ethnography: the public is briefly introduced to the culture of research as a professional practice. This is one reason why the Week of the Czech Academy of Sciences places considerable emphasis on institute visits and open days.

Schools constitute a particularly important audience because contact with research during adolescence can influence educational aspirations at a formative stage. AV ČR institutes have therefore developed extensive relationships with secondary schools through excursions, lectures, demonstrations, competitions, internships, teaching materials, and direct cooperation with teachers. The institutional significance of these activities extends beyond recruitment into scientific careers. School science necessarily presents knowledge in a structured and stabilised form, whereas research institutions can expose students to unanswered questions and methodological uncertainty. This distinction can transform the student’s perception of science. Chemistry becomes not merely a set of equations already printed in a textbook but an activity in which compounds remain to be synthesised or mechanisms to be understood. History becomes not merely a chronology but an argument constructed from incomplete evidence. Biology becomes not merely a classification of organisms but an investigation into ecological relationships, evolution, disease, or genomic

processes. Linguistics becomes not merely grammatical correctness but empirical analysis of language change, corpora, communication, and social variation. Such encounters help students understand that knowledge is unfinished. They also make scientific professions socially visible. Researchers appear as people with recognisable careers, routines, doubts, and motivations rather than distant authorities represented only by famous historical names. From the perspective of the Academy, school engagement consequently supports both scientific literacy and the long-term reproduction of research communities. These two goals should not be confused, but they can reinforce one another.

The Academy has also directed educational activity towards teachers, recognising that a single encounter with a researcher can be multiplied when it enters classroom practice. The School of Czech Language and Literature offers a clear example from the humanities. Organised for teachers with the involvement of specialists from the Institute of the Czech Language and other researchers, the programme has presented current research on language, literature, communication, media, and related subjects. By 2021, the event had already reached its ninth edition, demonstrating that teacher-oriented engagement had become an established rather than experimental activity. Such programmes are important because teachers occupy a strategic position between scientific knowledge and younger generations. School curricula cannot be rewritten every time a new article is published, yet teaching can become intellectually outdated if educators remain isolated from contemporary research. Direct contact with scholars provides teachers with new examples, conceptual developments, and materials while also allowing researchers to hear how specialised knowledge functions in educational settings. The relationship is therefore potentially reciprocal. Teachers learn from researchers, but researchers can also learn which concepts are difficult to communicate, which questions interest students, and which public misunderstandings persist. This model is especially valuable in humanities subjects where public debates over language, history, literature, identity, and media frequently enter classrooms before academic scholarship has been translated into textbooks. The Academy's educational function here becomes a bridge between current research and civic culture. It also demonstrates why education within AV ČR cannot be reduced to the natural-science image of children performing experiments. (*Czech Academy of Sciences, 2021*).

The most systematic Academy programme connecting secondary-school students directly with research has been *Otevřená věda*—Open Science. Established in 2005, the programme offers talented secondary-school students long-term research internships at Academy institutes under the supervision of scientists. Its purpose is explicitly more ambitious than popularisation. Participants do not merely attend a lecture or visit a laboratory. They spend an extended period within a research environment, work on defined scientific topics, learn methods, interact with mentors, and eventually present the results of their activities. The range of subjects extends across biology, chemistry, physics, geology, ecology, engineering, information technology, medicine, mathematics, history, philology, philosophy, archaeology, art history, astronomy, and other fields. This disciplinary breadth is important because it communicates the Academy's understanding of research as extending across natural, technical, social, and human sciences. It also prevents the idea of a "scientific internship" from becoming synonymous only with laboratory experimentation. A student may learn to analyse molecular mechanisms, archaeological materials, linguistic evidence, historical sources, ecological data, or mathematical structures. The programme therefore reproduces the institutional diversity of AV ČR on an educational scale. By transforming secondary-school

students temporarily into junior participants in research, Open Science reduces the distance between formal education and professional scientific practice. (*Czech Academy of Sciences, n.d.*).

The growth of Open Science provides evidence that this model has generated considerable demand. On its 20th anniversary in 2024, AV ČR reported that more than two thousand students had passed through the internship programme since its establishment. For the 2024 cycle, 119 internships were organised at thirty-seven Academy workplaces after 1,481 applications had been submitted by 818 secondary-school students from across the Czech Republic. These figures reveal several dimensions of the programme simultaneously. First, they show a level of demand considerably exceeding the number of available placements. Second, they demonstrate that participation is distributed across a substantial share of the Academy's institutional network. Third, they indicate that students are willing to commit to a demanding year-long form of engagement rather than seeking only short recreational encounters with science. The programme has also produced examples of former participants who later entered research careers and eventually supervised younger interns themselves. Such trajectories give Open Science an intergenerational character. A student first enters the Academy as a visitor and trainee, later becomes a university student or researcher, and may eventually reproduce the same mentoring relationship from the opposite side. Institutional continuity here operates through personal experience. The Academy transmits not merely subject knowledge but a model of scientific life and professional belonging. This is one of the clearest examples of popularisation evolving into scientific socialisation. (*Czech Academy of Sciences, 2024*).

Mentorship is central to this process because the educational value of a research internship cannot be reduced to access to equipment or data. Scientific knowledge contains a large tacit component that is difficult to codify fully in textbooks or protocols. Young researchers learn how to formulate questions, recognise bad data, judge whether an anomaly matters, organise notes, interpret ambiguity, discuss a problem with colleagues, revise an argument, and decide when evidence is sufficient for a provisional conclusion. These habits are acquired partly through observation and interaction. A mentor therefore transmits elements of disciplinary culture alongside technical knowledge. The process resembles the operation of scientific schools discussed earlier in "The Role of Directors, Teams, and Disciplinary Cultures", although the educational relationship begins at a much earlier stage. Students also encounter the ethical dimensions of research: accurate recording, respect for evidence, responsible handling of materials, acknowledgment of collaborators, and the distinction between what one knows and what one merely suspects. Such experiences can be intellectually formative even for participants who eventually choose careers outside science. A future lawyer, teacher, journalist, entrepreneur, or civil servant who has experienced research from within may carry a more realistic understanding of evidence into another profession. The public value of programmes such as Open Science therefore exceeds the number of participants who become professional researchers. They help disseminate research culture through society by placing scientific habits inside the biographies of individuals who later occupy many different roles.

At the same time, educational engagement raises questions of access and social selectivity. Programmes based on voluntary participation naturally attract young people who already possess curiosity, confidence, supportive teachers, family encouragement, or knowledge about available opportunities. Students living near major research centres may find participation easier than those in distant regions. A year-long internship can impose travel,

scheduling, and financial burdens that are not equally manageable for every family. Highly competitive selection may favour students who have already accumulated educational advantages. These limitations do not diminish the value of Open Science, but they complicate the assumption that simply opening an application automatically produces equal opportunity. A national academy must therefore think about geographical distribution, communication with schools outside major centres, accessibility for students from different socioeconomic backgrounds, and the design of hybrid or regional forms of participation. Digital communication can mitigate some barriers, although laboratory or archival training often depends on physical presence. Regional Academy institutes are especially important in this respect because they expand the geography of advanced research beyond Prague. The educational network can also be strengthened through teachers who identify promising students who might not otherwise imagine themselves as candidates for an Academy internship. Public engagement therefore intersects with questions of social mobility and the distribution of cultural capital. The strongest educational system is not merely one that attracts the already confident but one capable of making scientific participation imaginable to students who had previously regarded research as belonging to another social world.

The Academy's cooperation with universities forms another crucial educational bridge. Although public popularisation is often discussed separately from formal higher education, the two domains are connected through career pathways. Secondary-school students inspired through Academy events typically continue into universities before they can enter professional research. Doctoral candidates registered at universities frequently conduct substantial parts of their research within Academy institutes. Academy scientists lecture at universities, supervise theses, participate in joint programmes, and share specialised infrastructure. This produces a distributed Czech research-training system rather than two isolated educational sectors. The historical tension between universities and academies, present in various forms since the establishment of ČSAV, has therefore increasingly been complemented by institutional interdependence. The Academy contributes environments of concentrated research, while universities provide accredited degree structures and the broader teaching system. From the perspective of public engagement, this cooperation matters because it creates continuity between informal interest and professional formation. A student may encounter an Academy scientist at a festival, apply for Open Science, enter a university programme, conduct a thesis in an Academy laboratory, and eventually join a research institute. Such a trajectory does not belong exclusively to either institution. It is produced by the Czech research ecosystem as a whole. The Academy's educational role is consequently strongest when it complements rather than competes unnecessarily with universities. This reflects the principle that the preservation and renewal of national scientific capacity depend on circulation between institutions rather than on institutional isolation (*Drahoš, 2011*).

Publications have provided another bridge between research and education, one less dramatic than festivals but potentially more durable. *Živa* remains one of the clearest examples because it consciously connects contemporary biological research with educational use. Its teaching section includes material relevant to schools, while recent issues have addressed subjects such as citizen science, biodiversity, ecological monitoring, invasive species, and methods of observation. The journal thereby preserves a 19th-century concept in a modern form: specialised researchers can contribute to a public language of science without abandoning disciplinary seriousness. Other Academy publications, including *A / Magazín* and *A / Easy*, use different levels of complexity and visual presentation to reach broader audiences. Educational

value arises from this plurality of formats. Not every reader requires the same degree of simplification, and public science communication should not assume that all non-specialists occupy a single intellectual level. A secondary-school student with a strong interest in biology may be able to follow material far more sophisticated than a general introductory video. An adult reader may want extended explanation without entering the technical literature. Teachers may seek examples transferable into the classroom. Successful popularisation therefore creates a ladder of access rather than a single simplified layer. Academy periodicals help construct such a ladder by allowing readers to move gradually between general interest and specialised inquiry. They also preserve texts that can be revisited after the temporary encounter of a public event has ended.

Audiovisual and digital formats have broadened this educational environment considerably. *NEZkreslená věda*, podcasts, recorded lectures, online exhibitions, interactive materials, institute videos, and digital magazines allow Academy content to circulate independently of physical location. Digital communication became particularly important during the COVID-19 pandemic, when restrictions temporarily eliminated many of the face-to-face settings on which conventional popularisation had depended. The resulting turn towards streamed lectures, online discussions, podcasts, and remote educational materials was initially driven by necessity, but many formats survived because they solved older geographical and temporal problems. A lecture delivered in Prague and recorded online can be watched later by a student in another region. A teacher can return to a video during a lesson. A podcast can accompany a listener who would never attend an academic event in person. Digital archives also allow the public to encounter scientific communication asynchronously, long after the original event has passed. Yet digital access does not automatically create engagement. Online material competes with an enormous volume of commercial, political, and entertainment content, and passive viewing can reproduce the same one-directional communication model that public-engagement theory sought to overcome. The Academy therefore faces the task of combining the reach of digital media with opportunities for questioning, interaction, participation, and deeper exploration. The most effective educational ecology is likely to remain hybrid: digital formats broaden entry, while physical encounters and sustained programmes provide depth. (*Czech Academy of Sciences, n.d.*).

Citizen science represents the most explicit transition from communicating science to sharing parts of the scientific process. The concept encompasses diverse forms of collaboration in which people who are not employed as professional researchers contribute to research activities, frequently through observation, data collection, classification, sampling, transcription, monitoring, or other tasks. Some projects involve citizens mainly in collecting information designed by professional researchers. Others allow participants greater influence over research questions, interpretation, or the design of activities. This diversity matters because “participation” can describe very different distributions of scientific authority. Alan Irwin’s influential formulation of citizen science stressed not merely public assistance to scientists but a broader reconsideration of the relationship between expertise, citizenship, and knowledge (*Irwin, 1995*). Later projects demonstrated how large volunteer communities could generate datasets and observations impossible for small professional teams to collect on their own (*Bonney et al., 2009*). Citizen science therefore contains both epistemic and democratic possibilities. Epistemically, it can expand the spatial and temporal scale of research. Democratically, it can give citizens direct experience of how evidence is generated. Yet these advantages are not automatic. Participation requires methodological design, training, data-

quality procedures, communication, ethical standards, and recognition of volunteers' contributions. Citizen science becomes scientifically valuable when openness is organised rather than romanticised.

The Czech development of citizen science has been comparatively recent as an explicitly named and institutionally coordinated phenomenon, although volunteer participation in ornithology, natural history, astronomy, archaeology, and environmental observation has much older roots. A systematic study led by researchers connected with the Institute of Geonics of AV ČR identified seventy-three Czech projects matching definitions of citizen science and described a landscape whose extent had previously remained partly "hidden" because activities were dispersed among research institutions, associations, museums, conservation organisations, and informal communities (*Duží et al., 2019*). This finding is historically revealing. The practice existed before the category had been fully institutionalised. Citizens were already collecting observations, documenting environments, and cooperating with specialists even when such work was not consistently described as citizen science. The emergence of the term therefore created a new visibility for existing forms of participation. It also enabled projects to be compared, networks to be constructed, methodological standards to be discussed, and European funding opportunities to be pursued. Researchers at the Institute of Geonics subsequently participated in efforts to map and institutionalise citizen science in the Czech environment. By the mid-2020s, Czech discussions increasingly concerned not whether citizen science existed but how it should be supported, coordinated, evaluated, and incorporated into research policy. This movement illustrates a wider transformation of AV ČR's public role. Engagement is no longer confined to explaining completed research after the fact; in some fields, society enters earlier stages of knowledge production.

The Academy's own public interface now explicitly invites citizens to participate in research. Its citizen-science portal presents projects through which members of the public can record and share observations useful to Academy researchers. This is a symbolically important institutional development because it gives citizen science a place alongside public events, internships, magazines, and audiovisual projects rather than leaving it entirely at the margins of individual institutes. The invitation changes the grammar of communication. Instead of "come and listen to what researchers have discovered", the message becomes "contribute observations that may help researchers discover something". This does not erase the distinction between professional and non-professional roles. Researchers still formulate methodologies, validate data, interpret evidence, and assume responsibility for scientific conclusions. But the boundary becomes collaborative rather than impermeable. The portal also demonstrates the importance of digital technology. Mobile phones, GPS, cameras, online databases, and automated platforms allow ordinary observations to be documented with a precision and immediacy that earlier volunteer networks could rarely achieve. A photograph of a species, a geolocated environmental observation, or a structured report can enter a research database almost immediately. Digitalisation has therefore created practical conditions for participation at scales unimaginable during earlier periods of Academy history. The modern public sphere of science is not only a sphere of communication; it can become an infrastructure of distributed observation. (*Czech Academy of Sciences, n.d.*).

The Intersucho project illustrates how citizen participation can complement professional environmental science. The project monitors and forecasts agricultural drought in the Czech Republic, Slovakia, and Central Europe through meteorological data, modelling, mapping, and

assessment of impacts. An important component involves reports from hundreds of participants in agriculture, forestry, and related sectors who provide observations about conditions on the ground. Such information occupies an interesting position between scientific measurement and practical experience. Numerical models can describe soil moisture, precipitation, temperature, and predicted drought intensity, but farmers and foresters observe how these conditions affect specific crops, vegetation, soils, and local landscapes. Their reports add a layer of distributed experiential data that would be extremely expensive for a central research team to collect systematically across a large territory. The collaboration is particularly valuable because drought is both a physical phenomenon and a lived economic and environmental condition. Its consequences depend upon local soils, land use, vegetation, agricultural practices, and timing. Citizen participation therefore does not replace modelling; it allows different forms of evidence to be compared. It also gives practitioners a more active relationship with a scientific system whose results may directly affect their decisions. Environmental citizen science thus demonstrates how participation can operate where professional expertise and local knowledge possess genuinely complementary strengths. The scientific challenge is to integrate these forms of information without confusing their methodological status.

Archaeology provides a different but equally revealing example. Cooperation between professional archaeologists and amateur metal-detector users had long been marked by tension because undocumented collecting can destroy archaeological context and encourage illicit removal of heritage. The Archaeological Institutes of AV ČR in Prague and Brno therefore participated in developing the Portal of Amateur Collaborators and Register of Individual Finds within the Archaeological Map of the Czech Republic, known as AMČR-PAS. Launched in 2021, the platform was designed to support structured cooperation between professional archaeologists and amateur finders. This case demonstrates that citizen engagement can be particularly valuable where a public activity already exists independently of scientific institutions. The Academy cannot simply assume that amateur searching will disappear if researchers disapprove of it. Nor can it treat every unregulated activity as scientifically harmless. The institutional challenge is to create procedures through which useful discoveries can be documented while archaeological context, legal obligations, and heritage protection are respected. The portal therefore transforms a potentially adversarial relationship into a regulated collaborative one. Amateur participants gain a legitimate route for communicating finds, while archaeologists gain access to data that might otherwise be lost entirely. Citizen science here becomes a form of heritage governance as much as data collection. It also shows that engagement can involve negotiation over norms, responsibilities, and ownership rather than merely enthusiasm for science. (*Czech Academy of Sciences, 2021*).

Biological monitoring has proved particularly suitable for citizen participation because many ecological questions depend upon observations distributed across large areas. Plants, insects, birds, mammals, invasive organisms, and phenological events cannot always be monitored comprehensively by professional teams alone. Projects involving Academy researchers have therefore encouraged citizens to photograph, report, collect, or map biological observations. The *Biosmršť* initiative, for example, has involved volunteers in documenting non-native species. In its 2025 edition, more than two hundred volunteers, including students, contributed over eight hundred verified observations representing more than thirty-one species. These numbers matter scientifically because invasive species can spread rapidly and may be detected first by people who happen to encounter them outside

conventional monitoring sites. They also matter educationally because participants learn to identify species, understand ecological processes, and distinguish verified observations from casual impressions. Repeated participation can transform ordinary landscapes into objects of systematic attention. A garden, roadside, pond, forest edge, or urban park becomes a potential site of scientific observation. Citizen science therefore decentralises the geography of research. It allows knowledge production to occur beyond institutes, laboratories, and formal field stations while still feeding into professional analytical structures. This is one of the most tangible ways in which the Academy can enter everyday life without reducing research to public spectacle.

The educational potential of citizen science is especially strong when pupils and students participate. A young person collecting observations under a defined protocol learns something fundamentally different from a student merely reading about scientific method. They discover that data must be comparable, that observations require criteria, that uncertainty must be recorded, and that a single observation may have little meaning until placed within a larger dataset. Mistakes become methodologically instructive rather than simply wrong answers on an examination. Participants also encounter the importance of verification. A photograph may need expert identification; a measurement may contain an instrument error; a location may have been recorded incorrectly; an apparent pattern may disappear when more data arrive. These experiences can provide unusually concrete training in epistemic humility. They show why scientific claims require more than confidence. The educational literature surrounding citizen science has consequently emphasised its potential to combine learning with authentic participation in research (*Bonney et al., 2009*). Czech experience, however, has also exposed the limits of relying on enthusiasm without systematic institutional support. Zárybnická and Trojan argued that citizen science in the Czech Republic had developed rapidly while formal support mechanisms, including those relevant to education, remained less developed (*Zárybnická & Trojan, 2024*). The Academy's involvement may therefore be important not only through individual projects but through the establishment of standards, training, infrastructures, and long-term institutional recognition.

Citizen engagement also raises a fundamental question about the quality of data produced outside professional research environments. Critics sometimes assume that volunteer-generated information is inherently unreliable, while advocates can make the opposite mistake of treating participation itself as a guarantee of value. Neither position is defensible. Data quality depends upon project design. Tasks must be suitable for participants, protocols must be understandable, training must be proportionate, and mechanisms for validation must be built into the research process. Digital photographs, repeated observations, expert verification, automated anomaly detection, statistical filtering, and comparison with professional datasets can all improve reliability. Some projects deliberately ask volunteers to perform simple observations in large numbers because scale compensates for limited individual expertise. Others recruit experienced amateur naturalists whose specialist knowledge may rival that of professionals in narrow domains. Archaeological projects require different controls because an incorrect or undocumented intervention can irreversibly damage context. Medical or social-science projects introduce additional ethical and privacy concerns. "Citizen science" therefore does not describe one universal methodology. AV ČR's responsibility is to maintain scientific standards while designing forms of participation appropriate to the epistemic and ethical requirements of each discipline. The democratic value

of engagement depends precisely upon taking citizens' contributions seriously enough to organise them rigorously.

Recognition and reciprocity are equally important. Citizen science can become extractive if institutions treat volunteers merely as sources of free labour or data. Participants may invest substantial time, local knowledge, equipment, travel, or emotional commitment in a project. Ethical engagement therefore requires researchers to communicate how contributions are used, what results emerge, what limitations exist, and where appropriate how volunteers are acknowledged. In some projects, participants may be listed collectively in publications or reports; in others, they may receive access to datasets, educational materials, workshops, or feedback about their observations. The appropriate form varies, but the underlying principle is that participation should not disappear once data have been submitted. This reciprocity also strengthens scientific literacy because participants see the later stages through which raw observations become analysed evidence. They can learn why some reports were excluded, how categories were revised, and what conclusions can or cannot be drawn. Engagement becomes more intellectually meaningful when citizens can follow the chain from observation to interpretation. Such transparency can also protect trust when results contradict participants' expectations. Science is not democratic in the sense that evidence becomes true through majority vote, but the processes through which evidence is collected and interpreted can be made more visible and participatory. Responsible citizen science therefore combines methodological asymmetry with social reciprocity: researchers retain responsibilities arising from expertise, while citizens are treated as contributors rather than passive instruments.

The humanities and social sciences offer additional possibilities for engagement that have sometimes received less attention than biodiversity or environmental monitoring. Digital archives can invite volunteers to transcribe manuscripts, identify historical photographs, annotate maps, record local memories, or contribute knowledge about places and cultural practices. Linguistic projects can involve speakers in documenting vocabulary, dialects, pronunciation, or language change. Historical research can benefit from family archives, private collections, oral testimony, and locally held knowledge inaccessible through central repositories. Sociology and demography can develop participatory approaches to understanding communities, although such work requires particularly careful attention to consent, representation, and confidentiality. These forms of citizen scholarship resonate strongly with the long Czech tradition linking academic work with cultural memory. They also challenge an overly narrow conception of citizen science as people using mobile phones to record plants and animals. Participation in knowledge production can involve interpretation as well as observation. A local historian may possess knowledge about a community that no national archive contains. A speaker of a regional dialect may recognise distinctions invisible to an external researcher. A family photograph may preserve evidence relevant to urban history, industrial change, migration, or everyday life. The Academy's humanities institutes are therefore potentially important sites for developing forms of citizen engagement appropriate to cultural and historical knowledge. Such participation must preserve scholarly criticism, because memory can be inaccurate and local narratives can be selective. Yet professional criticism and public contribution are not incompatible; they can become complementary layers of historical inquiry.

Popularisation also affects the researchers who undertake it. Communicating a project to non-specialists forces scientists to identify which parts of their work are genuinely central and which depend mainly upon disciplinary convention. Questions from school pupils or members

of the public can expose assumptions that professional colleagues no longer notice because they share the same conceptual vocabulary. A seemingly naïve question may reveal that a familiar technical term conceals an unresolved conceptual problem. Researchers also become more aware of how their disciplines appear from outside. This reflective effect should not be exaggerated into the claim that public audiences automatically improve every research project. Some scientific problems require highly specialised discussion that cannot be meaningfully redesigned through public participation. Nevertheless, communication can become a form of intellectual clarification. Popularisers interviewed by the Academy in connection with the Week of the Czech Academy of Sciences have also described large public events as opportunities for networking within institutes and across the Academy. Hundreds of employees become involved in organising, explaining, demonstrating, and discussing research. The event therefore creates internal social connections while addressing external audiences. Popularisation can strengthen institutional culture by reminding researchers that they belong not only to a laboratory or department but to a wider national research organisation.

This internal dimension makes professional recognition of popularisation increasingly important. Scientific careers are conventionally evaluated through publications, grants, citations, patents, teaching, supervision, or other research outputs. Public communication can therefore appear as additional labour performed after the “real” scientific work has been completed. Such a model is difficult to sustain once institutions declare engagement to be part of their public mission. Preparing an effective public lecture, designing an interactive experiment for children, mentoring a secondary-school intern, coordinating volunteer observers, or developing reliable educational materials requires time and specialised competence. Some researchers enjoy these activities and perform them naturally; others require training or prefer to contribute in different ways. A mature institutional system should not expect every scientist to become a media personality. It should instead create teams in which researchers, educators, communication specialists, designers, data managers, teachers, and event organisers contribute complementary expertise. AV ČR’s growing professional communication infrastructure reflects movement in this direction. Yet the long-term challenge remains cultural as well as administrative. Public engagement must be valued enough that researchers do not experience it solely as invisible service work, while scientific quality must remain protected against incentives that reward popularity for its own sake. The appropriate goal is not to make every scientist famous but to make engagement a recognised component of institutional responsibility.

The question of entertainment illustrates this balance particularly clearly. Modern science fairs and digital media frequently use games, humour, spectacular experiments, visual effects, competitions, or narrative techniques to attract attention. Critics sometimes fear that such formats trivialise research. The concern is legitimate when entertainment replaces explanation, but the opposition between seriousness and attractiveness is too simple. Curiosity has always been part of learning. 19th-century popular science used demonstrations, illustrations, curiosities, travel narratives, collections, and spectacular discoveries to attract readers and audiences. Contemporary formats perform similar functions with different media. The educational criterion should therefore be whether an attractive entry point leads towards understanding rather than whether it initially entertains. A dramatic chemical reaction can become the beginning of a discussion about energy, molecular structure, or laboratory safety. A reconstruction of an archaeological face can lead into

questions of osteology, genetics, uncertainty, and historical interpretation. Virtual reality can introduce a research environment inaccessible to ordinary visitors. A linguistic game can reveal patterns of language change. Entertainment becomes problematic only when the scientific process disappears behind spectacle. AV ČR's challenge is consequently to use contemporary communicative forms without allowing them to redefine science as another branch of the attention economy.

The same issue arises in digital communication with younger audiences. Short-form video, social media, visual explainers, and interactive online content can dramatically broaden reach, but their formats encourage speed and compression. Scientific explanation often requires precisely the opposite: context, qualification, comparison, and patience. Educational communication therefore has to distinguish between the function of an entry point and the function of a complete explanation. A short video may successfully stimulate curiosity without pretending to exhaust a topic. It can direct viewers towards a longer article, lecture, podcast, database, or institute website. In this way, AV ČR can build layered pathways through its communication ecosystem. The danger arises when every format is expected to stand alone and compete for maximum immediate attention. Then uncertainty is likely to disappear, methodological detail will be sacrificed, and the most visually spectacular disciplines will dominate. A national academy has a particular responsibility to resist this narrowing because it must represent fields whose importance may not be instantly photogenic. Philosophy, mathematics, lexicography, archival scholarship, theoretical physics, long-term ecological monitoring, and many other activities often require explanation before their significance becomes visible. Public education should therefore cultivate attention rather than merely capture it. The Academy's institutional advantage is that it can operate on a longer horizon than commercial media. Its communication can invite audiences from a thirty-second encounter into a relationship lasting years.

Citizen engagement also has implications for the democratic meaning of expertise. Participation should not be understood as an attempt to abolish distinctions between professional knowledge and ordinary opinion. A virologist, archaeologist, climate modeller, linguist, or historian possesses methodological training that cannot be reproduced simply by inviting public participation. Democratic science does not require pretending that all claims possess equal epistemic weight. It requires making the basis of expert authority intelligible and creating appropriate opportunities for citizens to ask questions, contribute experience, observe methods, and participate where their contribution is scientifically meaningful. Stilgoe, Lock, and Wilsdon described public engagement as part of a wider movement towards opening questions about the purposes and governance of research rather than merely educating audiences after decisions have been made (*Stilgoe, Lock, & Wilsdon, 2014*). For AV ČR, this principle is particularly relevant where research intersects with environmental change, health, digital technology, regional development, cultural heritage, or other issues affecting everyday life. Citizens may not be able to determine the validity of a molecular assay by vote, but they can legitimately ask what problems receive research attention, how risks are communicated, how personal data are protected, or how scientific knowledge will be used in policy. Engagement therefore operates at several levels of authority. Scientific methods remain subject to disciplinary standards, while research priorities and social applications exist within a democratic political environment. Public education helps citizens distinguish these levels instead of collapsing them into either technocracy or populism.

This distinction becomes especially important when popularisation deals with controversial subjects. Climate change, vaccination, gene technologies, artificial intelligence, energy policy, migration, national history, language, and social inequality may all generate intense public disagreement. The Academy's educational responsibility is not simply to deliver the position most likely to receive approval. Nor is it to manufacture artificial balance by presenting every unsupported claim as equivalent to established research. Its task is to explain how knowledge has been produced, what degree of confidence exists, where legitimate scientific disagreement remains, and which aspects of a public decision depend upon values rather than empirical evidence alone. Public engagement can help because audiences are able to ask the questions that formal scientific publications do not address. Researchers may discover that public resistance concerns not factual ignorance but distrust of institutions, perceptions of fairness, moral concerns, or previous experiences with government and industry. More information alone cannot resolve every such problem. Dialogue becomes necessary precisely where the public meaning of science exceeds the factual content of a scientific result. This is one of the reasons the older "deficit model" of science communication has been criticised: ignorance is not always the principal cause of disagreement (*Bucchi & Trench, 2014*). AV ČR's expanding engagement practices therefore contribute to a more sophisticated understanding of its social environment. They also prepare the institutional ground for the problem addressed in "Public Trust in Expert Knowledge."

The public value of educational engagement can also be measured in time rather than merely in audience numbers. A visitor count records how many people passed through a festival, but not whether a child later chose a scientific field, whether a teacher changed classroom practice, whether a volunteer continued observing biodiversity, or whether an adult became more capable of evaluating scientific claims. Many important outcomes are delayed and difficult to measure. Open Science illustrates this clearly because some of its former participants returned years later as researchers and mentors. Citizen-science communities may similarly persist across successive projects, accumulating expertise and social connections. A teacher who attends Academy training can influence hundreds of pupils over a career. A freely available educational video can continue to circulate long after the expenditure required to produce it. This temporal dimension complicates conventional evaluation. Short-term metrics favour reach, registrations, downloads, and media attention because they are easily counted. Long-term educational effects require follow-up studies, qualitative evidence, and patience. A national academy oriented towards long-duration research is particularly well positioned to recognise this difference. It should evaluate engagement with the same caution that it applies to other complex institutional outcomes. Popularisation has public value not only when it produces immediate visibility but when it changes the long-term relationship between citizens and knowledge.

The regional dimension is equally important. The Czech Republic possesses strong scientific centres, but research capacity is unevenly distributed geographically. Prague and Brno remain particularly prominent, while other cities and regions host fewer large research institutions. Academy institutes and field facilities in places such as České Budějovice, Ostrava, Brno, Třešť, Ondřejov, Turnov, Nový Knín, and other locations therefore carry educational significance beyond their immediate research programmes. Public events can connect advanced scientific work with local schools and communities. Environmental projects can draw upon regional landscapes; archaeological research can connect residents with local heritage; studies of industrial transformation can address communities experiencing

economic change. Such activities reduce the impression that scientific expertise is something imported from distant metropolitan centres. They also make the Academy more responsive to the specific geography of Czech society. Citizen science is especially suited to this regional logic because data collection often depends upon broad territorial coverage. A volunteer in a small town can make an observation scientifically valuable to a national project. In this respect, participation redistributes part of the visible activity of science away from the institutional centre. The Academy remains responsible for methodology and analysis, but knowledge production acquires a geographically distributed public dimension.

Internationalisation adds a further layer to these activities. AV ČR participates in European research programmes, networks, infrastructures, and scientific organisations, while citizen science itself has become an increasingly important element of European open-science policy. Czech engagement projects therefore operate within an international environment in which public participation, open data, responsible research, and social impact are increasingly discussed together. This can bring methodological resources and funding opportunities, but it can also introduce policy vocabularies whose meaning must be adapted to Czech conditions. “Citizen science”, “public engagement”, “open science”, and “responsible research and innovation” emerged from overlapping but distinct institutional debates. They should not be treated as interchangeable slogans. Open access to publications does not automatically produce citizen participation. Public lectures do not automatically constitute dialogue. Crowdsourced data are not automatically open data, and public engagement does not automatically give citizens decision-making authority over research. The Academy’s experience is valuable precisely because it can translate these concepts into concrete institutional practices rather than adopting them rhetorically. The post-socialist history of Czech science also provides distinctive lessons about public authority, institutional trust, and the political uses of expertise. Engagement in the Czech context therefore belongs simultaneously to European research policy and to the country’s own historical relationship with scientific institutions.

By the middle of the 2020s, citizen science had begun to move from scattered individual initiatives towards more explicit institutional coordination in the Czech research system. Researchers associated with AV ČR participated in the development of CitizenScience.cz and in European projects concerned with the infrastructure and recognition of participatory research. Contemporary assessments nevertheless continued to note that systematic support had lagged behind the enthusiasm of individual researchers and communities (*Zárybnická & Trojan, 2024*). This tension resembles earlier stages in the professionalisation of science communication. At first, public outreach often depended upon unusually motivated individual scientists. Later, dedicated communication offices, programmes, budgets, and annual events made outreach more institutionally stable. Citizen science appears to be passing through a comparable transition. Its future depends on whether research organisations establish procedures for data management, ethical oversight, participant communication, training, recognition, and long-term preservation of project infrastructures. Temporary project funding can generate impressive participation and still leave communities without support when grants end. Sustainable engagement therefore requires institutional memory. Databases must remain usable, volunteers must know what happened to their contributions, and successful methodologies should be transferable across projects. AV ČR’s long-term institutional character may offer particular advantages here because the Academy can preserve

participatory infrastructures beyond the career of a single researcher or the life of a single grant.

The relationship among popularisation, education, and citizen engagement can therefore be understood as a continuum of increasing involvement rather than as three separate institutional activities. At the first level, a citizen encounters an explanation of research through a magazine, video, lecture, exhibition, or media interview. At the second, the encounter becomes sustained enough to produce learning: a teacher attends specialist training, a pupil follows an educational programme, or a secondary-school student joins an internship. At the third, the citizen contributes directly to knowledge production through observation, data, interpretation, local expertise, or another research task. Individuals can move between these levels. A child who visits the Science Fair may later attend an institute open day, enter Open Science, study at university, and become a researcher. An adult who first reads about invasive species may later contribute observations to a monitoring project. A teacher may begin by using Academy materials and later cooperate directly with researchers. These trajectories are not guaranteed, nor should every public encounter be judged according to whether it produces deeper participation. Casual curiosity has value in itself. Yet the existence of pathways matters because it turns the Academy from a broadcaster into an institution around which different levels of scientific participation can form. Public communication thereby acquires institutional depth.

This evolution also changes the meaning of the Academy's public mission. In the traditional model, the social value of an academy could be imagined as a sequence: society funds scientists; scientists produce knowledge; the institution then disseminates selected results to society. Contemporary engagement creates a more complex circulation. Citizens contribute questions, observations, experiences, and sometimes data. Teachers carry research into schools and return educational problems to researchers. Students move between schools, Academy institutes, and universities. Journalists translate expertise into public debate while seeking specialists through Academy networks. Municipalities and public organisations cooperate on locally relevant research. Digital users move between popular content and scientific databases. Researchers learn to explain their assumptions and sometimes redesign projects in response to social contexts. Knowledge therefore circulates through networks rather than along a single line from laboratory to public. This does not eliminate institutional hierarchy or professional standards, but it makes the public value of science more relational. AV ČR becomes important not only because of what is produced inside its institutes but because of the intellectual connections those institutes sustain throughout Czech society.

The long historical perspective of this book makes the change particularly striking. The learned societies of the 18th century communicated largely within restricted circles of educated elites. 19th-century Czech scholars expanded the linguistic and social reach of knowledge through journals, public institutions, schools, associations, museums, and national cultural movements. The Czech Academy of Sciences and Arts supported scholarship whose public significance was closely connected with national cultural maturity. ČSAV institutionalised research on an unprecedented scale but operated within a political system that constrained the democratic relationship between expertise and citizens. AV ČR inherited the research capacity of that system while gradually developing a public culture appropriate to pluralist democracy. Popularisation festivals, school cooperation, student internships, teacher programmes, digital resources, and citizen science belong to this longer trajectory. They represent neither a rejection of the older Academy model nor merely a fashionable

communication strategy. They are mechanisms through which a specialised research institution continually renegotiates its relationship with the society around it. The Academy remains institutionally distinct from schools, universities, museums, the media, civic associations, and government, yet it increasingly interacts with all of them. The result is a more porous boundary around professional science, but not a boundary without standards.

Thus, popularisation, education, and citizen engagement have transformed the public role of the Czech Academy of Sciences from the dissemination of knowledge into the construction of sustained relationships around knowledge. The historical tradition reaches back well beyond the modern Academy, from 19th-century Czech popular science and the legacy of *Živa* to the extensive educational culture of the 20th century. After 1989, however, these practices acquired a new democratic meaning because the public could no longer be understood merely as an audience to which authoritative knowledge was transmitted. AV ČR progressively developed a layered system in which science festivals and open days create first encounters, magazines and digital resources deepen understanding, teacher programmes extend research into classrooms, Open Science introduces secondary-school students to authentic research practice, and citizen-science projects allow members of the public to contribute directly to knowledge production. These activities also strengthen institutional continuity by connecting generations: visitors become students, students become researchers, researchers become mentors, and citizens accumulate forms of expertise through repeated participation. At the same time, engagement introduces demanding questions concerning access, data quality, ethics, recognition, geographical inequality, professional incentives, and the boundaries of scientific authority. The significance of the Academy's public mission therefore cannot be measured simply by visitor numbers or media reach. Its deeper value lies in creating conditions under which citizens can understand how knowledge is produced, experience research as a human practice, participate where participation is methodologically meaningful, and distinguish evidence-based expertise from mere claims to authority. Such relationships constitute one of the strongest foundations on which a democratic research institution can build legitimacy. Yet engagement does not automatically produce confidence, and familiarity with scientists does not eliminate scepticism towards expertise. The historical and institutional question that follows is therefore whether these increasingly elaborate connections between AV ČR and Czech society have been capable of sustaining public trust in expert knowledge.

3. Public Trust in Expert Knowledge

Public trust in expert knowledge occupies a more complex position than either public visibility or popularisation. A citizen may know that a scientific institution exists without trusting it, may enjoy science communication without accepting expert recommendations, or may respect scientists in general while distrusting particular experts once a question becomes politically contentious. Trust therefore cannot be treated as a simple consequence of familiarity. It is a judgement about whether another person or institution can reasonably be relied upon under conditions in which the citizen cannot independently verify every relevant claim. This problem is inherent in modern knowledge societies because no individual can personally reproduce the experiments, statistical analyses, archival investigations, clinical trials, geological measurements, or computational models on which contemporary decisions depend. Even scientists themselves rely constantly upon findings generated by specialists in other fields.

Expertise therefore requires a social division of cognitive labour in which knowledge travels through professional communities, institutions, publications, advisory bodies, media, and political systems. Public trust becomes essential precisely because citizens are dependent upon forms of knowledge whose production is largely invisible to them. Yet trust must not be equated with obedience. Democratic societies require citizens to be capable of asking how expertise was produced, what interests surround it, how disagreement is handled, and where the boundary lies between scientific evidence and political choice. For the Czech Academy of Sciences, the central challenge is consequently not to secure unconditional acceptance but to maintain a form of informed confidence in the procedures and professional cultures through which knowledge is produced. This distinction is especially important in an institution whose authority ultimately derives from research rather than from electoral mandate or administrative command.

The Czech historical experience makes this problem particularly sensitive. Throughout the 20th century, scientific authority was repeatedly embedded within political regimes that claimed different kinds of legitimacy. The First Czechoslovak Republic associated scientific expertise with modern state-building, economic development, national culture, and the authority of educated professional elites. The communist system after 1948 expanded state-supported research enormously but also subordinated substantial areas of academic life to political control and ideological supervision. ČSAV could therefore combine genuine scientific competence with institutional dependence upon a regime that restricted intellectual autonomy. In some disciplines, particularly the natural sciences, researchers were able to sustain significant professional standards even within this framework, while political and ideological intervention was considerably more direct in fields concerned with history, economics, philosophy, sociology, law, and contemporary society. The experience created a distinction that became important after 1989: citizens could respect specialised knowledge while remaining suspicious of institutions claiming to speak with official authority. The Velvet Revolution did not simply restore freedom to researchers; it also dismantled the political monopoly through which authoritative interpretations had previously been presented to society. Democratic pluralism meant that competing experts, journalists, politicians, civic organisations, entrepreneurs, international institutions, and ordinary citizens could challenge one another publicly. Scientific expertise consequently had to operate in a social environment in which authority could no longer be assumed from institutional position alone. The post-socialist Academy therefore inherited both substantial scientific capital and a historical need to demonstrate that contemporary expert authority rested upon professional independence rather than ideological command.

The transformation of ČSAV into AV ČR was significant in this respect because institutional autonomy acquired a public epistemic meaning as well as an internal organisational one. Democratic self-government, elected scientific bodies, external evaluation, international peer review, competitive recruitment, and diversified funding were intended primarily to improve the quality and independence of research. Yet these mechanisms also provided reasons why citizens might regard Academy expertise as different from political instruction. An expert employed within AV ČR could not simply be presumed independent in every circumstance, but the institution as a whole possessed safeguards that distinguished scientific judgement from direct ministerial control. This distinction became increasingly valuable as Czech society developed a generally sceptical relationship with national political institutions. OECD data for 2023, for example, found high or moderately high trust in the Czech national government

among only 19 per cent of respondents, substantially below the OECD average, while trust was considerably higher in several other professional and public institutions (*OECD, 2024*). Low political trust does not automatically imply low trust in science. On the contrary, a research organisation may gain credibility precisely by being perceived as professionally independent from day-to-day political competition. Yet institutional independence must be visible as well as formally protected. If citizens believe that experts simply repeat positions determined by governments, corporations, parties, or ideological groups, scientific credentials alone may not preserve confidence. The democratic legitimacy of Academy expertise consequently depends partly upon maintaining enough institutional distance from political power to allow critical advice, including advice that governments may find inconvenient.

The most systematic early attempt by the Academy itself to understand Czech attitudes towards science was the 2006 study *Obraz vědy v českém veřejném mínění*, conducted by the Public Opinion Research Centre of the Institute of Sociology of AV ČR. The survey questioned 1,078 respondents and examined conceptions of science, scientific method, the social role of research, scientists, individual disciplines, information sources, Czech research institutions, and public funding (*Šamanová, Škodová, & Vinopal, 2006*). It is important that the study did not reduce public attitudes to a single question about trust. Instead, it mapped the broader cultural image through which science was interpreted. Respondents commonly associated science with research and investigation, discoveries and new knowledge, practical improvement, and social progress. Scientists themselves were generally imagined favourably, above all as dedicated, intelligent, educated, and experienced specialists. The public image contained stereotypes, including the eccentric male scientist or the tension between scientific careers and conventional family expectations for women, but the dominant associations were nevertheless intellectual and professional rather than hostile. The study therefore captured a Czech public that was not alienated from science as an institution. At the same time, perceptions differed among disciplines and according to respondents' education, interest in science, and familiarity with researchers. This differentiation is crucial because "trust in science" can conceal major variation between trust in medicine, physics, history, sociology, economics, climate science, or other fields. A national academy spanning all these domains must therefore work with multiple cultures of public credibility rather than one uniform reservoir of trust.

The 2006 findings also showed a strong normative expectation that science should contribute positively to society. Eighty-five per cent of respondents thought scientific results influenced human life positively, while only a small minority evaluated their impact negatively. The judgement concerning one's own personal life was less definite, but uncertainty rather than rejection accounted for much of the difference (*Šamanová, Škodová, & Vinopal, 2006*). This pattern suggests an important distinction between diffuse trust and experienced usefulness. Citizens may believe that science benefits society without being able to identify exactly how a particular research system affects them personally. That gap creates both an opportunity and a vulnerability for AV ČR. The opportunity lies in a broadly favourable cultural disposition towards science. The vulnerability lies in the fact that public support may remain abstract unless institutions continually demonstrate connections between specialised research and social life. This is particularly difficult for fundamental research, whose value may become evident only over long periods or through pathways impossible to predict in advance. A new chemical method, mathematical theorem, archaeological database, linguistic corpus, or ecological time series may possess little immediate public visibility even though it later

becomes scientifically indispensable. Trust therefore cannot rest solely upon the promise of direct utility. It must also include confidence that autonomous institutions are capable of choosing and sustaining questions whose importance may not yet be obvious. The Academy's public legitimacy depends in part upon persuading citizens that scientific value and immediate usefulness overlap only imperfectly.

Public willingness to finance research provides another indirect but powerful measure of this legitimacy. In the same 2006 survey, only 3 per cent of respondents thought Czech science should not receive support from the state budget. Thirty-four per cent supported state funding if resources were available, while a clear majority argued that science should definitely be supported even where this required prioritisation against other expenditure (*Šamanová, Škodová, & Vinopal, 2006*). Ninety-two per cent supported state-budget financing of Czech science, and 95 per cent believed European Union resources should also contribute. Most respondents simultaneously considered existing public expenditure insufficient. Education played an important role: more highly educated respondents were particularly likely to favour strong public support, as were people who followed scientific developments more closely. These findings reveal that public trust has a material dimension. Citizens demonstrate confidence in the value of science not only by expressing admiration for scientists but by accepting the allocation of collective resources to research whose precise outcomes cannot be guaranteed. Such support is especially important for AV ČR because institutional funding enables long-term research programmes that cannot survive if every project must demonstrate an immediate market return. The 2006 survey therefore captured a form of social contract between Czech science and the public: research was expected to produce knowledge and benefits, but society was prepared to finance the institutional conditions under which uncertain inquiry could proceed. The durability of this contract would later become politically significant during disputes over research financing.

Later comparative evidence indicates that this broad support did not disappear as Czech society became more digitally fragmented and politically polarised. A Pew Research Center survey conducted before the COVID-19 pandemic found that 82 per cent of Czech respondents regarded government investment in scientific research aimed at advancing knowledge as worthwhile for society over time (*Pew Research Center, 2020*). This was identical to the median result reported across the twenty publics included in the study. Forty-one per cent considered Czech scientific achievements above average or among the best in the world, while perceptions of particular technologies were considerably more divided. Artificial intelligence, genetically modified foods, pesticides, childhood vaccination, climate change, and environmental protection produced different patterns of judgement. This diversity demonstrates why general approval of science should never be mistaken for automatic agreement with every scientific or technological application. Citizens may support research strongly while simultaneously expressing precaution, uncertainty, or scepticism towards particular technologies. Such attitudes are not necessarily irrational. Technologies distribute benefits, risks, costs, and power unevenly, and citizens may evaluate them according to ethical or economic considerations that scientific evidence alone cannot settle. Expert trust is therefore strongest when institutions do not treat legitimate questions about values as proof of scientific ignorance. AV ČR must distinguish between explaining what empirical evidence shows and claiming authority over the political choices that society makes on the basis of that evidence.

This distinction between knowledge and decision has become increasingly important in contemporary democratic governance. Scientific experts can estimate the probability of an epidemic spreading, model the consequences of drought, assess the toxicity of a substance, reconstruct historical events, calculate energy-system scenarios, or analyse demographic change. They cannot, through scientific method alone, determine how society should distribute every associated cost or choose among all competing political priorities. Decisions concerning lockdowns, pension reform, nuclear infrastructure, climate adaptation, migration policy, education, military expenditure, or land use inevitably incorporate normative judgements. Experts can clarify consequences, identify trade-offs, and challenge factual falsehoods, but democratic institutions retain responsibility for legitimate political choice. Problems arise when politicians present contested value decisions as if "science demands" them, or when critics reject empirical findings simply because they oppose the policy associated with those findings. Both moves politicise expertise in damaging ways. The first converts scientists into apparent sovereign decision-makers; the second turns evidence into another partisan opinion. AV ČR's credibility is best protected when researchers state clearly what belongs to their domain of competence and what does not. Such epistemic boundary-setting does not weaken authority. It demonstrates intellectual integrity and allows citizens to see that scientific advice is compatible with democratic disagreement.

Modern research on trust reinforces this interpretation by showing that people judge scientists through several dimensions simultaneously. A large international study published in *Nature Human Behaviour* and covering more than seventy thousand respondents across sixty-eight countries conceptualised scientific trustworthiness through competence, integrity, benevolence, and openness (*Cologna et al., 2025*). Competence concerns whether scientists possess the knowledge required to make reliable judgements. Integrity concerns honesty, adherence to standards, and resistance to manipulation. Benevolence concerns whether experts are perceived as acting with regard for social welfare rather than only narrow interests. Openness concerns transparency, communication, and willingness to engage with questions and criticism. The study found that widespread claims of a general collapse in trust in scientists were not supported: most people across most participating countries retained substantial trust and wanted scientists to engage with society and policymaking. At the same time, trust varied among groups and national contexts. These findings are highly relevant to AV ČR because scientific excellence addresses only one component of public trust. An internationally outstanding researcher may still be distrusted if perceived as politically captured, dismissive, secretive, or indifferent to social consequences. Public communication therefore cannot compensate for weak research, but research quality alone cannot guarantee trust. Institutional credibility emerges when competence is combined with visible integrity, independence, and openness.

The requirement of independence is especially important in Central and Eastern European societies shaped by the political experience of the 20th century and by relatively low levels of trust in many governmental institutions. Research examining expert trust during the first wave of COVID-19 in the Czech Republic, Hungary, Poland, and Serbia found that citizens assessed experts not only through professional competence but through perceived independence from political elites (*Mihelj, Kondor, & Štětka, 2022*). Personal contact with experts also mattered, as did perceptions of consensus and the credibility of the media through which expert messages were delivered. The researchers showed that trust in expertise, political institutions, and media sources forms a connected system rather than three separate attitudes. When

people believe an expert has become dependent upon political actors, doubts about professional integrity can spread rapidly. The reverse can also occur: an expert appearing through a media outlet regarded as partisan may be distrusted because the citizen transfers suspicion from the medium to the speaker. In highly polarised environments, different groups may consequently construct different maps of credible expertise. The danger is not simply that citizens lack information. They may encounter a large amount of information while lacking shared criteria for distinguishing reliable from unreliable authorities. This is one reason why the formal independence of AV ČR remains a strategic public asset. The Academy can provide a source of knowledge that is publicly financed yet institutionally distinct from governmental administration, giving researchers greater capacity to support, qualify, or criticise official positions according to evidence.

The COVID-19 pandemic revealed these dynamics more clearly than any previous Czech crisis of the post-1989 period. During the first months of 2020, epidemiologists, virologists, immunologists, physicians, statisticians, sociologists, economists, psychologists, mathematical modellers, and other specialists entered public discussion with unprecedented frequency. Citizens suddenly needed to interpret reproduction numbers, exponential growth, test sensitivity, excess mortality, population immunity, clinical uncertainty, and rapidly evolving international evidence. Experts were asked to speak before scientific consensus had fully stabilised. Government measures changed repeatedly, sometimes because new evidence emerged and sometimes because political priorities changed. These two kinds of revision could appear identical to a public following events through fragmented media. Scientific caution was difficult to communicate because journalists and policymakers often demanded clear predictions. Experts who openly acknowledged uncertainty could appear less confident than commentators offering categorical answers unsupported by evidence. Conversely, experts who spoke too definitively risked losing credibility when circumstances changed. The pandemic therefore made visible one of the central paradoxes of trust in science: the honest expression of uncertainty may temporarily weaken perceived authority even though it is one of the strongest markers of genuine scientific integrity. AV ČR researchers participated in this environment both as specialists and as analysts of Czech social responses to the crisis.

The work of the Public Opinion Research Centre during the pandemic showed that trust was not distributed randomly. Paulína Tabery and Matouš Pilnáček analysed a representative Czech sample and found that actors directly involved in resolving the crisis, particularly medical professionals and security institutions, occupied central positions in the network structure of trust (*Tabery & Pilnáček, 2021*). This finding is important because it suggests that institutional relevance during an emergency can increase trust when citizens perceive concrete competence and responsibility. People do not necessarily transfer their general distrust of politics to every institution involved in government action. Professional groups can retain distinct reputations. Yet such reputations remain vulnerable to the way political communication incorporates expert voices. When politicians selectively cite scientists who support preferred measures, disagreement among researchers can appear to be party conflict rather than a normal feature of evolving knowledge. Experts themselves may also disagree publicly because they work with different evidence, models, disciplinary assumptions, or definitions of acceptable risk. A democratic society must be able to distinguish such scientific disagreement from fabrication. Trust therefore cannot require the absence of disagreement. It requires confidence that disagreement is occurring within procedures capable of evaluating

evidence. Institutions such as AV ČR are especially important because they embody precisely these professional procedures over periods longer than a political crisis.

The Czech vaccination debate provided a particularly instructive example of how perceived expert disagreement can diverge sharply from actual expert opinion. A survey of 9,650 Czech physicians conducted in early 2021 found that approximately 90 per cent trusted the approved COVID-19 vaccines and intended to be vaccinated, while an overwhelming majority would recommend vaccination to healthy patients (*Bartoš, Bauer, Cahlíková, & Chytilová, 2022*). Yet a nationally representative sample of the public radically underestimated this professional consensus. Around 90 per cent of respondents underestimated physicians' confidence, and the most common belief was that only about half of doctors trusted the vaccines. Researchers subsequently showed experimentally that informing people accurately about the degree of medical consensus produced a persistent increase in vaccination uptake. The case demonstrates that distrust does not necessarily arise because scientific experts themselves are deeply divided. It may arise because the information environment creates an exaggerated perception of division. Media conventions that present opposing voices as balanced counterparts can unintentionally magnify minority positions. Social media can intensify the effect by making controversial statements more visible than routine agreement. A citizen may therefore conclude that "experts disagree" even where professional consensus is unusually strong. Trust in expertise consequently depends not only on what scientists believe but on whether society can accurately perceive the distribution of expert judgement.

This observation has major implications for the Academy's communication strategy. Scientific institutions traditionally hesitate to speak of consensus because knowledge is always open to revision and disciplinary communities rarely agree on every detail. Such caution is intellectually justified. Yet failing to communicate the existence of strong consensus can leave the public unable to distinguish normal scientific uncertainty from fundamental disagreement. Climate science provides another example. Researchers may dispute regional models, feedback mechanisms, adaptation priorities, or specific projections while sharing broad conclusions about anthropogenic climate change. If every disagreement is presented without its epistemic scale, citizens may infer that foundational questions remain unresolved. Conversely, institutions should never invoke consensus as a rhetorical substitute for evidence. Consensus matters because it reflects repeated investigation and critical testing across professional communities, not because majority opinion automatically constitutes truth. AV ČR therefore has to explain not only conclusions but the architecture of agreement. Citizens need to understand how peer review, replication, independent datasets, international comparison, and cumulative research create different degrees of confidence. Such communication moves public trust away from personality and towards institutions and procedures. It teaches citizens why one statement deserves greater epistemic weight than another even when both speakers possess academic titles.

The digital information environment has made this task increasingly difficult. Before the expansion of social media, mainstream newspapers, radio, television, universities, academies, professional associations, and major publishers exercised relatively strong gatekeeping over public scientific information. That system had serious limitations, including elitism and restricted participation, but it created recognisable institutional pathways through which expertise reached audiences. Digital communication reduced these barriers dramatically. Researchers can now speak directly to citizens, and citizens can access publications, data, recorded lectures, international experts, and specialised communities

without relying entirely upon traditional intermediaries. At the same time, the same infrastructure enables unsupported claims, manipulated images, conspiracy theories, fabricated expertise, and commercially motivated health information to circulate with extraordinary speed. Visibility is governed partly by algorithms that reward engagement rather than accuracy. A sensational falsehood may therefore reach more people than a careful Academy explanation. The problem is intensified by the superficial resemblance between reliable and unreliable forms of digital communication. A professionally designed website, technical vocabulary, graph, academic title, or reference list can be imitated without reproducing the research practices that give scientific knowledge its reliability. Public trust increasingly depends upon epistemic literacy: citizens must know not only facts but how to evaluate sources, institutions, methods, and conflicts of interest.

For AV ČR, institutional identity can function as one heuristic within this complex environment. Most citizens cannot investigate the publication record, methodological expertise, funding history, and disciplinary reputation of every person encountered online. They therefore rely partly on institutional signals. Affiliation with an Academy institute indicates that a researcher works within a professional organisation subject to recruitment procedures, evaluation, ethical standards, and disciplinary scrutiny. Such affiliation does not guarantee that every public statement made by that researcher is correct, nor does it transform personal views into official Academy positions. Nevertheless, institutional reputation reduces the informational burden on non-specialists. This is one reason why maintaining rigorous internal standards has a direct public consequence. Scientific misconduct, conflicts of interest, plagiarism, fabrication, or unethical research do not damage only the individuals involved. They can weaken the institutional signal upon which citizens rely when deciding whom to trust. Research integrity is therefore inseparable from science communication. The strongest campaign promoting trust cannot compensate for credible evidence that an institution tolerates poor research practices. Conversely, transparent investigation of misconduct may initially attract negative publicity but ultimately strengthen trust by demonstrating that professional accountability operates in practice.

Transparency has a similar dual character. Scientific organisations sometimes fear that publishing uncertainty, internal disagreement, or methodological limitations will provide material for critics. In the short term, concealment may appear safer. Yet long-term trust is particularly vulnerable when information omitted by an institution later becomes publicly known. Citizens may then reinterpret not only the specific issue but earlier communications as strategic manipulation. The Academy's democratic legitimacy therefore depends upon a distinction between confidentiality that is genuinely required—for example, to protect personal data, intellectual property, or research participants—and secrecy used merely to avoid criticism. This principle was explored directly by researchers of the Institute of Sociology in connection with the socially contentious problem of selecting a deep geological repository for spent nuclear fuel and high-level radioactive waste. Martin Ďurďovič's methodology for communication and participation argued that transparency, sustained dialogue, publicly accessible information, and the possibility of criticism are central to building durable relationships among experts, state authorities, and affected communities (*Ďurďovič, 2016*). The case demonstrates that technically sound expertise cannot by itself create social acceptance. People also judge whether the process through which expertise enters decision-making is fair. The procedural conditions of communication therefore become part of expert trustworthiness.

The nuclear-waste case is valuable precisely because it demonstrates why trust should not be measured simply by agreement with an expert recommendation. A local community can fully understand a scientific assessment and still oppose a facility because it evaluates risk, fairness, territorial identity, compensation, or intergenerational responsibility differently from state authorities. Labeling such opposition as ignorance can destroy trust rather than strengthen it. Technical experts may know more about geology, radiation, engineering, and probabilistic safety assessment, while residents possess knowledge about local landscapes, social relationships, historical experience, property, and community priorities. These forms of knowledge are not interchangeable, yet public decision-making may require both. AV ČR researchers working on socially sensitive projects therefore occupy a position that differs from that of a private consultant hired simply to justify a predetermined outcome. Their institutional credibility depends partly upon willingness to identify genuine problems in the policy process. Scientific independence can sometimes produce conclusions welcomed by citizens and sometimes conclusions welcomed by government. It should not be judged by whether it consistently aligns with either side. Trustworthy expertise is characterised by the possibility that evidence can alter the expert's position. This capacity to revise judgement distinguishes research from advocacy even though individual scientists, like other citizens, may also participate legitimately in advocacy.

The humanities and social sciences present particular trust challenges because their findings often concern issues on which citizens already possess strong personal or political opinions. Few people believe they can independently verify quantum electrodynamics or protein crystallography, but many believe that personal experience gives them adequate understanding of history, language, economics, education, migration, politics, or social inequality. Expert authority in these fields can therefore be contested more immediately. The 2006 Czech public-opinion research found lower perceptions of scientific character and usefulness for some social-science and humanities disciplines than for many natural sciences, and the authors explicitly suggested that insufficient communication might contribute to this pattern (*Šamanová, Škodová, & Vinopal, 2006*). This does not mean that humanities researchers should imitate laboratory science or present interpretative scholarship as experimental certainty. Their credibility rests upon different methodological traditions: source criticism, comparative analysis, linguistic evidence, archival research, conceptual argument, statistical analysis, fieldwork, and contextual interpretation. Public trust is strengthened when these methods are explained rather than hidden behind the authority of the scholar. A historian who shows why one archive supports a conclusion better than another performs a similar democratic function to a biologist explaining how a sample was collected. Both reveal the procedure through which professional judgement is disciplined. The Academy's multidisciplinary structure therefore gives it an unusual opportunity to communicate expertise as methodological diversity rather than as a single model of scientific authority.

Historical scholarship provides an especially sensitive example in the Czech Republic because interpretations of the 20th century intersect directly with national identity and political memory. Research on the First Republic, Munich, the Nazi occupation, the Communist Party, political trials, collectivisation, 1968, normalisation, dissent, the Velvet Revolution, post-socialist privatisation, or Czech-German relations can provoke controversy extending far beyond academic circles. Citizens may approach such subjects through family memory, political allegiance, regional experience, or inherited narratives. Academy historians and

archival institutions therefore cannot expect professional credentials alone to end disagreement. Their contribution lies in making evidence visible, distinguishing documented facts from later myth, clarifying what remains uncertain, and demonstrating how interpretations change when new sources become available. This function is closely connected with the Academy's role as a guardian of cultural memory discussed in "The Academy as a Place of National Memory and Critical Reflection." Trust here does not mean that the public must accept one official historical narrative. Indeed, the democratic value of post-1989 scholarship lies partly in escaping the notion that an academy should produce state-sanctioned history. Trust means believing that professional historians follow recognisable scholarly procedures even when their conclusions challenge familiar narratives. The Academy therefore earns public credibility not by stabilising memory into political orthodoxy but by protecting evidence-based inquiry from attempts to impose such orthodoxy.

Expert disagreement itself must similarly be normalised as a feature of science rather than interpreted automatically as institutional failure. Different scientific groups can analyse the same phenomenon using different models, datasets, theoretical assumptions, or risk thresholds. During early stages of research, disagreement may be substantial and scientifically productive. Over time, evidence can narrow the range of plausible interpretations without eliminating every dispute. The public, however, frequently encounters science at the moment of controversy rather than after consensus has stabilised. Journalism naturally focuses on novelty, conflict, and change, which can make scientific practice appear less settled than it normally is. The appropriate institutional response is not to conceal disagreement but to contextualise it. AV ČR can explain whether a debate concerns basic facts, the magnitude of an effect, methodological details, future projections, or policy implications. This distinction is particularly important during crises, when a small difference among models may have large political consequences. Citizens need to know both that scientists disagree and what exactly they disagree about. Trust becomes possible when disagreement appears structured by evidence rather than by arbitrary opinion. In this sense, the Academy's internal pluralism is potentially a source of credibility rather than weakness.

The authority of individual experts creates another difficulty because contemporary media personalise knowledge. Television and social media favour recognisable faces, concise statements, and repeated appearances. A scientist who communicates clearly can become a trusted public figure and may substantially improve public understanding. Yet public familiarity can also produce what might be called expertise inflation. Once a researcher becomes widely known in one domain, journalists may seek opinions on subjects outside the researcher's actual specialisation. Academic titles can then function as general markers of authority rather than evidence of relevant competence. Scientists themselves face the temptation to respond because public attention is rewarding and institutional affiliation provides legitimacy. AV ČR therefore has an interest in maintaining a culture in which experts identify the limits of their competence publicly. Saying "this question lies outside my field" is a sign of scientific responsibility rather than weakness. Expert directories, communication officers, and collaboration among institutes can help journalists locate people whose professional expertise matches the issue under discussion. Institutional trust is strongest when the Academy is recognised not as a source of universal commentators but as a network capable of directing questions to appropriate specialists.

The relationship between expertise and media is equally central because most citizens encounter Academy scientists through mediation rather than direct contact. The findings of

Mihelj, Kondor, and Štětka indicate that the perceived credibility of the media channel can affect judgements about the expert appearing within it (*Mihelj, Kondor, & Štětka, 2022*). This creates a difficult strategic problem. If scientists communicate only through outlets already trusted by highly educated or science-oriented audiences, they may strengthen relationships with groups that require little persuasion while failing to reach sceptical communities. If they appear in highly partisan or sensational environments, the institutional reputation of the Academy can become entangled with those outlets. No perfect solution exists because contemporary Czech media audiences are fragmented. The Academy therefore benefits from communicative plurality: public-service broadcasting, newspapers, regional media, podcasts, direct digital channels, schools, public events, and face-to-face engagement can reach different groups. Repetition across independent channels is particularly valuable because trust becomes less dependent upon a single intermediary. The public can compare explanations and observe whether an expert's argument remains consistent across settings. Direct access through Academy platforms also provides a reference point against which mediated interpretations can be checked.

Face-to-face contact can be unusually powerful precisely because it reduces the abstraction of institutional expertise. The previous discussion of festivals, Open Science, public lectures, school activities, and citizen science showed how direct encounters make research processes visible. These activities also have a trust dimension. A visitor who speaks with a researcher can ask follow-up questions, observe hesitation, request clarification, and see that expertise is embodied in ordinary professional practice rather than in an inaccessible elite. The international comparative study of crisis trust likewise found that personal familiarity with professionals could influence perceptions of credibility (*Mihelj, Kondor, & Štětka, 2022*). Such encounters cannot scale to an entire population, but they may have network effects. Teachers, students, journalists, volunteers, physicians, local officials, and citizen-science participants carry impressions of professional research into their own communities. A person who has worked with an Academy scientist is better positioned to interpret how research operates when later encountering public controversy. This does not guarantee agreement, but it provides experiential criteria for recognising authentic expertise. Public engagement therefore contributes to trust not only because it distributes scientific facts but because it gives citizens experience of scientific institutions as social organisations.

Citizen science can deepen this effect further by allowing members of the public to encounter the disciplinary requirements that separate scientific evidence from casual observation. A volunteer recording species distributions, drought impacts, astronomical phenomena, archaeological finds, or historical data learns that observations require standardisation and verification. Measurements that appear straightforward may contain uncertainty. Categories require definitions. Data can be excluded if collection procedures are unreliable. Apparent patterns may vanish when additional observations arrive. Participants consequently experience scientific scepticism from inside rather than merely being told to trust expert conclusions. This can produce a more resilient form of confidence because trust is based partly upon understanding why professional procedures exist. Yet poorly designed citizen-science projects can have the opposite effect if participants feel their contributions disappear into an opaque institutional system. Feedback and transparency are therefore essential. Citizens should be able to see how data were assessed and how their contributions affected research. AV ČR's expansion of citizen engagement therefore connects directly with the epistemic legitimacy of the institution. Trust grows most effectively where public participation

reveals rather than obscures the mechanisms through which evidence acquires scientific status.

Research integrity remains the institutional foundation beneath all these communicative relationships. Scientific trust is difficult to build and relatively easy to damage because public audiences cannot normally distinguish isolated misconduct from systemic failure. Plagiarism, fabricated data, manipulated images, undisclosed conflicts of interest, questionable authorship practices, or failures of ethical oversight can therefore have consequences far beyond the individual case. AV ČR has progressively developed ethical frameworks, institute-level procedures, evaluation mechanisms, and professional standards intended to protect the reliability of research. Internationalisation reinforces these expectations because Academy institutes operate within European and global scientific communities where misconduct can affect collaborations, funding, and institutional reputation. Yet integrity should not be presented publicly as a claim that science is free from error or unethical behaviour. No large human institution can guarantee that. Trustworthy governance depends instead upon mechanisms capable of detecting, investigating, correcting, and learning from failures. Retractions, corrections, replication, open criticism, and transparent ethics procedures can appear embarrassing, but they are also evidence of institutional self-correction. A public that understands these mechanisms is less likely to interpret every correction as proof that science cannot be trusted. The Academy's public task therefore includes explaining that reliability arises not from the perfection of individual scientists but from organised criticism.

Open science can reinforce this principle by increasing access to publications, methods, data, and research infrastructures where ethical and legal conditions permit. The movement towards open access and research-data management changes the relationship between expertise and transparency. Citizens will not generally analyse raw datasets themselves, but availability permits independent researchers, journalists, civil-society organisations, and international collaborators to scrutinise work more easily. Openness also reduces the impression that scientific authority depends upon inaccessible knowledge guarded by closed institutions. AV ČR's participation in European open-science initiatives therefore has a public-trust dimension even when its immediate purpose concerns research efficiency and reproducibility. At the same time, openness has limits. Personal medical information, culturally sensitive data, endangered archaeological sites, confidential interviews, or commercially protected material may require restriction. A simplistic demand that all data must always be public would itself be irresponsible. Trust depends upon transparent explanation of why access is granted in some cases and restricted in others. The broader principle is that scientific institutions should expose as much of the evidential pathway as is compatible with ethical and legal responsibility. Such openness makes institutional authority more inspectable and therefore more compatible with democratic culture.

The problem of commercial influence requires similar clarity. Modern science depends partly upon collaboration with companies, technology transfer, contract research, patents, and private funding. These relationships can generate socially useful innovations and are essential in areas where scientific discoveries must be transformed into products, therapies, instruments, or industrial processes. Yet citizens may reasonably judge expert advice differently when researchers have financial connections with firms affected by a policy decision. The appropriate response is not to present every commercial relationship as corrupting. It is to disclose relevant interests and establish procedures through which professional judgement remains accountable. AV ČR's growing emphasis on technology

transfer and cooperation with industry therefore makes conflict-of-interest governance increasingly important to public trust. A researcher can possess genuine expertise and a financial interest simultaneously; the interest does not automatically invalidate the research, but concealment would undermine credibility. Transparency enables audiences and other experts to assess the relationship. This issue illustrates again that trustworthiness depends on more than competence. Integrity requires institutions to make potential sources of bias visible before opponents reveal them selectively. In a polarised information environment, undeclared relationships can rapidly become evidence for broad conspiracy narratives.

Generational change also alters the conditions under which expert authority is recognised. Older Czech citizens were educated within a system in which academic titles, universities, state institutions, and established media occupied relatively clear positions within social hierarchy. Younger generations encounter a much flatter digital environment in which institutional and informal sources coexist on the same screen. A professor's statement may appear immediately beside commentary from an influencer, political activist, commercial advertiser, anonymous account, or artificial-intelligence-generated text. Traditional status markers therefore no longer guarantee attention. This should not necessarily be interpreted as cultural decline. Younger audiences may possess healthy scepticism towards institutional authority and greater expectations of transparency and interaction. Yet they also face unprecedented difficulties in verifying provenance. AV ČR cannot respond simply by insisting that institutional prestige should command trust. It must demonstrate why professional research procedures deserve confidence. Communication with younger publics consequently requires both adaptation of format and preservation of epistemic standards. The Academy's long-term public relevance depends upon ensuring that each generation learns not merely the name of the institution but the reasoning practices that distinguish scientific expertise from confident assertion.

Educational inequality complicates this task because the ability to navigate expert information is unevenly distributed. The 2006 survey already demonstrated significant relationships between educational attainment, interest in science, perceptions of Czech research, and support for scientific funding (*Šamanová, Škodová, & Vinopal, 2006*). Contemporary digital environments may intensify such differences. Highly educated citizens often possess better access to professional networks, foreign-language resources, paid media, and the conceptual background necessary to interpret scientific uncertainty. People with less educational privilege may encounter scientific debates largely through political rhetoric, commercial media, or social platforms where simplification is intense. Treating these citizens as deficient or irrational would itself undermine trust. Institutions need communication strategies that respect audiences without assuming specialist vocabulary. Clear explanation is not equivalent to intellectual condescension. AV ČR's school programmes, regional events, accessible media, and public-service collaborations are therefore part of an epistemic equality project as well as a popularisation project. Democratic access to trustworthy expert knowledge should not depend excessively upon social class or educational capital.

Regional experience can produce similar differences in trust. Scientific expertise may appear distant when concentrated in Prague or other large urban research centres, particularly if recommendations affect rural, industrial, or peripheral communities. Environmental regulation, energy transitions, land-use planning, mining, water management, transport, and conservation can impose geographically unequal costs. Residents may therefore distrust experts not because they reject science but because they believe scientific institutions do not

understand local conditions. Academy institutes with regional research programmes can help bridge this gap by combining national or international expertise with sustained local engagement. Field stations, archaeological excavations, ecological monitoring, regional social research, and collaboration with municipalities give experts direct experience of places affected by policy. This local presence can strengthen both knowledge quality and perceived benevolence. Citizens are more likely to regard researchers as legitimate interlocutors when they see them returning over time rather than appearing only during a controversy. Trust is therefore spatial as well as cognitive. The distributed geography of AV ČR provides an institutional resource that can support such relationships if public engagement is treated as part of long-term research practice.

Political polarisation remains one of the most serious threats to this model because scientific information can become incorporated into identity conflict. Once a position on vaccination, climate, energy, migration, historical memory, or another issue becomes a marker of political belonging, evidence is interpreted through group loyalty. An expert endorsed by one political camp may become automatically suspect to another. International research shows that political orientation can correlate with trust in scientists, although the direction and strength of these relationships vary considerably among countries and issues (*Cologna et al., 2025*). Czech society is not immune to such dynamics. Yet the Academy occupies an institutional position that can mitigate them if it avoids unnecessary identification with individual political parties. This does not require neutrality towards facts. A scientific institution should state clearly when evidence contradicts a political claim, irrespective of who makes it. Nor does institutional independence require researchers to avoid civic values such as democracy, academic freedom, human rights, or research integrity. The key distinction is between evidence-based institutional positions and partisan loyalty. AV ČR's credibility depends upon citizens being able to imagine that the same professional standards would be applied under different governments.

The Academy's own social-science research contributes uniquely to this process because the institution can study the trust on which its public role depends. CVVM, the Institute of Sociology, psychologists, communication researchers, economists, and other specialists analyse political confidence, misinformation, risk perception, social cohesion, media behaviour, vaccination attitudes, environmental conflict, and public understanding of science. This creates a form of institutional reflexivity unusual among public organisations. AV ČR is not only an object of public trust but a research environment capable of investigating how trust is formed, lost, and rebuilt. Such research can expose weaknesses in science communication that institutional leaders might otherwise prefer not to acknowledge. The 2006 study, for example, concluded that Czech science itself had sometimes failed to communicate its purposes and social significance effectively, particularly in the humanities and social sciences (*Šamanová, Škodová, & Vinopal, 2006*). Pandemic research later demonstrated the consequences of perceived expert conflict and information fragmentation. This capacity for self-examination should be understood as part of the Academy's public value. An institution that studies its own social environment can adapt its practices on the basis of evidence rather than publicity intuition. It also demonstrates that expert authority itself is a legitimate subject of critical research rather than an unquestionable starting assumption.

International comparison further cautions against exaggerated narratives of either crisis or triumph. Contemporary public debate frequently speaks of a universal "collapse of trust in science", yet comparative evidence does not support such a simple diagnosis. The

multinational survey by Cologna and colleagues found that most respondents across most societies continued to trust scientists and wanted them to contribute to public life (*Cologna et al., 2025*). European surveys likewise continue to report broadly positive attitudes towards science and technology, alongside expectations that researchers should respond to the needs and concerns of society. The most recent Eurobarometer evidence showed large majorities across the European Union viewing science and technology positively and associating scientists with intelligence and reliability (*European Commission, 2025*). Czech attitudes exist within this broader European context but are shaped by national political trust, historical memory, media systems, educational inequalities, and specific controversies. The relevant problem is therefore not a binary question of whether society trusts science. It is how trust is distributed, which institutions and disciplines benefit from it, which groups remain sceptical, and what happens when scientific knowledge intersects with identity or material interests. AV ČR's strategy should consequently avoid both complacency and panic. Trust is substantial enough to protect, but uneven enough to require continual work.

This work ultimately requires preserving a distinction between trust and credibility. Trust is an attitude held by citizens; credibility is something institutions can attempt to earn through behaviour. AV ČR cannot directly control whether every person trusts its researchers, especially in a pluralist society where scepticism is legitimate. It can control the quality of research, transparency of procedures, clarity of communication, disclosure of conflicts, responsiveness to criticism, and degree of political independence. These are therefore more appropriate institutional objectives than simply maximising trust scores. An academy that actively sought to make the public trust it regardless of evidence would itself become less trustworthy. Citizens should retain the right to doubt scientific institutions and to demand explanations. Responsible expertise answers this scepticism with methods, evidence, and openness rather than appeals to status. The goal is not to eliminate criticism but to sustain a public environment in which criticism can distinguish between error, uncertainty, disagreement, misconduct, and deliberate misinformation. Such distinctions are essential to democratic knowledge culture.

Trust must also be understood temporally. Institutional credibility accumulates through thousands of interactions that may seem insignificant individually: a researcher answering a journalist carefully, an institute correcting an error, a teacher receiving useful material, a citizen-science volunteer obtaining feedback, a scientific report acknowledging uncertainty, a director refusing political pressure, or an expert admitting that evidence is insufficient. These acts rarely generate major headlines, but they build institutional memory within society. The reverse process is similarly cumulative. Repeated exaggeration, opaque communication, dismissive treatment of citizens, undisclosed interests, or careless public commentary can slowly weaken credibility even without a single dramatic scandal. AV ČR's advantage is its long institutional horizon. Unlike political administrations that change every electoral cycle or commercial campaigns organised around temporary products, the Academy can cultivate relationships over decades. This makes consistency particularly valuable. Citizens may not remember an individual communication event, but they form broader impressions about whether an institution behaves predictably and professionally.

The democratic meaning of expert trust therefore differs fundamentally from the authority claimed by ČSAV under state socialism. In the older system, scientific authority could be incorporated into an official ideological hierarchy and backed by political control over public communication. In the contemporary Czech Republic, AV ČR possesses no legitimate

mechanism for compelling acceptance of its conclusions. Its influence depends upon scientific quality, professional reputation, transparent reasoning, and voluntary recognition within a pluralist public sphere. This makes expert authority simultaneously weaker and stronger. It is weaker because citizens, politicians, journalists, and competing experts may challenge the Academy openly. It is stronger because credibility acquired without coercive support can become a genuine form of democratic legitimacy. The public can distinguish between an expert recommendation and a government order. Researchers can criticise state policy without thereby rejecting the constitutional system. Political leaders can reject scientific advice but remain publicly accountable for the consequences of doing so. This relationship preserves the separation between knowledge and power while allowing them to interact.

Thus, public trust in expert knowledge has become one of the central forms through which the Czech Academy of Sciences exercises public value in a democratic society. Czech evidence across the post-socialist period does not support a simple narrative of hostility towards science: citizens have repeatedly expressed strong support for research, favourable views of scientists, willingness to finance science publicly, and recognition of its contribution to social welfare (*Šamanová, Škodová, & Vinopal, 2006*; *Pew Research Center, 2020*). At the same time, trust is neither uniform nor permanent. It differs among disciplines, technologies, institutions, social groups, and political contexts, and it can deteriorate rapidly when experts appear politically dependent, when media exaggerate disagreement, or when scientific uncertainty is communicated poorly. The COVID-19 pandemic demonstrated both the resilience and vulnerability of expert authority, revealing high trust in medical professionals but also major public misperceptions about the actual degree of expert consensus (*Tabery & Pilnáček, 2021*; *Bartoš et al., 2022*). For AV ČR, the strongest basis of credibility therefore lies not in claims of institutional infallibility but in competence, integrity, independence, openness, and the visible capacity for self-correction. Public communication, education, citizen engagement, research ethics, open science, and transparent governance all contribute to this foundation, but none can substitute for scientific quality itself. Democratic trust also requires respect for the boundary between evidence and political decision: experts must be free to advise, criticise, and explain without claiming authority that belongs to elected institutions and citizens. In this model, scepticism is not the enemy of science; informed scepticism is one of the conditions under which reliable science can distinguish itself from ideology, propaganda, and unsupported assertion. The historical transformation from ČSAV to AV ČR can therefore also be understood as a transformation in the social basis of academic authority—from authority partially guaranteed by the state to credibility that must repeatedly be earned within an open public sphere. That credibility becomes most consequential when ordinary conditions disappear and society suddenly requires knowledge under pressure. The next section, “Scientific Advice during Social, Health, Environmental, and Security Crises,” therefore turns from the everyday construction of public trust to those moments when expert knowledge becomes an immediate component of collective decision-making.

The Academy in Times of Crisis

1. Scientific Advice during Social, Health, Environmental, and Security Crises

Crises alter the normal relationship between research and public decision-making because they compress the time available for interpretation while simultaneously increasing the consequences of error. Under ordinary conditions, scientific findings may circulate through publications, conferences, expert committees, ministries, professional associations, and gradual policy debate over months or years. During a pandemic, flood, drought, energy shock, refugee influx, environmental disaster, or security emergency, political authorities may need usable knowledge within hours or days. The scientific problem is therefore not merely to produce correct knowledge but to determine what can responsibly be said before all relevant evidence is available. This distinction is fundamental to the modern concept of scientific advice. Researchers do not govern the state, and scientific conclusions cannot by themselves determine legitimate political choices, yet governments acting without reliable evidence expose society to avoidable risks. International analyses of crisis advice consequently emphasise preparedness, rapid access to expertise, transparent communication of uncertainty, interdisciplinary coordination, and strong connections between scientific institutions and crisis-management structures (*OECD, 2018*; *Gluckman, Bardsley, & Kaiser, 2021*). For the Czech Academy of Sciences, these requirements acquire particular importance because the institution preserves substantial concentrations of expertise outside the administrative apparatus of the state. Its institutes can therefore provide knowledge that is publicly funded but not produced inside ministries whose immediate political responsibilities may shape the interpretation of evidence. The Academy's capacity to advise during crises rests precisely on this combination of autonomy and institutional permanence. Laboratories, long-term datasets, archives, models, expert communities, and professional networks are accumulated before the emergency appears. A crisis then reveals whether those apparently slow investments can be converted into rapid social usefulness. Scientific advice in exceptional circumstances is thus one of the clearest demonstrations that the public value of an academy depends upon capacities built long before society knows exactly when it will need them.

The modern Czech experience of crisis expertise must also be understood against the political history of ČSAV and its transformation after 1989. Under state socialism, Academy institutes already possessed extensive expertise relevant to agriculture, health, industry, environmental protection, geology, energy, materials, population studies, and other areas affecting state decision-making. Yet the relationship between expertise and political authority was structurally asymmetric. The Communist Party and state administration could determine political priorities, restrict the circulation of inconvenient findings, and subordinate scientific interpretation to ideological requirements, particularly in the social sciences and humanities. The democratic transformation changed the institutional meaning of advice rather than eliminating the relationship between research and government. AV ČR became a self-governing research organisation whose experts could cooperate with state authorities without being formally incorporated into the executive hierarchy. This arrangement created the possibility of advice that might support governmental policy, complicate it, or openly contradict assumptions held by political actors. Independence therefore became an epistemic resource. A ministry may possess excellent technical experts, but an autonomous scientific

institution can provide an additional arena in which evidence is assessed according to disciplinary procedures rather than administrative loyalty. The value of such plurality becomes especially visible during crises, when political pressure for certainty can be intense. A democratic Academy is useful not because it promises to remove uncertainty but because it can preserve professional criticism precisely when decisions have to be taken quickly. This principle links crisis advice directly to the larger institutional history developed throughout this book: scientific autonomy becomes socially meaningful when it improves the state's ability to perceive reality rather than merely protecting researchers from interference.

For much of the 1990s and early 2000s, however, the Academy did not possess one single centralised mechanism through which all policy advice was channelled. Expertise moved through many routes at once. Individual institute directors and researchers served on governmental councils, ministerial committees, advisory groups, standard-setting bodies, environmental commissions, medical or technical panels, and legislative consultations. Institutes prepared expert assessments, provided measurements, maintained specialised databases, responded to ministries, and collaborated with universities and public agencies. Some of this work was highly visible, while much remained embedded in professional administrative processes rarely noticed by the wider public. Such decentralisation reflected the institutional character of AV ČR itself. A national academy containing biologists, physicists, chemists, historians, economists, lawyers, sociologists, geologists, mathematicians, computer scientists, linguists, and other specialists could not realistically reduce all expert advice to a single organisational voice. Indeed, excessively centralised advice would risk converting disciplinary expertise into administrative messaging. Yet decentralisation also had costs. Policymakers could find it difficult to identify the relevant researchers, individual experts could speak without clear institutional coordination, and useful knowledge might remain within scientific communities because no mechanism translated it into policy language. This tension between disciplinary autonomy and policy accessibility gradually encouraged the development of more explicit interfaces between the Academy and the decision-making sphere. The later AVex system and policy-briefing formats can therefore be understood not as a sudden invention of expert advice but as an institutionalisation of practices that had long existed in more fragmented form.

Environmental disasters provided some of the earliest major post-1989 demonstrations of the importance of scientific knowledge for Czech crisis management. The catastrophic Moravian and Silesian floods of July 1997 killed around fifty people, destroyed or damaged tens of thousands of homes, and caused losses estimated at more than sixty billion Czech crowns. The disaster exposed weaknesses not only in physical flood protection but in forecasting, communication, coordination, land management, and the institutional understanding of extreme precipitation. Research and expert analysis after 1997 contributed to changes in legislation, forecasting systems, information exchange, and emergency-management procedures. When another exceptional flood struck Bohemia in August 2002, inundating large areas including parts of Prague, the country possessed more developed systems of observation and crisis response than it had five years earlier, although the scale of the disaster remained immense. Researchers associated with atmospheric physics, hydrology, geography, geology, ecology, engineering, and other fields continued to investigate extreme precipitation and flood dynamics. The importance of the 1997 and 2002 events lies partly in the way they altered the political status of environmental expertise. Extreme weather could no longer be treated as a rare anomaly whose consequences were addressed only after the water receded.

Forecasting, landscape management, infrastructure design, risk mapping, and emergency planning became long-term questions of national resilience. Scientific advice therefore began to move from retrospective explanation towards anticipatory governance. The Academy was only one component of this broader system, which also involved the Czech Hydrometeorological Institute, universities, ministries, municipalities, emergency services, and other organisations, but Academy research contributed to the wider national accumulation of knowledge about environmental hazards. The flood experience would later provide an important institutional precedent when Czech society confronted droughts, heat waves, wildfires, and other consequences of a changing climate.

The environmental crisis of the following decades developed differently because drought rarely possesses the dramatic visual beginning of a flood. Soil moisture declines gradually, groundwater is depleted over seasons, forests become stressed, agricultural losses accumulate, and the consequences may be distributed unevenly across regions. Such a crisis can therefore remain politically underestimated until its economic and ecological effects become difficult to ignore. The sequence of dry and unusually warm years affecting the Czech Republic from the middle of the 2010s transformed drought into a major public-policy problem. CzechGlobe, the Global Change Research Institute of AV ČR, became one of the most visible scientific actors in this debate. Its researchers combined meteorological observations, soil-water modelling, satellite information, ecological monitoring, historical climate reconstruction, and cooperation with agricultural specialists. By 2018, Academy reporting showed drought affecting a very large proportion of Czech territory, while subsequent research demonstrated that the exceptionally dry period of 2015–2018 was extraordinary even when compared with long historical reconstructions (*Czech Academy of Sciences, 2018*; *Büntgen et al., 2021*). The scientific contribution here was not simply to announce that conditions were dry. Researchers attempted to distinguish temporary meteorological fluctuations from longer structural trends and to explain how rising temperatures alter evaporation, vegetation periods, soil-water balance, agricultural risk, and forest vulnerability. This placed climate expertise directly inside debates about water policy, agriculture, forestry, adaptation, and regional development. The crisis therefore blurred the distinction between environmental science and strategic planning. Drought became simultaneously a climatic, economic, ecological, infrastructural, and eventually security question.

The InterSucho system illustrates particularly clearly how long-term scientific expertise can be converted into operational decision support. Developed by CzechGlobe researchers together with partners including Mendel University, the system combines modelling, direct measurements, remote sensing, meteorological information, and observations from a network of reporters in agriculture and forestry. It does not merely publish retrospective scientific analysis. It provides regularly updated maps, forecasts, assessments of soil-moisture deficits, and information designed for farmers, foresters, water managers, government institutions, journalists, and the general public. By 2025, after a decade of operation, the platform had been substantially modernised to provide more detailed information down to regional, district, and cadastral levels, while connected systems such as FireRisk, AgroRisk, and DendroNet extended the advisory infrastructure into wildfire danger, agricultural risk, and forest monitoring. More than two hundred automatic stations were incorporated into parts of the monitoring architecture, while citizen reporters continued to contribute observations from the field. The system therefore occupies a position between research infrastructure and public service. Scientific models are not simply published in journals; they become tools through

which users decide when, where, and how to respond to environmental stress. This is a form of advice embedded in information infrastructure rather than delivered through a single report to a minister. It also shows that crisis advice can become more effective when the boundary between “normal research” and “emergency response” is deliberately weakened. A drought-monitoring system built before the most severe agricultural season begins allows decision-makers to act on developing evidence rather than waiting for a formal crisis declaration. By 2026, associated projects were moving further towards recommending and testing practical water-retention and adaptation measures with farmers in the Dyje basin.

The creation and development of AVex expert opinions provided a more formal Academy-wide mechanism for translating research into public policy. The Academy defines AVex as an independent expert statement prepared for state bodies and representatives as a professional basis for decision-making in public affairs, with the relevant Academy institute acting as scientific guarantor. The significance of this format lies not only in the subjects covered but, in the attempt, to separate scientific expertise from ordinary institutional lobbying. AVex documents address questions where research evidence is already sufficiently developed to inform public debate, while acknowledging uncertainty and competing policy options where necessary. By 2019 the series included statements on Big Data, drinking water, drought, and genetically modified crops. In 2020 it addressed antibiotic resistance, greenhouse warming, soil degradation, climate change, population health in the Ústí region, and viruses. Subsequent documents considered invasive species, consequences of mining, migration, a just transition towards a low-carbon economy, artificial intelligence, energy technologies, archaeological protection, water-source protection, mine reclamation, and wildfires. The thematic sequence itself demonstrates how the Academy’s conception of crisis and public risk expanded. Health, climate, environmental degradation, digital technology, migration, industrial transformation, and security increasingly appeared as interconnected public-policy domains rather than separate specialist questions. AVex did not replace the advice supplied by individual researchers or institutes, but it created a recognisable institutional channel through which the Academy could present evidence to legislators and other state actors. By the mid-2020s, the Academy’s “science for policymaking” interface also included policy papers and shorter recommendations intended explicitly to support strategic discussion and informed decision-making.

No crisis tested these advisory capacities as intensely as the COVID-19 pandemic beginning in 2020. The first Czech cases were confirmed in March, and within weeks the country confronted shortages of diagnostic capacity, protective equipment, reliable information, and tested policy instruments. The Academy responded on several levels simultaneously. It offered laboratories and trained personnel for SARS-CoV-2 testing, redirected parts of existing research infrastructure towards diagnostic work, developed and verified alternative testing procedures, analysed protective materials, supported new diagnostic technologies, produced epidemiological models, examined economic consequences, evaluated behavioural interventions, addressed legal and ethical questions, and studied the psychological and social effects of restrictions. This breadth is institutionally important because the pandemic was not a narrowly biomedical emergency. The virus created a health crisis, but government responses affected education, employment, mobility, privacy, social inequality, public trust, family life, mental health, public finance, and constitutional rights. An academy organised across multiple scientific fields was therefore unusually well positioned to illuminate different dimensions of the same event. Yet interdisciplinarity did not emerge automatically.

Researchers working on virology, economics, law, psychology, mathematics, sociology, or data science used different concepts and evidence. The crisis required these forms of expertise to be placed into conversation far more quickly than under ordinary academic conditions. The pandemic thereby exposed both the strength of the Academy's disciplinary diversity and the practical difficulties of translating that diversity into coherent advice. (*Czech Academy of Sciences, 2020*).

The immediate contribution of biological and biomedical institutes was unusually concrete. On 17 March 2020, the Academy announced that several of its research organisations, together with university partners, were offering laboratories, equipment, and trained scientific personnel to the government in order to expand coronavirus testing. After the necessary approvals were obtained, multiple Academy institutes entered testing operations. BIOCEV, the joint biomedical centre of the Academy and Charles University, processed hundreds of samples from hospitals and care homes, while the Institute of Molecular Genetics used robotic infrastructure capable of large-scale sample processing. The Biology Centre in České Budějovice adapted facilities for SARS-CoV-2 diagnostics, and other institutes provided equipment or personnel to clinical systems. The Academy's 2020 annual report subsequently recorded participation by the Biology Centre, BIOCEV, the Institute of Molecular Genetics, the Microbiology Institute, Algatech, the Institute of Botany, the Institute of Biophysics, and the Institute of Biotechnology. This mobilisation demonstrated a principle that becomes visible only during emergencies: research infrastructure has option value. A robotics station designed for molecular research, a high-security laboratory maintained for other pathogens, or the accumulated skill of researchers experienced in nucleic-acid isolation can be redirected when conventional health infrastructure suddenly becomes overloaded. Such capacities could not have been created from nothing in March 2020. The emergency response therefore depended on investments made for research purposes during years when no pandemic was present. (*Czech Academy of Sciences, 2020*).

Diagnostic shortages also revealed the importance of scientific independence from vulnerable commercial supply chains. Researchers led by Jan Konvalinka at the Institute of Organic Chemistry and Biochemistry, working with a broad network of Academy, university, clinical, and public-health laboratories, developed and verified alternative methods for the isolation of viral RNA. The purpose was not merely academic novelty. Commercial extraction kits had become difficult to obtain because the entire world was competing for the same diagnostic supplies. A method using accessible components could therefore increase national testing resilience. Researchers at BIOCEV and other laboratories tested these procedures against established methods, while additional Academy teams contributed to diagnostic research and biosensor development. The Institute of Physics worked on a portable biosensor intended to detect virus particles directly, building partly upon earlier work connected with rapid pathogen detection. Researchers from the Institute of Chemical Process Fundamentals analysed filtration materials and cooperated with technical universities on respirator development. IOCB Tech, the technology-transfer company associated with the Institute of Organic Chemistry and Biochemistry, supplied financial support for the accelerated development of diagnostic tests. What appeared publicly as "science against COVID" was therefore not one project but a networked conversion of existing expertise into emergency capability. The episode also complicates any simple opposition between basic and applied research. Many of the scientists who responded most rapidly were able to do so because years of fundamental

work had given them methods, equipment, and professional networks that could suddenly be redirected towards an urgent application.

The pandemic also transformed mathematical and computational modelling into an object of intense public and political attention. Epidemiological models had long been normal tools of specialised research, but suddenly their projections could influence school closures, mobility restrictions, hospital planning, tracing strategies, and the timing of reopening. The Model antiCOVID-19 initiative associated with IDEA at the Economics Institute of AV ČR brought together dozens of researchers from Czech and international institutions. Several modelling approaches examined the epidemic at different scales, including national dynamics, regional variation, and network structures representing individual interactions. Academy researchers from the Biology Centre, Institute of Information Theory and Automation, Institute of Computer Science, Institute of Organic Chemistry and Biochemistry, and other workplaces participated in different aspects of this work. The models were intended not to predict the future with certainty but to compare the likely consequences of different interventions. This distinction was difficult to maintain in public discussion because political actors and journalists often demanded a single number or date. Modelling is strongest when it clarifies relationships among assumptions, data, and scenarios; it is weakest when a conditional projection is interpreted as prophecy. The Czech pandemic experience therefore offered an unusually public lesson in the epistemology of modelling. Scientific advisers had to explain that uncertainty was not evidence that the models were useless but a property of a rapidly changing system involving biological mechanisms and human behaviour. (*OECD, 2020*).

The economic dimension of the pandemic brought the Academy's social sciences into the centre of crisis advice. The IDEA think tank at CERGE-EI, jointly associated with the Economics Institute of AV ČR and Charles University, rapidly established an anti-COVID research agenda that produced more than thirty analytical studies and recommendations before the initiative ended its main research activities in 2021. Economists examined how the government might preserve employment, support firms without destroying incentives, design temporary measures, collect relevant data, and limit the long-term economic damage of shutdowns. Behavioural economists analysed how public communication could encourage protective behaviour and why simply providing information was insufficient to change habits. They stressed that compliance depended partly on trust, clarity, repeated communication, and the perceived legitimacy of measures (*Bauer & Chytilová, 2020*; *Bartoš, 2020*). Other analyses considered the design of "smart tracing", including the need to protect personal data and establish clear limits on access (*Jann, 2020*). The speed of these publications distinguished them from normal academic output. Their purpose was explicitly to place existing international research and rapidly emerging Czech evidence into a form usable by decision-makers. At the same time, IDEA repeatedly clarified that individual analyses expressed the views of their authors rather than an automatic official position of the Economics Institute or the Academy. This distinction preserved an important boundary between enabling scientific advice and manufacturing institutional consensus.

Education became another field in which the pandemic revealed that a health emergency could rapidly become a social crisis. Czech schools closed in March 2020 and shifted abruptly towards distance teaching. Researchers Miroslava Federičová and Václav Korbel warned that the disruption could deepen educational inequalities that were already substantial before the pandemic (*Federičová & Korbel, 2020*). Children differed greatly in access to computers, stable internet connections, quiet study space, parental support, and schools capable of organising

effective online teaching. An epidemiological decision to close classrooms could therefore generate unequal educational costs long after the immediate infection wave had ended. This problem demonstrates why crisis advice requires social sciences alongside medical expertise. A measure may be epidemiologically effective while producing secondary consequences that need to be anticipated and mitigated. The relevant policy question is not simply whether one intervention reduces viral transmission but how different combinations of interventions redistribute risks across age groups and social classes. Economists, sociologists, psychologists, and educational researchers therefore contributed to a more complete understanding of the pandemic as a systemic crisis. Their work also made visible groups that aggregate infection statistics could obscure. Scientific advice becomes socially responsible when it identifies not only average effects but also the distribution of burdens.

Legal and ethical expertise became equally important because emergency measures inevitably affected rights, privacy, resource allocation, and the boundaries of executive authority. The Institute of State and Law of AV ČR addressed ethical and legal principles relevant to allocating scarce health-care resources during the pandemic. Other analyses examined data collection and the conditions under which digital tracing could be compatible with privacy and democratic safeguards. These questions were not marginal to effective epidemic control. Public cooperation can deteriorate if citizens believe emergency surveillance will become permanent or that rules are applied arbitrarily. Scientific advice therefore had to engage with legitimacy as well as technical effectiveness. Law could not determine the biological behaviour of a virus, but it could shape the institutional environment within which responses were implemented. Ethics could not create additional intensive-care beds, but it could clarify principles for deciding among patients if scarcity became unavoidable. Psychology and sociology similarly examined compliance, solidarity, masks, fear, institutional confidence, and the cultural meanings attached to restrictions. Researchers from the Psychological Institute and Institute of Sociology investigated the extraordinary social mobilisation around mask wearing and mutual aid during the first emergency period. Such work illustrates the breadth of crisis expertise within the Academy: the relevant knowledge extended from viral RNA to constitutional principles and from aerosols to collective behaviour.

The public communication of advice became itself a component of pandemic management. In October 2020, as infection numbers again rose sharply, the serving President of the Academy, Eva Zažímalová, together with former leaders of the institution, issued a public appeal emphasising solidarity, adherence to protective rules, and confidence in qualified experts. Such interventions inevitably occupied delicate territory. The Academy was not a governmental authority empowered to order citizens to behave in particular ways. Yet remaining silent while scientific evidence indicated escalating risk could also have appeared irresponsible. The pandemic therefore demonstrated that the institutional responsibility of a national academy cannot always be confined to providing private memoranda to ministries. There are moments when scientific organisations must communicate directly with society because public behaviour is itself one of the variables affecting the crisis. At the same time, this public role created exposure to political controversy. As measures became more contested, scientific advice could be interpreted through partisan divisions, while individual experts sometimes became public personalities associated with particular strategies. The experience reinforced the lesson developed in “Public Trust in Expert Knowledge”: advice is effective only if citizens can distinguish professional evidence from political command and if experts communicate

uncertainty without losing clarity. Crisis communication consequently became inseparable from crisis science.

The pandemic also generated an institutional lesson about preparedness. In October 2020, Academy leadership argued publicly for stronger specialised virological research capacity capable of supporting the country during future epidemics. The logic was straightforward: emergency mobilisation had demonstrated impressive flexibility, but flexibility could not substitute indefinitely for permanent preparedness. Laboratories assembled for one crisis would disperse, temporary volunteer arrangements would end, and scientists would return to other research agendas. If infectious disease threats were likely to recur, the Czech research system needed to preserve capabilities between emergencies. This is one of the recurring problems of crisis policy. Political attention and funding rise dramatically while danger is visible and then decline when the immediate threat recedes. Scientific institutions operating over longer time horizons can resist this cycle by maintaining expertise even when it is no longer politically fashionable. Antibiotic resistance offers an instructive parallel. Before COVID-19 became the dominant health emergency, the Academy had already issued an AVex statement describing antimicrobial resistance as a serious long-term threat (*Czech Academy of Sciences, 2020*). Such problems lack the clear beginning of a pandemic wave, but their cumulative consequences may be equally severe. Health-security advice therefore needs institutions able to recognise slow emergencies as well as sudden ones.

This broader understanding of systemic crisis contributed to the establishment of the National Institute for Research on the Socioeconomic Impacts of Diseases and Systemic Risks, SYRI, in 2022. The consortium connects researchers from AV ČR, Masaryk University, and Charles University and was created partly from the recognition that pandemic consequences could not be understood within one discipline. By 2023, approximately 150 researchers were involved in work addressing questions including misinformation, educational conditions, social peripheries, psychological effects, political behaviour, and resilience. Academy President Eva Zažímalová expressed the interdisciplinary logic succinctly: even an excellent medicine or vaccine is socially ineffective if substantial sections of the population refuse to use it. This observation captures an important shift in the meaning of preparedness. A resilient society requires biomedical capacity, but also institutional trust, functional education, effective communication, social cohesion, and the ability to identify vulnerable groups. The pandemic therefore accelerated a move from crisis research centred on the hazardous event towards research centred on the resilience of the entire social system. Such a shift has important implications for the Academy. The social sciences and humanities are no longer supplementary commentators arriving after natural scientists have solved the “real” technical problem. They become part of the infrastructure through which technical solutions can actually function in society.

The Russian full-scale invasion of Ukraine on 24 February 2022 created another type of crisis in which the Academy’s scientific and civic roles became intertwined. This was simultaneously a military-security crisis, a humanitarian catastrophe, a refugee crisis, an energy shock, an economic disruption, and a direct threat to European scientific cooperation. AV ČR publicly condemned Russian aggression and expressed support for Ukrainian researchers and students. The Academy and its institutes suspended or reconsidered relations with Russian state institutions, offered employment and internships, provided accommodation and humanitarian assistance, and created the Researchers at Risk Fellowship programme. The speed of the institutional response was notable. According to Academy accounts, the

programme was prepared through an accelerated procedure in little more than a week after the beginning of the invasion, even though similar schemes would normally require months of preparation. Its purpose was broader than Ukraine: researchers whose work became impossible because of war, persecution, or comparable threats could be offered a safe environment in Czech research institutions. The first call concentrated on Ukraine and ultimately supported more than fifty fellowships. This was not scientific advice in the narrow sense of a policy memorandum. It was an institutional recognition that the destruction of scientific communities is itself a security consequence of war. A national academy defending endangered researchers therefore protects not only individuals but the continuity of knowledge across political catastrophe.

The refugee dimension of the war returned scientific expertise directly to Czech public administration. During the first year of the invasion, the Czech Republic received an exceptionally large number of Ukrainian refugees relative to its population, with women and children forming a large share of arrivals. Questions of housing, employment, schools, health care, language acquisition, social benefits, and integration therefore became immediate policy problems. Researchers connected with AV ČR contributed empirical data capable of replacing political speculation with evidence. Longitudinal research into Ukrainian refugees was developed with cooperation from the Ministry of Labour and Social Affairs and later the Ministry of the Interior, enabling researchers to follow changes in employment, housing, language skills, education, working conditions, and intentions to remain or return. By the mid-2020s, the data showed high employment among economically active refugees but also substantial occupational downgrading, financial stress, difficult working conditions, and incomplete use of qualifications acquired in Ukraine. School integration improved, while language skills increased over time, yet important institutional obstacles remained. Such evidence matters because refugee policy is particularly vulnerable to anecdote and politicisation. A highly visible local incident can be generalised into a claim about hundreds of thousands of people, while successful integration can remain statistically invisible. Longitudinal research therefore provides a stabilising form of expert knowledge during a socially sensitive crisis.

Academy-associated research also examined how Czech public attitudes towards Ukrainian refugees changed after the initial wave of solidarity. IDEA analysis found that support for accepting refugees declined during 2022 as the first shock of the invasion faded and economic concerns, particularly those linked with the energy crisis, became more important (*Protivínský, 2023*). Public perceptions of integration did not always correspond to measurable improvements in employment or schooling. Personal contact with Ukrainians was associated with more favourable attitudes, while interpretations of the causes of the war and patterns of media consumption also influenced perceptions. Researchers and experts presenting results to the Czech Senate in 2023 warned that integration still faced serious weaknesses, including uneven school support, access to health care, and risks created by disinformation and social radicalisation. Such findings demonstrate that social advice during crisis cannot end when emergency reception centres close. The difficult phase may begin precisely when the crisis becomes normalised and public patience declines. Scientific institutions can monitor these slower transformations because they are able to compare repeated surveys rather than relying on the emotional temperature of one political moment. The Academy had already prepared an AVex expert statement on migration and third-country nationals in 2022, providing an institutional framework for analysing migration beyond the immediate Ukrainian emergency.

Crisis expertise therefore linked short-term refugee reception with longer questions of integration, labour markets, identity, and social cohesion.

The invasion also transformed energy from a technical and environmental policy issue into a central security problem. Russian gas supplies, European dependence on fossil-fuel imports, rapidly rising energy prices, sanctions, electricity markets, and the future of nuclear and renewable energy became urgent questions for Czech government and society. AV ČR was able to contribute because its institutes had long-standing research traditions in materials science, plasma physics, thermodynamics, chemistry, energy conversion, environmental analysis, economics, law, and social transformation. During the Czech Presidency of the Council of the European Union in 2022, the Academy explicitly organised its contributions around three broad themes: food security, low-emission energy, and a resilient society. These themes were directly connected with the war in Ukraine, the energy crisis, and the perceived threat to democratic stability. The significance of this intervention lies in its interdisciplinary framing. Energy security was not reduced to the question of which fuel should replace Russian gas. It involved technological possibilities, infrastructure, emissions, affordability, legal frameworks, industrial competitiveness, and public acceptance. Later AVex statements on fusion energy, renewable energy pathways towards fossil-free fuels, and the legal dimensions of a just transition extended this policy interface beyond the immediate emergency. Scientific advice therefore connected crisis response with the long-term transformation of the Czech energy system.

The concept of security itself consequently broadened within Academy-supported research. Traditional military security remained indispensable after the return of major interstate war to Europe, but Czech resilience also depended upon food systems, energy supplies, cyber infrastructure, trusted communication, public health, environmental stability, and functioning democratic institutions. The Academy's contribution in these areas differs from that of intelligence agencies or armed forces. It does not assess operational military threats in the same way as security services, nor should it attempt to substitute for them. Its comparative advantage lies in analysing the structural conditions that make societies vulnerable. Economists can examine supply shocks and fiscal responses; sociologists can study polarisation and trust; psychologists can investigate fear and misinformation; computer scientists can analyse digital systems and artificial intelligence; historians and area specialists can provide cultural and geopolitical context; lawyers can examine emergency powers and institutional safeguards. The rise of disinformation after the pandemic and during the war in Ukraine made this breadth particularly important. False or manipulative narratives can transform a health recommendation, migration issue, or energy measure into a security problem by weakening trust in institutions and encouraging social polarisation. SYRI research and other Academy-linked projects therefore treated misinformation not simply as a media phenomenon but as part of systemic resilience. The modern Academy's security role is consequently epistemic: it helps society identify which risks are real, how they interact, and where apparent certainty is unsupported.

Industrial transformation provides another example of a crisis that develops without a single dramatic beginning. The decline of coal mining in Ostrava and Karviná affected employment, landscape, infrastructure, public health, regional identity, and the long-term economic future of communities historically structured around extractive industry. The Institute of Geonics of AV ČR contributed expertise on the consequences of mining, while an AVex statement in 2021 addressed its regional effects. A subsequent AVex on the "just transition" examined the shift

towards a low-carbon economy from a legal perspective (*Czech Academy of Sciences, 2021*; *Czech Academy of Sciences, 2022*). These documents illustrate how crisis advice can operate before social disruption reaches catastrophic proportions. Closing mines may be environmentally and economically necessary, yet the transition can generate political alienation if affected communities perceive that costs are being imposed by distant institutions. Research can help identify land-reclamation options, legal responsibilities, demographic trends, economic alternatives, and the social consequences of restructuring. Here again the Academy's multidisciplinary structure is relevant. Environmental recovery, labour-market change, regional culture, law, and energy policy cannot be separated neatly. The social crisis of deindustrialisation is therefore a test of whether scientific advice can anticipate secondary effects rather than merely justify a technologically defined transition.

Wildfires have more recently provided a vivid example of how environmental and security risks converge. The exceptional fire in Bohemian Switzerland in the summer of 2022 burned approximately 1,060 hectares and became the largest forest fire in the modern history of the Czech Republic. In the immediate aftermath, the Ministry of the Environment commissioned a rapid study involving researchers from the Czech Geological Survey, CzechGlobe, the Institute of Botany of AV ČR, other research organisations, and universities. The analysis was prepared within only a few months and examined the combination of drought, wind, vegetation, visitor behaviour, landscape conditions, and other factors that shaped the fire's origin and spread (*Hruška et al., 2023*). The researchers challenged simplified explanations that attributed the scale of the event to a single forest-management decision. Such rapid synthesis illustrates the difference between scientific advice and political narrative. Crisis debate often rewards one clear cause because it enables immediate blame; ecological systems usually contain interacting causes whose relative importance must be evaluated. Academy research continued after the emergency, examining ecological recovery, soil conditions, biodiversity, and future fire risk. In 2025, AV ČR issued a dedicated AVex expert statement on wildfires and their impacts on environment and society, combining contributions from the Institute of Botany, Biology Centre, CzechGlobe, and the Czech Geological Survey. The transition from the 2022 emergency study to the 2025 institutional statement demonstrates how immediate investigation can be converted into long-term preparedness.

The continuing evolution of FireRisk further illustrates this shift from post-disaster explanation to anticipatory advice. By 2024 the system was providing repeatedly updated assessments of vegetation-fire danger, and researchers warned when unusually prolonged conditions produced high or very high risk in parts of the Czech Republic. Fire science thus became linked with meteorology, drought monitoring, forest condition, land management, and emergency preparedness. The increasing frequency of heat waves and dry periods means that a phenomenon once regarded as peripheral to the Czech climate is becoming more relevant to national planning. This is an important historical change in the meaning of environmental expertise. Czech institutions developed much of their 20th-century hazard knowledge around floods, storms, industrial accidents, and other risks familiar to the region. Climate change is altering the hazard portfolio itself. Scientific advice must therefore anticipate events for which institutional memory is weaker. The Academy's value lies partly in its ability to connect Czech observations with international climate and ecological research rather than relying solely on historical local experience. A society prepared only for the disasters it has already experienced may remain highly vulnerable to those becoming probable for the first time.

Water security demonstrates the same logic in a slower form. Drought research, drinking-water availability, groundwater protection, agricultural demand, industrial use, contamination, and climate change increasingly intersect within Czech public policy. AVex statements on drinking water in 2019, drought in 2019, climate change in 2020, and protection zones for water sources in 2025 show a sustained movement from describing environmental stress towards analysing institutional responses. The 2025 expert statement on water-source protection was prepared with involvement from the Institute of Hydrodynamics, the Institute of State and Law, and university partners. This interdisciplinary composition is significant because a technically adequate understanding of water quality cannot by itself resolve questions of regulation, land use, legal authority, and enforcement. The environmental crisis is therefore partly a governance crisis. Scientific advice becomes most useful when it identifies where the relevant problem lies outside the traditional boundary of a single discipline. The same applies to soil degradation, invasive species, mine reclamation, and agricultural adaptation. These issues may appear less dramatic than an epidemic or military invasion, but they can generate cumulative effects on food security, health, ecosystems, and regional economies. An academy capable of maintaining attention across political cycles can make such slow-moving risks more visible before they become acute emergencies.

The Academy's crisis role therefore increasingly resembles what science-policy scholarship describes as knowledge brokerage. Evidence rarely moves automatically from a research article into a government decision. Someone must define the policy question, identify relevant disciplines, evaluate the quality of evidence, synthesise competing findings, communicate uncertainty, and translate technical conclusions into options that decision-makers can understand. Gluckman, Bardsley, and Kaiser argue that effective brokerage requires pluralistic evidence synthesis, transparency, integrity, and careful separation between scientific assessment and the values that belong to political choice (*Gluckman, Bardsley, & Kaiser, 2021*). AV ČR's network structure gives it considerable capacity for this function but also creates organisational difficulties. Relevant expertise may be dispersed across several institutes, universities, and external organisations. During an emergency, institutional boundaries can slow coordination unless relationships have already been established. The success of COVID testing, drought monitoring, wildfire assessment, or refugee research often depended upon networks that existed before the crisis or were assembled from people who already knew one another professionally. Crisis preparedness is therefore partly relational. Databases, laboratories, and models matter, but so do trusted channels between scientists, ministries, hospitals, schools, emergency services, municipalities, media, and international partners. The Academy's advisory capacity is strongest when these relationships are maintained during normal periods rather than improvised only after a crisis begins.

Speed remains one of the most difficult institutional problems. Academic research normally rewards verification, careful methodological design, peer criticism, and reluctance to make claims before evidence is mature. Crisis management rewards timely answers. A perfectly validated study arriving six months after a critical policy decision may be scientifically excellent and practically irrelevant to the immediate emergency. Yet excessively rapid advice can propagate errors, especially when data quality is poor and researchers are pressured to give categorical answers. The pandemic showed this tension repeatedly. Preliminary findings entered media and policy debate before normal peer-review cycles were complete; models changed as behaviour and viral characteristics changed; apparently promising medical interventions sometimes failed under stronger testing. Similar problems arise in environmental

disasters, where political pressure for a single explanation begins before field evidence has been fully collected. The appropriate solution is not to abandon scientific caution but to make the status of evidence explicit. Preliminary estimates, scenario models, expert judgement, peer-reviewed findings, and established consensus should not be communicated as though they possess identical certainty. International guidance on scientific advice during COVID-19 stressed precisely this need for clarity about uncertainty, roles, evidence quality, and transparency (*OECD, 2020*). The Academy's credibility during crisis therefore depends upon its ability to be rapid without pretending that provisional knowledge is final.

Political independence creates an equally delicate challenge. Advice that never disagrees with government risks appearing administratively captured, while advice that routinely becomes political opposition can lose its character as scientific assessment. AV ČR occupies an institutionally useful middle position because it receives public funding yet is organised as a network of autonomous public research institutions rather than a ministry. This allows researchers to cooperate deeply with the state without being identical to it. AVex explicitly describes its expert statements as independent bases for public decision-making. The institutional value of that independence becomes greatest during emergencies, when governments face strong incentives to defend earlier decisions and political opponents face equally strong incentives to interpret every problem as evidence of failure. Scientific institutions must resist both pressures. Their responsibility is to update conclusions when evidence changes, including when this is politically inconvenient. At the same time, advisers should not conceal value judgements inside technical language. Decisions about acceptable risk, redistribution of economic costs, restrictions on liberty, or military strategy cannot be settled by data alone. Scientific advice preserves democratic legitimacy when it expands the range of informed options rather than attempting to replace political responsibility.

Crisis experience also demonstrates why the humanities should not be excluded from the advisory ecosystem. Historical research can show how societies responded to previous epidemics, wars, population movements, economic collapses, or environmental disasters. Philosophy can clarify ethical assumptions embedded in decisions about risk and responsibility. Linguistics and communication research can identify how terminology shapes public understanding. Ethnology can analyse migration, cultural adaptation, and community responses. Legal scholarship can define the constitutional limits of emergency measures. Historians and area specialists can provide context for conflicts whose origins are easily simplified in political rhetoric. The Russian invasion of Ukraine, for example, cannot be understood solely through military data; it also involves imperial history, national identities, memory politics, language, religion, and the long development of Russian and Ukrainian statehood. Similarly, public resistance to environmental or health measures cannot always be explained as ignorance. It may express historically accumulated distrust of institutions or perceptions of unequal treatment. The Academy's combination of natural sciences, social sciences, and humanities therefore gives crisis advice a breadth that specialised technical agencies may not possess. This multidisciplinary capacity is one of the distinctive public assets inherited from the academy model itself.

The accumulated cases from floods to COVID-19 and from drought to the war in Ukraine also reveal that contemporary crises increasingly overlap. A climate event can become an agricultural crisis, then a food-price problem, then a social and political conflict. A pandemic can become an educational, economic, psychological, and constitutional crisis. A military invasion can become a refugee, energy, inflation, information, and scientific-mobility crisis.

Wildfire risk can connect ecology, tourism, emergency services, forestry, regional economies, and climate adaptation. These interactions make disciplinary silos particularly dangerous. The relevant unit of analysis is increasingly not the isolated hazard but the resilience of interconnected systems. The Academy's Strategy AV21 and later policy-oriented programmes reflected this broader understanding by organising research around large societal challenges rather than only traditional disciplinary boundaries. The emergence of SYRI after COVID-19 moved in the same direction from another institutional angle. Crisis advice therefore became one of the contexts in which interdisciplinarity ceased to be merely an intellectual aspiration and became an operational necessity. The question confronting AV ČR was not whether biology, economics, sociology, law, and informatics could cooperate in principle, but whether they could do so quickly enough to help society when the next system-wide disruption occurred.

A further lesson concerns international dependence and cooperation. None of the major crises considered here has been purely Czech. Flood-producing weather systems cross borders, drought affects Central European agriculture, viruses circulate internationally, Russian aggression transformed the European security order, energy markets connect states, refugees move across jurisdictions, and digital misinformation ignores national boundaries. Scientific advice therefore depends upon international data, professional networks, common standards, and comparative evidence. Czech Academy researchers participate in European infrastructures, global databases, international collaborations, and cross-border projects that become especially valuable during emergencies. During the pandemic, diagnostic methods and epidemiological evidence were exchanged internationally at extraordinary speed. Drought systems used meteorological and satellite data from several international sources. Fire-risk research compared Czech conditions with broader European climate trajectories. Ukrainian-refugee research benefited from comparison across host societies. International scientific integration is therefore not a luxury separate from national resilience. It is part of the infrastructure through which a medium-sized state gains access to knowledge that no domestic research system could reproduce entirely on its own. The post-1989 internationalisation of AV ČR, discussed elsewhere in this book as a transformation of scientific quality and institutional identity, thus also acquired an unmistakable security dimension.

The relationship between crisis expertise and institutional memory is equally important. Each emergency generates enormous quantities of data, reports, models, temporary committees, informal networks, and practical knowledge. Once the immediate danger recedes, there is a tendency for these arrangements to dissolve. OECD guidance has repeatedly warned that knowledge generated during crises should be structured, preserved, and used to improve future advisory capacity (*OECD, 2018*; *OECD, 2020*). The Academy is particularly well suited to this function because its institutes persist across political cycles and can preserve datasets, methodologies, publications, and professional communities after emergency organisations disappear. The researchers studying drought in 2026 can build upon monitoring initiated a decade earlier. Pandemic economists can compare later labour-market developments with data collected during lockdowns. Sociologists examining Ukrainian integration can use longitudinal panels rather than isolated snapshots. Ecologists investigating wildfires can compare post-fire regeneration over multiple years. Institutional continuity therefore converts one crisis into knowledge for the next. This is another sense in which archives, laboratories, long-term datasets, and research teams become strategic assets. The public value of scientific

institutions is not merely that they respond to emergencies but that they remember them professionally.

Thus, scientific advice during social, health, environmental, and security crises has become one of the clearest expressions of the Czech Academy of Sciences' evolving role in democratic society. The Academy does not command emergency services, enact legislation, determine military strategy, or possess the democratic mandate of elected government, yet it supplies something that each of these functions increasingly requires: organised, professionally tested knowledge capable of surviving political pressure and short decision cycles. The floods of 1997 and 2002 demonstrated how environmental disasters could stimulate new systems of forecasting, preparedness, and expert coordination. The droughts of the 2010s transformed CzechGlobe and InterSucho into important interfaces between long-term climate research and practical agricultural, forestry, and water-management decisions. AVex subsequently provided a more formal route through which Academy institutes could translate expertise on drought, water, climate, viruses, migration, energy, artificial intelligence, industrial transformation, and wildfires into material intended for public authorities. COVID-19 revealed the full breadth of the Academy's crisis capacity, from molecular diagnostics and testing infrastructure to mathematical modelling, economics, behavioural science, law, psychology, and sociology. The Russian invasion of Ukraine then demonstrated that scientific institutions themselves belong to the infrastructure of democratic resilience: they protected threatened researchers while contributing evidence on refugees, integration, energy, misinformation, and social stability. Environmental emergencies such as the Bohemian Switzerland wildfire further showed how rapid scientific investigation can evolve into long-term preventive policy advice. Across these different cases, the strongest responses were rarely created entirely after the crisis began; they depended upon laboratories, datasets, scientific schools, international networks, and professional relationships developed over many previous years. Crisis advice therefore reveals a central paradox of research policy: the capacity to respond rapidly is produced slowly. The Academy's public value lies precisely in preserving that slow accumulation of expertise between emergencies and making it available when society suddenly needs answers faster than ordinary research cycles can provide them. Yet this transition from accumulated knowledge to emergency advice raises another institutional problem: how can a research organisation combine the long temporal horizon required for serious expertise with the speed demanded by crisis politics? That tension between accumulated competence and immediate intervention forms the subject of "Long-Term Expertise and Rapid Response."

2. Long-Term Expertise and Rapid Response

The apparent contradiction between long-term scientific research and rapid crisis response lies at the centre of the modern public role of the Czech Academy of Sciences. Research institutions are normally designed to operate on temporal scales radically different from those of political emergencies. A serious experimental programme may require many years before its results become reliable, while longitudinal social research may depend upon repeated observations across decades. Historical scholarship can take years of archival work, and climate science depends upon time series that acquire greater explanatory value precisely because they are maintained over long periods. Crisis politics, by contrast, compresses decision-making into days, hours, and sometimes minutes. Governments confronted by an

epidemic, energy shortage, flood, war, or social disruption cannot wait for the ordinary academic cycle of project design, data collection, peer review, and publication to conclude. Yet the speed required by politics does not mean that useful expertise can itself be produced quickly. On the contrary, the capacity to provide responsible advice at short notice usually depends upon intellectual, human, technological, and organisational resources accumulated long before the emergency appears. International studies of science advice repeatedly stress that knowledge systems, expert networks, data infrastructures, and relationships between researchers and crisis managers must be built during periods of relative stability if they are to function under pressure (*OECD, 2018*). The crucial analytical distinction is therefore between the speed with which expertise is mobilised and the much slower process through which expertise is created. AV ČR's experience since the 1990s illustrates this distinction with unusual clarity because many of its most visible rapid interventions were possible only because apparently non-urgent basic research had been sustained for years or decades beforehand.

This temporal asymmetry helps explain why permanent research institutions matter even in a scientific system increasingly organised through competitive projects. Grant-funded research is indispensable for directing resources towards strong ideas and encouraging competition, but a grant is normally constructed around a defined research problem, timetable, methodology, and set of expected outputs. A major crisis rarely respects those boundaries. It generates questions that were not specified when existing projects were written and may require researchers to redirect equipment, staff, databases, or analytical capacity towards entirely new purposes. A pandemic can suddenly make a laboratory specialising in molecular mechanisms relevant to national diagnostics, even though diagnostic service was never part of its original research plan. A drought can turn an experimental climate model into an operational instrument for farmers and ministries. A war can transform research on migration, energy, political communication, or regional history into an urgent source of public advice. Long-term institutional funding therefore creates a degree of scientific optionality that tightly specified projects alone cannot provide. It maintains people and capabilities whose future applications cannot always be predicted. This is one reason why national academies have historically combined project-based science with relatively durable institutional structures. The continuity of AV ČR institutes after the transformation from ČSAV did not merely preserve historical organisations; it preserved what might be called a national reserve of cognitive capacity. That reserve becomes especially visible when an unexpected event forces researchers to answer questions nobody had included in a grant proposal three years earlier.

The relationship between continuity and responsiveness is also rooted in the organisational form of the Academy. AV ČR is not one laboratory or one policy institute but a distributed system of specialised research organisations whose disciplinary traditions stretch across generations. Such a structure appears cumbersome when judged only by the speed of administrative decision-making, because expertise is dispersed among institutes, departments, teams, and infrastructures rather than concentrated within a single central office. Yet the same dispersion creates resilience. Different crises activate different portions of the system, and complex crises activate several at once. During COVID-19, expertise in molecular biology, chemistry, medicine, statistics, economics, psychology, sociology, law, and information science could be mobilised without the Academy having to invent these disciplines in response to the emergency. The war in Ukraine similarly activated historians, area specialists, economists, migration researchers, political scientists, legal scholars, energy

researchers, and international-cooperation structures. Environmental crises draw upon climate science, ecology, hydrology, geology, remote sensing, agriculture, and increasingly behavioural and social research. The Academy's strength therefore lies less in possessing one universal crisis unit than in preserving a broad ecosystem from which relevant expertise can be assembled. This ecosystem approach corresponds closely to international recommendations that complex emergencies require ready access to multiple disciplinary perspectives and that expert networks should be established before crises rather than improvised after they begin (*OECD, 2018*). A diversified academy can consequently appear slow in ordinary administrative terms while remaining remarkably fast in epistemic mobilisation.

Human expertise constitutes the most important element of this reserve because equipment and datasets acquire value only when communities exist that understand how to use them. The previous chapter's discussion of scientific schools and disciplinary cultures showed that researchers inherit more than published conclusions from their predecessors. They acquire tacit knowledge about instruments, anomalous results, source criticism, field conditions, experimental design, model assumptions, and the limits of particular methods. Such knowledge cannot be reconstructed instantly from manuals when an emergency occurs. An experienced virologist recognises laboratory problems that may not be obvious from a written protocol, just as a climatologist understands which apparent anomaly deserves attention because it resembles or differs from earlier events. A sociologist who has worked for years with Czech survey data knows where changes in questionnaire wording, sampling, or political context complicate comparisons. An archaeologist can evaluate whether an apparently spectacular discovery is plausible partly because decades of professional experience have created an internal comparative archive. Long-term scientific employment therefore stores knowledge inside people as well as institutions. This is one reason why repeated disruption of research teams can reduce crisis capacity even if physical infrastructure survives. A laboratory can be rebuilt more quickly than a community possessing twenty years of accumulated judgement. AV ČR's institutional continuity has consequently had a strategic significance extending well beyond the preservation of organisational names.

The same principle applies to research infrastructure. Large instruments, specialised laboratories, biological collections, supercomputing resources, archives, databases, field stations, observatories, experimental facilities, and highly controlled technical environments are usually justified through their contribution to scientific discovery. Yet crises can reveal a second function: they constitute latent national capacity. The emergency academic testing programme during the first phase of COVID-19 is perhaps the clearest example. Academy and university laboratories processed tens of thousands of samples between March and June 2020, with more than 250 scientists, technicians, and other volunteers participating in the extraordinary operation. When epidemiological conditions improved, most laboratories returned to their original work, but the scientific initiative explicitly stated that the infrastructure and personnel remained ready to be mobilised again if circumstances deteriorated. The organisers interpreted this experience as evidence that investment in research infrastructure had created technological and human capital on which the country could rely under exceptional conditions (*Czech Academy of Sciences, 2020*). The laboratories had not been financed originally as a reserve public-health service, yet their existence increased the state's effective diagnostic capacity at a moment when the established system was under pressure. Scientific infrastructure therefore resembles other forms of strategic infrastructure in one important respect: some of its value lies in capabilities that remain

unused during normal conditions but can be activated when ordinary systems become insufficient.

COVID-19 also demonstrated why such latent capacity cannot be measured simply by counting machines. The Academy's rapid response depended upon the prior existence of teams accustomed to molecular diagnostics, nucleic-acid isolation, robotics, biosafety procedures, protein research, virology, and high-throughput laboratory work. Researchers could modify procedures because they understood the underlying science rather than merely following commercial kits. This became particularly important when international supply chains were disrupted and standard diagnostic reagents became difficult to obtain. Alternative methods developed and verified by Czech researchers could reduce dependence upon scarce commercial materials because the necessary knowledge already existed in the research community. Basic biochemical and molecular expertise was therefore converted into operational resilience. The episode provides an almost textbook illustration of the temporal structure of scientific preparedness. The rapid procedure might be designed in days or weeks, but the competence required to design it had been built through years of research. The same was true of the researchers capable of evaluating filtration materials, adapting robotic equipment, or developing new biosensors. None of these capacities could have been ordered from a catalogue after the state of emergency was declared. The pandemic thus made visible an institutional truth that is easily forgotten during periods of fiscal normality: scientific systems create options whose value cannot be calculated solely from the immediate outputs for which they were originally funded.

Long-term datasets represent another form of stored capacity. Some scientific questions can be answered rapidly only because observations were collected patiently when nobody knew precisely which future question would make them indispensable. Environmental science provides the most obvious examples because the significance of an extreme year depends upon comparison with many non-extreme years. A dry summer may appear remarkable to contemporary observers, but only long meteorological, hydrological, ecological, and phenological series can show whether it is unprecedented, part of a recurrent pattern, or evidence of a sustained climatic shift. CzechGlobe and collaborating institutions have progressively integrated contemporary monitoring with long historical records and modelled future conditions. The Fenofáze platform, for example, uses long phenological series extending in some cases across approximately six decades, while current observations are continually added by professional and volunteer observers and used alongside modelling and satellite calibration. Such records create a bridge between historical baseline, present monitoring, and prediction. Their immediate policy relevance increases precisely because they were not created only in response to one particular emergency. A state that begins collecting environmental data only when drought is already severe cannot reconstruct the baseline it failed to observe. Long-term scientific monitoring therefore constitutes a form of anticipatory public service even when its future practical applications remain uncertain.

The development of InterSucho demonstrates how this patient accumulation of environmental expertise can produce increasingly rapid and operational responses. The Czech drought-monitoring system did not emerge from a sudden technical mobilisation during one exceptionally dry summer. Its developers emphasise that the platform, publicly available from the early 2010s, was built upon more than a decade of earlier climatological research and long-standing interdisciplinary cooperation. Once established, however, the system could move progressively closer to real-time decision support. It combined meteorological information,

soil-water modelling, observations from field reporters, remote-sensing products, and later increasingly dense networks of automated measurements. By 2025, after roughly a decade of operational experience, InterSucho had been redesigned to provide users with more detailed information down to district and cadastral levels and to integrate hundreds of observational stations with related services. The project's development therefore moved through several temporal layers: decades of scientific knowledge created the conceptual basis, years of system construction created operational reliability, and current data now enable rapid warnings and localised assessment. The resulting platform can react quickly precisely because its scientific and organisational architecture was developed slowly. (*Czech Academy of Sciences, 2025*).

InterSucho also illustrates how long-term expertise can generate a family of rapid-response instruments rather than one fixed service. Once researchers had created models, datasets, software, professional networks, and user communities for drought monitoring, these resources could support related systems concerned with wildfire danger, agricultural risk, forest conditions, phenology, and water retention. FireRisk and AgroRisk did not have to begin from an institutional vacuum because they could draw upon the methodological and technological ecosystem already built around CzechGlobe's environmental monitoring. By 2026, the same research community was working with farmers in the Dyje basin on measures designed to retain more water in the landscape, moving from diagnosis towards practical adaptation. The trajectory is analytically important because it shows that rapid response becomes stronger when institutions do not treat each crisis as an isolated event. Drought, heat, wildfire, agricultural stress, forest vulnerability, and water scarcity are interconnected phenomena, and infrastructures developed for one can increase preparedness for another. The scientific system therefore accumulates not only data but reusable organisational architecture. This is one reason why continuity matters in environmental research: a mature monitoring network can adapt to new hazards more quickly than a succession of temporary projects constructed independently from one another.

The globalisation of Czech drought forecasting provides another indication of how accumulated competence changes the scale of possible intervention. In 2021, researchers associated with InterSucho cooperated with the Windy.com platform to extend drought monitoring and forecasting to a global scale, making near-real-time information accessible through a widely used international digital service. The project drew upon methods originally developed for Czech and Central European conditions but demonstrated that the analytical capacity had matured sufficiently to be adapted to a much broader geographical domain. By 2025, CzechGlobe researchers and international partners had also launched a global system monitoring reported drought impacts, adding another layer to the observational architecture. These developments are relevant to crisis responsiveness because environmental emergencies increasingly cross borders and because national institutions benefit from methods tested across many climatic contexts. Internationalisation expands the comparative experience available to Czech researchers while simultaneously increasing the international value of Czech scientific infrastructure. Rapid domestic advice can therefore be strengthened by tools developed through global collaboration rather than weakened by it. The long-term international integration of AV ČR after 1989, often discussed primarily in terms of scientific excellence, consequently has a second meaning: it enlarges the pool of data, models, professional contacts, and methodological alternatives available when a crisis demands immediate interpretation.

The same temporal logic can be seen in social research, although its infrastructures are less visually obvious than laboratories or environmental stations. Societies generate crises whose consequences cannot be measured with physical instruments alone. Employment losses, educational inequality, changing political trust, refugee integration, mental health, household insecurity, and attitudes towards emergency measures require carefully designed surveys, administrative data, longitudinal studies, and social-scientific interpretation. These capacities depend upon organisations that understand representative sampling, questionnaire design, causal inference, statistical modelling, and the historical context of Czech institutions. When COVID-19 appeared, economists and social scientists could respond quickly because they were not beginning their knowledge of the Czech labour market, schools, inequality, or public policy in March 2020. The IDEA anti-COVID initiative at CERGE-EI was able to issue repeated analyses of economic, behavioural, educational, and regulatory questions because it drew upon accumulated expertise and existing institutional networks. Its rapid publications were therefore a different kind of emergency infrastructure: instead of processing biological samples, they processed policy questions through established analytical competence. The speed of the output would have been impossible without long preparation at the level of careers, datasets, research communities, and international literature.

The pandemic also revealed a structural weakness of ordinary research funding that became a subject of explicit reflection within Strategy AV21. Daniel Münich, coordinating the programme *Society in Motion and Public Policies*, later emphasised that one of its major advantages was the capacity to react operationally to new and unexpected social problems in ways that ordinary standard grant projects often could not. The programme connected several Academy institutes with external public, non-profit, and private-sector partners and provided a framework within which researchers could redirect attention when social circumstances changed. This flexibility is institutionally significant. Competitive grants normally protect scientific quality by requiring advance specification, but the very mechanism that increases predictability can reduce responsiveness when events invalidate the original timetable. Strategy AV21 introduced a programme architecture broad enough to preserve scientific coherence while allowing new problems to enter during implementation. It therefore created a middle layer between stable institutional funding and narrowly defined project funding. This model does not eliminate the need for competitive grants, nor should every research programme be permanently reorganised around current events. It does, however, recognise that public-interest research requires some resources whose use can adapt to societal change. The experience suggests that scientific systems become more resilient when their funding portfolio includes both long-duration continuity and bounded flexibility.

Strategy AV21 more generally institutionalised the idea that socially important research should be organised before political demand becomes urgent. Since its launch in the mid-2010s, the programme has created interdisciplinary networks around topics such as energy, water, health, environmental change, food, public policy, communication, and social resilience. Its value in crisis conditions lies less in producing ready-made answers to every future emergency than in ensuring that researchers from relevant disciplines already know how to work together. By 2026, fifteen programmes were active, and the Academy was explicitly moving towards stronger coordination, presentation, and transfer of the resulting knowledge. Newly developed programmes included infectious diseases and the global biodiversity crisis, while the continuing resilience programme addressed trust, psychological resilience, participation, crisis communication, and historical models of dealing with disruption. Such themes clearly

reflect lessons learned from COVID-19, war, climate pressures, and other recent shocks. Yet their institutional significance lies in converting those lessons into sustained research rather than allowing expertise to disperse when media attention moves elsewhere. The Academy thus increasingly treats crisis preparedness as a research agenda extending across political cycles. (*Czech Academy of Sciences, 2026*).

The programme "Resilient Society for the 21st Century: Crisis Potentials and Effective Transformation" makes this shift especially explicit. Its conceptual starting point is that resilience cannot be reduced to the capacity to return society mechanically to its pre-crisis condition. Some crises expose structural weaknesses so serious that successful recovery requires transformation rather than restoration. Researchers therefore examine how individuals and communities process fear, how trust is sustained or lost, how participation affects legitimacy, how communication functions during uncertainty, and what historical experiences reveal about adaptation to disruption. This approach adds a crucial temporal dimension to rapid response. Immediate action may stop damage, but long-term research determines whether society learns from the event or merely survives it. Pandemic restrictions, for example, could be evaluated not only according to immediate infection control but through later consequences for education, trust, mental health, and social inequality. The war in Ukraine similarly requires both emergency assistance and longer analysis of integration, social cohesion, security, and the transformation of European political assumptions. Climate crises demand emergency management of drought or fire while also forcing reconsideration of land use and infrastructure. Long-term expertise therefore allows the Academy to connect the urgency of response with the slower politics of adaptation.

The establishment of SYRI after the pandemic represents another attempt to preserve expertise beyond the crisis that initially made it politically visible. The National Institute for Research on the Socioeconomic Impacts of Diseases and Systemic Risks brought together approximately 150 researchers from the Czech Academy of Sciences, Masaryk University, and Charles University. Its research agenda extends from misinformation and political behaviour to educational conditions, social peripheries, psychological resilience, and other dimensions of systemic vulnerability. The institutional lesson is important because many emergency research groups disappear once extraordinary funding ends. Their members return to other projects, datasets become difficult to maintain, and networks built under pressure gradually weaken. SYRI sought instead to convert pandemic-era cooperation into a more durable interdisciplinary infrastructure. It recognises that the next systemic crisis may not be biomedical even though many of the relevant social mechanisms will recur. Distrust, unequal access to resources, misinformation, institutional coordination, and psychological stress can amplify very different hazards. Preserving expertise in these mechanisms makes future responses faster because researchers do not have to reconstruct the social-scientific problem from the beginning. The Institute therefore represents a move from reactive crisis research towards institutionalised resilience research.

A similar transformation occurred in the relationship between the Academy and policymaking through AVex. Expert advice had always been produced by individual institutes and researchers, but until the late 2010s it remained dispersed among committees, reports, personal consultations, and disciplinary channels. Beginning in 2019, AVex created a recognisable institutional format for independent expert statements intended for legislators and other representatives of the state. Early documents addressed Big Data, drinking water, drought, and genetically modified crops, while later statements expanded to antibiotic

resistance, climate change, viruses, migration, mining, energy, archaeological heritage, artificial intelligence, water protection, and wildfires. The importance of AVex for rapid response lies not simply in the possibility of producing a document quickly. More fundamentally, it creates an established pathway through which policymakers already know where Academy expertise can enter the decision-making process. Institutionalised interfaces reduce transaction costs during emergencies because actors do not have to invent the relationship between science and government every time a new problem appears. The relevant institute acts as scientific guarantor, while the Academy provides an identifiable framework for the advice. In this sense, AVex converts dispersed long-term expertise into a reusable policy instrument. (*Czech Academy of Sciences, 2019*).

The importance of such interfaces has been reinforced by the wider European debate about scientific advice under complexity and uncertainty. In 2019, the Academy drew attention to the work of SAPEA, the consortium of European academies contributing to the European Commission's Scientific Advice Mechanism. The central problem identified in that debate was precisely that the issues for which politicians most urgently require scientific advice—climate change, pollution, digital transformation, economic disruption, and similar systemic challenges—are often those in which evidence is complex, incomplete, or contested. Long-term expertise therefore does not eliminate uncertainty. It improves the capacity to characterise uncertainty intelligently. A mature research community can distinguish what is known with high confidence from what is plausible, poorly measured, or still genuinely disputed. This distinction becomes particularly valuable during rapid decision-making, because political actors may otherwise mistake the absence of perfect certainty for the absence of useful knowledge. The scientific adviser's task is consequently not to accelerate research until uncertainty disappears, which is often impossible, but to compress a complex evidential landscape into an honest map of what decision-makers need to know now. Institutions such as AV ČR are valuable partly because their reputations permit them to perform this brokerage without being reducible to commercial consultancy or partisan advocacy. (*SAPEA, 2019*).

The Academy's response to the Russian invasion of Ukraine demonstrates that rapid institutional action also depends upon organisational preparation outside the narrow domain of research advice. The Researchers at Risk Fellowship programme was approved by the Academy Council on 8 March 2022, less than two weeks after the full-scale invasion began. Academy representatives later explained that an initiative of this kind would normally require several months to design and approve, whereas the complete programme had to be prepared for a Council meeting only a little over a week after the outbreak of war. Such speed was possible partly because the International Cooperation Division had already been considering a more modest programme for endangered researchers before the invasion. The crisis therefore did not produce the concept from nothing; it transformed a partially prepared institutional idea into an urgent large-scale mechanism. Existing relationships between Czech and Ukrainian institutes accelerated implementation further because many potential host teams already knew Ukrainian colleagues professionally. In the first round, sixty-seven proposals were approved and fifty-three fellowships were ultimately realised, with twenty-four Academy institutes hosting researchers. The example is striking because it shows that preparedness may exist in unfinished forms. A policy concept, international network, administrative template, or professional relationship can become a strategic resource when events suddenly increase the scale of need.

The role of EURAXESS in this mobilisation reveals another dimension of long-term institutional readiness. The network had been assisting foreign researchers arriving in the Czech Republic since 2004, long before mass displacement from Ukraine was anticipated. After February 2022, its established experience with immigration procedures, administrative support, and integration could be intensified rather than invented from the beginning. This matters because scientific mobility during crisis is not solved merely by offering a salary. Researchers fleeing war may require visas, accommodation, family support, access to schools, recognition of documents, laboratory space, computer accounts, and rapid integration into unfamiliar teams. Administrative expertise therefore becomes part of the scientific response. The long history of Czech participation in European researcher-mobility structures created bureaucratic competence that could be repurposed during a humanitarian emergency. This example complicates the tendency to imagine crisis readiness only in terms of laboratories or specialist researchers. Effective scientific institutions also require administrative systems capable of moving quickly without abandoning legal and ethical standards. The capacity of AV ČR to protect endangered research careers in 2022 rested partly upon forms of institutional knowledge that had been accumulated through ordinary internationalisation for almost two decades.

Research on Ukrainian refugee integration provides a parallel example on the analytical side. The immediate arrival of large numbers of refugees created strong political demand for information about employment, housing, language skills, education, welfare, and intentions to remain in the Czech Republic. Rapid surveys could provide early snapshots, but responsible policy required longitudinal evidence capable of distinguishing temporary emergency conditions from more durable patterns. Czech social scientists therefore developed repeated studies following refugee populations over time and connected research with ministries responsible for labour, social affairs, and internal administration. The value of this approach lies in combining two tempos. Early waves of data can inform immediate decisions, while subsequent waves show whether policy interventions and integration processes are changing the situation. Employment rates may improve while occupational downgrading persists; language skills may rise while housing insecurity remains; school participation may increase while regional differences continue. Longitudinal design prevents policymakers from mistaking one moment for a stable condition. It also demonstrates that rapid response is not simply about producing the first available number. The strongest advice often requires institutions capable of continuing observation after the political urgency has declined.

Energy research after February 2022 offers a particularly revealing counterexample to simplistic expectations of rapid science. Russia's invasion of Ukraine and the resulting European energy crisis created immediate political pressure for secure alternatives to imported fossil fuels. Researchers at AV ČR could contribute expertise in nuclear fusion, materials, chemistry, renewable-energy pathways, economics, and low-emission technologies. Yet Academy communication surrounding the Czech Presidency of the Council of the European Union explicitly acknowledged a crucial limitation: long-term research into technologies such as thermonuclear fusion could not provide electricity for the coming winter. This admission illustrates scientific responsibility rather than institutional weakness. Some forms of expertise can inform immediate conservation, market regulation, and diversification decisions, while others shape energy strategy over decades. A crisis does not accelerate the physical maturation of every technology simply because political demand has intensified. The Academy's role is therefore partly to protect long-term horizons against emergency distortion.

It can explain which technologies are available now, which require further development, and which may become strategically important only in the future. The energy crisis thus demonstrates that rapid response sometimes consists of telling policymakers what science cannot rapidly deliver.

This distinction is fundamental because crisis politics naturally privileges immediacy. Measures that produce visible results within weeks are easier to justify than research whose benefits may appear only after ten or twenty years. Yet a state that responds to every emergency solely with short-term measures risks repeatedly encountering the same vulnerability. Energy security provides one example, but similar patterns apply to infectious diseases, water management, cybersecurity, food systems, and demographic change. The absence of a crisis can create pressure to reduce apparently redundant capacity, while the arrival of a crisis reveals that redundancy was actually resilience. This cycle is familiar in public health, where laboratory networks, emergency stockpiles, and specialist expertise can appear expensive until they are suddenly indispensable. Scientific institutions face a comparable problem because the value of unused capability is difficult to demonstrate through conventional productivity metrics. A researcher maintaining expertise in a rare pathogen, an engineer preserving an unusual measurement system, or a historian sustaining competence in a politically neglected region may appear peripheral during ordinary years. When circumstances change, that expertise can become strategically central. National research policy must therefore tolerate a certain degree of uncertainty about future usefulness if it wishes to maintain genuine preparedness.

The financial architecture of research consequently matters for crisis resilience. If every research group depends entirely upon short grants tied tightly to predetermined outputs, laboratories and teams may have little capacity to redirect effort when urgent problems appear. If funding is entirely institutional and insulated from evaluation, however, responsiveness may be weakened by inertia. AV ČR has historically operated through a combination of institutional support, competitive national and European grants, Strategy AV21 programmes, technology-transfer mechanisms, and other targeted schemes. The experience of recent crises suggests that the diversity of this portfolio is itself valuable. Institutional funding preserves continuity, grants drive competition and specialisation, while flexible programmes can support interdisciplinary or emerging priorities. Rapid external schemes can then supplement the system when extraordinary events require additional resources. The pandemic demonstrated the value of emergency funding from bodies such as the Technology Agency of the Czech Republic, while Academy resources and private support also helped laboratories mobilise. No single mechanism could optimally serve every stage of preparedness and response. Scientific resilience therefore depends upon financial redundancy in much the same way as ecological resilience depends upon functional diversity.

Organisational networks constitute another critical resource because no Academy institute can respond effectively to systemic crises alone. The COVID testing initiative linked AV ČR institutes with Charles University, Masaryk University, Palacký University, hospitals, clinical laboratories, public authorities, and external donors. Drought monitoring connects CzechGlobe with Mendel University, the Czech Hydrometeorological Institute, farmers, foresters, international data providers, and digital platforms. Ukrainian research support depended upon Academy institutes, EURAXESS, Czech authorities, Ukrainian partners, and European mobility networks. Energy expertise during the Czech EU Presidency required interaction with governmental and European institutions. These examples demonstrate that

preparedness resides partly in relationships rather than organisational charts. A telephone number already stored, a colleague already trusted, a shared data format already agreed, or a collaboration already tested can save valuable time when institutions suddenly need to cooperate. OECD analyses of crisis science emphasise precisely this point: regular interaction between providers and users of scientific advice, as well as trusted international scientific networks, should be considered part of crisis infrastructure (*OECD, 2018*). The implication for AV ČR is that collaboration maintained during normal periods possesses strategic value even when it produces no immediate emergency output.

International networks are especially important for a medium-sized scientific system such as the Czech Republic. No country of comparable size can maintain world-leading capacity in every scientific field or independently reproduce every dataset required during a global emergency. The rational strategy is therefore to combine strong domestic expertise with deep integration into international networks. AV ČR's post-1989 reintegration into European and global science created precisely these channels. Czech researchers participate in international laboratories, data infrastructures, disciplinary societies, European research projects, mobility schemes, and advisory networks. During COVID-19, international sharing of genomic, epidemiological, and clinical information dramatically accelerated domestic understanding. Climate research depends structurally upon international observations and modelling. Security analysis benefits from area expertise and international scholarly contacts. Cross-border cooperation also enables researchers to compare national policies rather than treating Czech experience as isolated. The capacity to absorb external knowledge is itself a form of expertise, because international evidence must be evaluated and adapted to Czech institutional conditions rather than copied mechanically. OECD work accordingly treats scientific human capital and institutional capacity to absorb knowledge as long-term strategic investments central to effective crisis cooperation (*OECD, 2018*).

The human relationships linking researchers and policymakers require similarly long cultivation. Scientific advice is often imagined as though a report could simply be delivered to a ministry and transformed into policy. In reality, researchers and administrators operate according to different professional rhythms, vocabularies, incentives, and definitions of usefulness. Scientists may regard qualification and uncertainty as evidence of intellectual seriousness, while crisis managers require clearly differentiated options and explicit consequences. Researchers may structure analysis around disciplinary questions, whereas ministries must act through legal competences, budgets, and existing administrative procedures. Mutual incomprehension can therefore waste valuable time even when high-quality evidence exists. The development of AVex, Strategy AV21, IDEA policy analyses, governmental advisory participation, and newer science-for-policy initiatives can be understood partly as attempts to create translation mechanisms between these cultures. Such mechanisms are most effective when contact begins before an emergency. Repeated cooperation allows policymakers to learn which researchers are reliable and allows researchers to understand the actual informational needs of administration. Long-term expertise therefore includes expertise in using expertise.

The Academy's evolving Science for Policy agenda reflects recognition of this institutional problem. By the mid-2020s, AV ČR had begun to supplement AVex with policy papers, briefs, and recommendations explicitly intended for the decision-making sphere. Academy representatives argued that the humanities and social sciences in particular possessed substantial research relevant to public policy but that much of it failed to reach officials

because academic outputs were not translated into usable formats. They also proposed stronger coordination of the science–policy interface rather than relying entirely upon spontaneous contacts between individual researchers and ministries. The Academy Council elected for the 2025–2029 term subsequently identified deeper engagement with ministries, governmental bodies, legislative processes, and strategic documents as an institutional priority. Plans included stronger representation in advisory bodies and a coordinating role for Science4Policy. By April 2026, the Academy's broader strategic priorities explicitly included a functioning Science for Policy platform. These developments suggest that lessons from recent crises were being incorporated into organisational design. Rapid response was increasingly treated not as exceptional improvisation but as a capability requiring permanent interfaces.

The capacity to respond rapidly nevertheless depends upon protecting scientific quality from the pressures generated by speed. Emergency research creates powerful incentives to release preliminary findings because governments, journalists, and citizens urgently need information. This can be justified when delays would produce greater harm, but it increases the risk that weak evidence will acquire political authority before it has been adequately tested. The appropriate response is not to force every crisis analysis through the full ordinary publication cycle before it can be discussed. Rather, institutions need explicit categories distinguishing established knowledge, preliminary analysis, scenario modelling, expert judgement, and unresolved uncertainty. Experienced research communities are better able to make these distinctions because they possess long memories of what methods can and cannot support. Expertise therefore acts as a brake and an accelerator simultaneously. It enables researchers to work quickly because they recognise familiar structures, while restraining them from claiming more than the evidence permits. This dual function is one of the most important contributions that long-term scientific cultures make during emergencies. A newly assembled group may possess enthusiasm and computational power, but it cannot instantly reproduce decades of disciplinary judgement.

Open science can strengthen this relationship between speed and reliability when implemented responsibly. Rapid access to publications, reusable data, interoperable repositories, shared code, and transparent methodologies allows researchers to build upon one another's work rather than repeatedly starting from the beginning. During transnational crises, this can reduce duplication and help independent groups identify errors quickly. AV ČR's adoption of formal Open Science principles therefore has implications extending beyond ordinary academic publishing. The Academy explicitly links openness with the accessibility and reusability of research outputs and with the trustworthiness created by the possibility of verification. These principles can enhance rapid response because data and methods preserved in usable forms remain available when new questions arise. Yet openness also requires long-term investment in curation, metadata, legal frameworks, and technical infrastructure. A dataset stored on an obsolete computer is not genuinely reusable simply because its original researcher intended to share it. Open science therefore demonstrates again that speed during crisis depends upon maintenance during calm. (*Czech Academy of Sciences, 2025*).

Historical and cultural research provides a less obvious but equally important example of long-term expertise becoming rapidly relevant. The outbreak of war, political instability, or international conflict can create intense demand for explanations of regions, ideologies, languages, religious traditions, and historical grievances that previously attracted limited public attention. Such expertise cannot be generated responsibly by reading a few documents

after the crisis begins. Scholars may have spent decades learning languages, analysing archives, studying political institutions, and building contacts with foreign research communities. When Russia invaded Ukraine, Czech historians, Slavists, political scientists, ethnologists, and other specialists were consequently able to interpret narratives about Russian and Ukrainian history, imperial legacies, national identity, memory politics, and cultural relations. Their interventions complemented military and economic analysis by explaining why historical claims were being mobilised politically. The same principle applies to crises involving religion, migration, constitutional conflict, or cultural heritage. Humanities expertise frequently appears "non-urgent" until a society suddenly needs contextual knowledge that no emergency committee can manufacture. The long temporal horizon of humanistic scholarship therefore constitutes a form of preparedness even where its connection with security is indirect.

Archival and documentary continuity also allows crises themselves to become objects of later learning. Research institutions preserve reports, survey datasets, policy analyses, scientific publications, correspondence, and other materials through which future researchers can reconstruct what decisions were made and why. This function is essential because institutional memory tends to weaken rapidly after emergencies. Personnel change, political priorities move, temporary committees are dissolved, and informal knowledge disappears with participants. OECD recommendations therefore emphasise that knowledge generated during crises should be structured, recorded, systematised, preserved, and disseminated so that later responses can improve (*OECD, 2018*). AV ČR's archival and research culture gives it a particular capacity to perform this function. Pandemic-era survey data can be reanalysed years later; wildfire recovery can be followed over successive seasons; drought models can be recalibrated against later observations; Ukrainian integration can be assessed longitudinally rather than through memory. Scientific institutions thereby turn emergencies into cumulative knowledge. The difference between a society that merely experiences crises and one that learns from them lies partly in whether such memory survives institutionally.

Recovery is consequently not a stage outside crisis science but one of the periods in which long-term expertise becomes most important. Emergency politics understandably concentrates attention on immediate mortality, physical damage, service continuity, or security. Secondary consequences often become visible only later. School closures may affect educational trajectories years after an epidemic wave has passed. Labour-market disruptions may accelerate regional inequality. Wildfire can reorganise ecosystems over decades. War-induced migration may alter demography, schools, housing, and labour markets long after emergency reception has ended. Energy-price shocks can reshape industrial investment decisions. Scientific institutions capable of continuing research after headlines disappear can therefore detect consequences that short-lived emergency structures miss. This provides another argument for preserving teams beyond crisis-specific funding. A response system that dissolves immediately after acute danger has passed may lose the ability to determine whether its own interventions worked. Long-term research completes the feedback loop between preparedness, response, recovery, and renewed preparedness.

The concept of resilience increasingly used within AV ČR captures this cyclical relationship. Resilience is sometimes misunderstood as simple resistance—the ability to endure disruption without changing. Contemporary research instead emphasises adaptation, learning, and in some cases transformation. A scientific institution itself must be resilient in this stronger sense. It needs enough continuity to preserve expertise, yet enough flexibility to redirect

attention when circumstances change. It must protect slow research against the demand that every project solve an immediate problem, while remaining capable of making that slow research rapidly available when society requires it. It must sustain disciplinary depth while building interdisciplinary networks. It must preserve independence from government while creating reliable channels into public administration. It must internationalise without losing knowledge of Czech institutions and regions. These tensions cannot be permanently resolved because they are structural features of the academy model. The institutional achievement lies in balancing them rather than eliminating one side.

Recent changes within Strategy AV21 illustrate this adaptive understanding of institutional continuity. By 2026, the Academy was simultaneously launching programmes on infectious diseases and biodiversity while strengthening existing work on social resilience and the practical application of research. These priorities clearly respond to contemporary risk landscapes, yet they do so through multi-year research frameworks rather than temporary emergency campaigns. Biodiversity loss, emerging infection, and social resilience are precisely the kinds of problems in which the boundary between normality and crisis is difficult to define. Their consequences accumulate slowly until a threshold is crossed, after which rapid intervention may become unavoidable. Developing expertise before such thresholds are reached is therefore more efficient than waiting for a dramatic event to legitimise research. Strategy AV21 increasingly operates as a mechanism for this anticipatory mobilisation. It does not predict the exact form of the next emergency, but it helps ensure that relevant intellectual communities already exist.

The same anticipatory logic underlies the Academy's renewed emphasis on institutional stability. The strategic priorities adopted for the 2025–2029 leadership period combine aspirations for excellent basic research with stronger public-policy engagement, knowledge transfer, internationalisation, cybersecurity, modern administration, and organisational flexibility. This combination is significant because crisis readiness cannot be isolated from the ordinary quality of institutional governance. A research institute that lacks stable personnel, secure information systems, functioning records management, or clear legal frameworks may possess excellent researchers yet still respond poorly under pressure. Cybersecurity has become particularly relevant as research itself depends increasingly upon digital infrastructure and as scientific institutions can become targets of espionage, sabotage, ransomware, or politically motivated attacks. Administrative modernisation may appear distant from scientific creativity, but under crisis conditions it determines whether resources, people, and information can be mobilised reliably. Institutional resilience therefore joins scientific excellence and organisational competence.

The Academy's experience also shows why "rapid response" should not be judged solely by whether scientists provide immediate policy recommendations. Sometimes the most valuable rapid intervention is a diagnostic one: establishing that a problem has been misdefined. A wildfire may initially be explained through one politically convenient cause, while multidisciplinary analysis reveals interacting climatic, ecological, and management factors. A refugee-policy debate may be dominated by isolated anecdotes until representative longitudinal data show broader patterns. A pandemic measure may appear successful in aggregate while disproportionately harming particular groups. An energy technology may be politically attractive but incapable of contributing within the required time horizon. Scientific expertise can therefore accelerate decision-making by slowing down premature conclusions. This paradox is central to responsible crisis advice. Rapid science is not science that reaches

the fastest answer; it is science that reaches the most defensible answer within the time actually available.

The distinction between institutional responsiveness and institutional opportunism is equally important. Crises attract public attention and funding, creating incentives for researchers and organisations to rebrand existing work around fashionable emergencies. Some adaptation is entirely legitimate because new events genuinely alter the relevance of research. Yet constant redirection towards whatever dominates current headlines can weaken the very long-term expertise that makes future response possible. A national academy therefore requires mechanisms protecting research whose importance is not immediately visible. The history of AV ČR provides numerous examples of scientific programmes whose applications emerged only after many years. Pandemic diagnostics, environmental forecasting, advanced energy research, materials science, and computational methods all depended upon earlier work not originally justified by the exact emergency in which they later became useful. Long-term institutional autonomy is therefore a defence against excessive presentism. Society benefits when researchers are allowed to investigate important questions before politicians know that those questions will become urgent.

At the same time, autonomy cannot justify indifference to societal needs. The public finances a substantial part of Academy research because it expects the institution to preserve capabilities that markets and short political cycles may underprovide. This expectation creates a reciprocal responsibility. When expertise accumulated through public resources becomes relevant to a serious national problem, researchers and institutions should possess channels through which it can be mobilised. The expansion of AVex, Strategy AV21, policy papers, public expert directories, crisis collaborations, and Science for Policy reflects a gradual institutionalisation of this obligation. The Academy increasingly seeks to avoid two symmetrical failures: reducing science to immediate policy service and allowing excellent science to remain inaccessible when policymakers need it. The appropriate model is neither technocratic command nor academic isolation. It is a permanent capacity for exchange in which scientific standards remain distinct from political authority.

The Czech experience since 2020 has accelerated this institutional learning. COVID-19 demonstrated that laboratories and research teams could be mobilised on an emergency scale but also exposed weaknesses in national coordination. Researchers involved in academic testing later noted that available capacity had not always been fully used because the national testing concept and coordination remained unclear. The war in Ukraine showed that administrative mechanisms could be accelerated dramatically when leadership, pre-existing plans, and professional networks aligned. The energy crisis demonstrated both the usefulness and temporal limits of scientific advice. Environmental monitoring showed how mature platforms could move from research towards increasingly operational forecasting. SYRI and resilience programmes attempted to preserve interdisciplinary cooperation after immediate emergencies subsided. Taken together, these experiences suggest that the principal question is no longer whether AV ČR can respond to crises. It is how to make successful responses less dependent upon exceptional improvisation and more consistently embedded within institutional design.

This question also has a generational dimension. Crisis capacity will weaken if expertise remains concentrated in senior researchers without systematic transfer to younger scientists. Laboratories need doctoral students, technicians, postdoctoral researchers, software

specialists, data managers, and administrative professionals who learn not only ordinary research procedures but also how to operate under exceptional conditions. The Researchers at Risk programme indirectly demonstrated how international mobility can enlarge this human capital by integrating scientists with different experiences into Czech teams. Strategy AV21 and interdisciplinary projects similarly create environments in which younger researchers learn to work beyond narrow disciplinary boundaries. Such experience may become especially valuable when the next crisis requires rapid collaboration with unfamiliar fields. Preparedness should therefore be understood partly as education. A scientific system becomes responsive when new generations inherit both deep disciplinary competence and the capacity to translate that competence across institutional boundaries.

The problem of maintaining expertise between crises remains the most difficult. Emergency funding is politically easy to justify while television images show overflowing hospitals, burning forests, flooded towns, or refugees arriving at railway stations. Five years later, permanent preparedness may appear less urgent than competing budgetary priorities. Yet reducing capacity during calm periods merely recreates the conditions for frantic reconstruction during the next emergency. Research institutions are particularly vulnerable to this cycle because their capabilities often look intangible until used. A team of specialists may publish only a limited number of highly specialised papers, yet their collective expertise can become irreplaceable when a rare event occurs. Long-term institutional funding therefore functions partly as insurance. Like insurance, much of its value becomes obvious only when something goes wrong. Unlike ordinary insurance, however, scientific capacity also generates knowledge, education, innovation, and cultural value during periods when the insured-against crisis never occurs.

Thus, the apparent opposition between long-term expertise and rapid response is largely misleading. The experience of the Czech Academy of Sciences demonstrates that genuinely rapid scientific action is usually the visible end of a much longer process of institutional accumulation. Laboratories mobilised during COVID-19 were useful because molecular, biochemical, and technological capabilities had been developed before the virus appeared; drought forecasts became operational because climatological research and monitoring had been sustained for years; social scientists could analyse educational inequality, refugee integration, or public trust quickly because methodological expertise and data infrastructures already existed; and the Researchers at Risk programme could be launched within days because international networks and even elements of a suitable institutional mechanism predated the invasion of Ukraine. Strategy AV21, AVex, SYRI, open-science infrastructures, and the emerging Science for Policy platform represent attempts to make this relationship between continuity and responsiveness more systematic. They create intermediate structures through which stable research communities can be mobilised without being permanently reorganised around immediate political demand. At the same time, recent crises have shown that speed requires more than scientific excellence: it depends upon administrative flexibility, trusted networks, interoperable data, appropriate funding mechanisms, professional communication, and established relationships with policymakers. The strategic value of AV ČR therefore lies partly in its ability to preserve knowledge during periods when no emergency makes that knowledge politically urgent. A democratic state cannot manufacture decades of scientific experience on the day a crisis begins. It can only decide beforehand whether institutions capable of preserving such experience deserve sustained support. Long-term expertise is consequently not the opposite of rapid response but its principal precondition, while rapid

response provides one of the most visible demonstrations of why long-term research institutions matter. The remaining question is normative rather than merely organisational: if society grants science autonomy and resources partly because it may need that expertise in moments of uncertainty, what obligations follow for researchers when knowledge acquires immediate political and human consequences? This issue leads directly to "The Responsibility of Science in Democratic Society."

3. The Responsibility of Science in Democratic Society

The responsibility of science in a democratic society begins with a paradox. Scientific research requires a considerable degree of freedom from political, economic, religious, and ideological interference, yet this freedom is sustained by institutions embedded within society and, in the case of the Czech Academy of Sciences, substantially financed from public resources. Scientific autonomy therefore cannot mean social isolation or exemption from accountability. It is better understood as a protected institutional space within which evidence can be produced, criticised, revised, and communicated without requiring prior agreement with political authority. The democratic state benefits from this arrangement precisely because reliable knowledge is difficult to produce when conclusions must conform to the preferences of those who govern. At the same time, scientists do not possess a democratic mandate merely because their claims are methodologically sophisticated. They can establish facts, probabilities, causal relationships, historical evidence, technological possibilities, and the likely consequences of alternative courses of action, but they cannot legitimately replace political institutions in deciding how competing social values should ultimately be balanced. The responsibility of science therefore exists on both sides of the boundary between knowledge and power. Researchers must defend the independence required for credible inquiry, while also recognising the limits of the authority that specialised knowledge gives them. Political institutions, conversely, must remain free to make legitimate decisions while accepting responsibility when those decisions depart from well-supported evidence. This reciprocal arrangement distinguishes democratic scientific authority both from technocracy, in which expertise threatens to displace political choice, and from populist anti-intellectualism, in which professional knowledge is treated as merely another opinion. Scholars of the science–policy relationship have repeatedly emphasised that democratic expertise works best when evidence informs political choice without disguising normative decisions as purely technical necessities (*Jasanoff, 1990*; *Pielke, 2007*; *Douglas, 2009*). For AV ČR, this balance has become one of the central questions of its public identity.

The historical experience of Czech and Czechoslovak science gives this issue unusual depth. The country experienced several political systems during the 20th century in which the institutional meaning of scientific responsibility changed dramatically. Under democratic Czechoslovakia before 1938, research organisations operated within a pluralistic political order, although academic communities remained socially selective and strongly dependent upon established elites. Nazi occupation then demonstrated in the most brutal form what happens when intellectual institutions are subordinated to racial ideology, repression, censorship, and political violence. After 1948, the communist regime expanded research capacities and created ČSAV while simultaneously incorporating scientific institutions into a political order that assigned the Communist Party a privileged role in defining legitimate public knowledge. The degree of ideological intervention differed markedly by discipline, but the basic

institutional asymmetry remained: political power possessed mechanisms capable of influencing research agendas, careers, interpretations, and access to public discussion. Normalisation after 1968 made these mechanisms particularly visible through personnel purges, restrictions on international contacts, ideological conformity, and the exclusion of scholars regarded as politically unreliable. Individual scientists could preserve professional standards and sometimes create spaces of relative intellectual independence, but institutional autonomy remained conditional. The responsibility expected from scientists under such conditions was therefore distorted by a political system in which "social responsibility" could be interpreted as loyalty to officially defined ideological objectives. This history explains why the post-1989 reconstruction of academic autonomy was not merely an administrative reform. It represented an attempt to redefine what responsible science meant after decades in which political obedience had repeatedly been presented as a public virtue. The democratic Academy that emerged from this transformation had to recover both the right to disagree with political power and the obligation to justify its own claims through evidence rather than institutional privilege.

The constitutional settlement created after the Velvet Revolution gave this new relationship a clear normative foundation. Article 15 of the Czech Charter of Fundamental Rights and Freedoms explicitly guarantees freedom of scientific research and artistic creation, placing scientific inquiry among constitutionally protected liberties (*Czech National Council, 1993*). This provision is more than a symbolic declaration because it establishes that the search for knowledge is not simply an administrative service delegated by government. Scientific inquiry possesses an autonomous legal and cultural status whose legitimacy does not depend upon whether particular conclusions are politically convenient. The Statutes of the Czech Academy of Sciences develop this principle institutionally by defining AV ČR as a democratically organised network of autonomous scientific institutions and by connecting its mission with the enrichment of human knowledge and the welfare of the Czech Republic and its citizens (*Czech Academy of Sciences, 2006*). Freedom and service are therefore written into the same institutional identity. The Academy is expected neither to operate as a department of government nor to regard society merely as the source of its budget. Its constitutional freedom creates the possibility of producing knowledge independently, while its statutory public mission provides a reason why that independence should be maintained collectively. The significance of this model becomes clearer when compared with the history of ČSAV. Post-1989 autonomy was not designed to detach science from society but to remove political command from the mechanisms through which scientific credibility was established. Democratic responsibility therefore begins with freedom because only knowledge capable of contradicting power can serve society critically. The Czech constitutional framework embodies the principle that the public interest in science is strongest when inquiry is protected from premature political control.

This understanding places AV ČR within a wider European and international conception of scientific freedom. UNESCO's *Recommendation on Science and Scientific Researchers* connects intellectual freedom with explicit responsibilities towards human welfare, dignity, human rights, environmental protection, and the ethical consequences of scientific applications (*UNESCO, 2017*). Researchers are expected to pursue and communicate scientific conclusions without undue interference, but they are also called upon to recognise the social and ecological consequences of their work. The recommendation is significant because it refuses to separate scientific freedom from ethical agency. A researcher is not

merely entitled to independence; they also possess responsibilities when knowledge can be used in ways that harm people or undermine fundamental rights. The European Research Area similarly treats academic freedom and the freedom of scientific research as central conditions of a functioning European knowledge system. Comparative European monitoring has placed Czechia among the countries with particularly strong formal and practical conditions for academic freedom, while European policy increasingly recognises that legal guarantees must be supported by institutional independence and protection against political and economic pressures (*European Commission, 2024*). These international principles reinforce rather than replace the Czech post-1989 settlement. They situate AV ČR within a transnational democratic culture in which scientific freedom is understood both as a right of researchers and as an institutional resource necessary for society. A government that protects inconvenient research gains access to forms of criticism that may improve public policy. A society that tolerates dissenting scholarship preserves intellectual alternatives against future political or technological failures. Scientific autonomy is therefore not a private privilege granted to a professional caste but part of the infrastructure of democratic self-correction.

Autonomy, however, is sustainable only if science accepts that freedom carries obligations of self-discipline. Democratic societies cannot examine every laboratory notebook, archaeological interpretation, statistical model, or archival claim through direct public supervision. They therefore delegate substantial epistemic authority to professional communities. Such delegation is possible only when those communities maintain procedures capable of detecting error, fraud, bias, and unjustified certainty. Robert Merton's classical discussion of the normative structure of science identified organised scepticism and the communal character of scientific knowledge among the practices through which research distinguishes itself from ordinary assertions of authority (*Merton, 1973*). Later scholarship has complicated this idealised picture by demonstrating that science is embedded in social institutions, values, interests, and inequalities, yet the importance of organised criticism has remained central (*Longino, 1990*). Democratic responsibility therefore does not require scientists to pretend that they are free of values or institutional interests. It requires mechanisms through which claims can be challenged regardless of the status of the person making them. Peer review, replication, methodological transparency, critical debate, external evaluation, and correction all perform this function imperfectly but indispensably. An academy becomes publicly trustworthy not because its members are assumed to possess superior moral character, but because it maintains institutional procedures designed to expose their claims to criticism. Scientific autonomy is consequently inseparable from institutional accountability to professional standards.

The Czech Academy has progressively codified these expectations through its ethical framework. The Academy Assembly formally approved an ethical code for researchers in 2006, building on discussions and rules developed during the preceding years, and the framework was subsequently revised as scientific practice and social expectations changed. A substantially revised *Code of Ethics for Scientific Research of the Czech Academy of Sciences* entered into effect on 16 April 2024 after a process lasting approximately a year and a half (*Czech Academy of Sciences, 2024*). The revision is historically revealing because it demonstrates that scientific responsibility is not treated as a fixed list of prohibitions. New problems arise as research organisation, technologies, employment relations, international cooperation, and public expectations change. The revised code extends ethical attention beyond the classical problems of fabrication, falsification, and plagiarism towards workplace

relations, environmental responsibility, conflicts of interest, institutional resilience, and foreign influence. Its introductory principles include freedom of research, fairness, equal opportunity, responsibility, honesty, diligence, trust, and respect. These values are presented not as optional virtues of exceptionally conscientious researchers but as basic requirements of the academic environment. The code also insists that loyalty to an institution cannot justify concealing unethical behaviour, a formulation with particular significance in a country whose academic history includes periods when obedience to institutional authority could conflict with scientific integrity. Ethical responsibility is therefore located simultaneously in the individual researcher, the research team, the institute, and the Academy as a whole.

Several provisions of the 2024 code speak directly to the relationship between science and democracy. Researchers are expected to defend freedom of scientific thought, expression, exchange of opinions, and information, while resisting ideological and political pressures and the interests of pressure groups. They are required to maintain a critical attitude towards their own findings as well as those of colleagues and to remain open to substantive discussion. The code rejects politically or socially prejudiced approaches presented as science and requires researchers to oppose unethical or inappropriate uses of scientific knowledge. It explicitly protects the possibility of reporting serious ethical breaches and recognises that, after internal avenues have been exhausted, making misconduct public need not necessarily constitute a violation of institutional loyalty (*Czech Academy of Sciences, 2024*). This is a particularly strong democratic principle because it places integrity above organisational reputation. Institutions naturally prefer disputes and failures to remain invisible, yet public trust ultimately suffers more when loyalty becomes a mechanism for concealing wrongdoing. The code therefore reflects a conception of science in which criticism is not an act of disloyalty but a normal mechanism of institutional health. It also mirrors the logic of democratic government more broadly, where legitimate authority depends upon the possibility of scrutiny. Scientific organisations cannot credibly advise society about transparency while exempting themselves from analogous principles internally. The responsibility of the Academy thus begins within its own organisational culture.

Internal democratic culture matters for another reason: authoritarian relations inside scientific organisations can undermine the intellectual independence that institutions publicly claim to defend. A junior researcher who fears retaliation from a supervisor may formally possess freedom of inquiry while lacking the practical ability to exercise it. A doctoral researcher whose authorship can be arbitrarily denied, an employee subjected to harassment, or a team member unable to question methodological decisions may work inside a legally autonomous institute yet experience professional relations that discourage criticism. The revised Academy ethics framework therefore addresses not only research outputs but relationships among colleagues. It rejects discrimination, bullying, sexual harassment, abuse of seniority, intimidation, and manipulative management, while requiring leaders to support independent critical thinking and fair professional development (*Czech Academy of Sciences, 2024*). This expansion is not peripheral to scientific integrity. Knowledge is produced socially, and the quality of criticism depends upon whether people with less institutional power can speak without disproportionate personal risk. Longino's analysis of scientific objectivity emphasises the importance of communities capable of exposing assumptions through genuinely critical interaction (*Longino, 1990*). Organisational equality does not mean eliminating expertise or hierarchy, but it does require that hierarchy cannot determine the truth of a claim. The democratic responsibility of science is therefore reproduced at the micro-level of laboratory

meetings, authorship decisions, evaluations, promotions, and mentoring relationships. A research institution that defends free inquiry publicly must cultivate conditions in which internal disagreement remains professionally possible.

The Academy's growing commitment to Open Science adds another layer to this responsibility. In November 2024, the Academy Council approved common Open Science principles encouraging institutes to make publications, research data, software, and supporting materials accessible and reusable where legal, ethical, and security conditions permit. The policy adopts the widely used principle that research should be "as open as possible, as closed as necessary", while emphasising transparency, FAIR data, long-term repositories, reusable research outputs, and the availability of materials needed to verify scientific conclusions (*Czech Academy of Sciences, 2024*). The Academy explicitly links openness with the trustworthiness of scientific institutions because accessible data and methods make independent verification easier. This principle has democratic significance beyond the specialised debate about scholarly publishing. Publicly financed knowledge becomes more socially valuable when researchers, students, journalists, firms, public authorities, and citizens can gain access without unnecessary barriers. Openness also weakens the idea that scientific authority depends upon privileged possession of inaccessible information. At the same time, democratic responsibility requires recognising legitimate limits. Personal data, endangered archaeological sites, sensitive biological information, national-security concerns, intellectual property, and confidential research participants cannot always be made completely public. Responsible openness therefore involves reasoned justification of restrictions rather than an absolute ideology of disclosure. The Academy's Open Science framework reflects precisely this balance between access and stewardship.

Transparency, however, should not be confused with the expectation that non-specialists will personally verify every scientific conclusion. Modern science is too complex for such a model. A citizen cannot independently reproduce an advanced spectroscopy experiment, reanalyse every genomic dataset, reconstruct a macroeconomic model, or inspect all archival sources underlying a historical monograph. Even professional researchers depend heavily upon the specialised competence of colleagues outside their own narrow fields. The democratic function of openness is therefore not to eliminate expert dependence but to make expert institutions more inspectable. Independent specialists can check methods, journalists can investigate conflicts of interest, other research groups can reuse data, and citizens can see that conclusions rest upon identifiable procedures rather than inaccessible authority. Naomi Oreskes has argued that rational trust in science is grounded substantially in the organised social character of scientific inquiry, especially the capacity of diverse expert communities to criticise claims and converge upon conclusions through sustained scrutiny (*Oreskes, 2019*). This understanding is particularly useful for AV ČR because the Academy's authority resides in a network rather than in a single institutional spokesperson. Different institutes, disciplines, teams, and international collaborators provide overlapping mechanisms of criticism. Democratic responsibility means strengthening this critical architecture and making enough of it visible that public trust can rest upon more than reputation alone.

Public communication therefore becomes an ethical responsibility rather than a purely promotional function. The previous section showed how AV ČR has expanded its magazines, festivals, educational videos, podcasts, public events, expert directories, school programmes, and digital communication. The democratic significance of these activities lies partly in their capacity to make scientific reasoning accessible without pretending that expertise disappears.

Researchers speaking publicly must distinguish evidence from inference, probability from certainty, disciplinary consensus from personal judgement, and scientific analysis from political preference. The 2024 ethical code explicitly requires researchers to communicate non-confidential results judiciously to the general public while taking account of the current state of knowledge (*Czech Academy of Sciences, 2024*). This wording is important because communication can be scientifically accurate in a narrow sense while still misleading through exaggeration or omission. A statistically significant association may be presented as a causal discovery, an experimental result may be described as if clinical application were imminent, or a preliminary historical interpretation may be framed as settled fact. Such distortions can increase short-term visibility while weakening the long-term credibility of science. Democratic responsibility therefore includes resisting the media incentives that reward categorical statements and dramatic certainty. The public has a right not merely to hear scientific conclusions but to understand the degree of confidence with which those conclusions are held.

The communication of uncertainty is especially important because democratic debate often transforms scientific nuance into apparent weakness. Political actors normally seek positions that can be expressed clearly and defended publicly. Scientific inquiry, by contrast, frequently produces conditional conclusions whose strength depends upon assumptions, data quality, and future evidence. During COVID-19 this difference became visible to millions of Czech citizens, but the underlying problem exists in climate modelling, economic forecasting, demography, environmental risk, archaeology, and almost every other field. Scientists therefore have a responsibility neither to exaggerate uncertainty until action becomes impossible nor to suppress it in order to make advice appear stronger. Heather Douglas has shown that scientists inevitably make judgements about acceptable evidential standards when research may have consequences for public policy, even though political values should not determine empirical results directly (*Douglas, 2009*). Such judgement becomes particularly delicate when errors have asymmetric consequences. Underestimating a hazardous pathogen and overestimating it may produce very different forms of harm, just as false reassurance about environmental contamination differs ethically from an unnecessarily cautious warning. Responsible expertise makes these asymmetries visible. It explains where judgement enters analysis instead of presenting every recommendation as an automatic deduction from “the science”. Democratic citizens are then better able to evaluate not only what experts recommend but why.

Expert disagreement presents a related responsibility. Scientific institutions can be tempted to conceal disagreement because unified messages appear more authoritative. Yet genuine disagreement is inevitable in active research and can be essential to intellectual progress. The democratic question is therefore not whether scientists disagree but whether the public is given enough context to understand the nature of that disagreement. Researchers may share the same empirical findings while differ about model assumptions, interpretations, acceptable risks, or policy implications. Conversely, a small dissenting minority may challenge a broad consensus without possessing equivalent evidential support. Treating these situations identically misrepresents the structure of knowledge. The Academy’s ethical commitment to respect different scientific opinions and the plurality of disciplines should therefore be accompanied by a responsibility to describe their evidential weight accurately (*Czech Academy of Sciences, 2024*). Organised scepticism is productive only when criticism itself remains subject to scientific standards. The existence of one dissenting researcher cannot

automatically establish that “science is divided”, just as a strong consensus cannot remove the right to challenge it. Democratic science needs institutions capable of protecting minority hypotheses while still communicating where professional evidence presently lies. This balance protects both intellectual freedom and public understanding.

The rise of organised disinformation has made this responsibility considerably more difficult. Researchers now communicate within information systems where institutional expertise competes directly with politically motivated propaganda, commercial misinformation, conspiracy narratives, fabricated images, anonymous social-media accounts, and increasingly synthetic content generated by artificial intelligence. Democratic neutrality cannot require scientific institutions to treat demonstrably false factual claims as merely another legitimate viewpoint. If evidence strongly establishes the efficacy of a diagnostic method, the existence of anthropogenic climate change, or the authenticity of a documented historical event, an Academy researcher does not become politically partisan simply by explaining that evidence accurately. At the same time, institutions should avoid expanding fact-checking authority into a general right to arbitrate political values. The distinction is demanding but essential. Science can show that a numerical claim is false, that an image has been manipulated, or that a purported historical source is fabricated. It cannot determine by scientific method alone what distributive policy citizens ought to prefer or which legitimate political priority should receive greater moral weight. European research policy increasingly identifies disinformation, manipulation, and foreign interference as threats to democratic systems while encouraging scientific research that can expose their mechanisms (*European Research Executive Agency, 2026*). AV ČR’s responsibility lies in contributing to this defence of the factual environment without becoming a substitute for political pluralism.

The humanities and social sciences are particularly important in preserving this distinction because democratic problems are rarely reducible to technical questions. Historians can reveal how political myths are constructed and how authoritarian regimes manipulate memory, but historical knowledge does not dictate one legitimate contemporary political programme. Sociologists can measure inequality, trust, migration, or social exclusion, but the distribution of public resources remains ultimately a normative political matter. Economists can estimate the likely consequences of taxation, regulation, or pension reforms, while different societies may legitimately assign different weights to efficiency, equality, security, and intergenerational justice. Linguists can document changes in language and patterns of communication without acquiring authority to decide every cultural controversy. Philosophers can analyse concepts of justice, responsibility, knowledge, or technological risk while remaining participants in argument rather than final arbiters. The democratic responsibility of these disciplines is therefore not weakened by their interpretative character. On the contrary, they help expose precisely those places where factual evidence, conceptual assumptions, historical memory, and values intersect. AV ČR’s inclusion of humanities and social sciences within the same institutional structure as experimental and natural sciences gives it an unusual capacity to resist the reduction of public problems to engineering exercises. A democratic society needs not only answers about what can be done but critical inquiry into what actions mean, whom they affect, and which historical experiences shape their legitimacy.

This broader responsibility becomes especially important during crises. The preceding discussion of “Scientific Advice during Social, Health, Environmental, and Security Crises” showed that scientific expertise can become operationally indispensable when governments face decisions under severe uncertainty. Yet the urgency of a crisis can also strengthen

technocratic tendencies. Emergency language encourages the belief that only one rational policy exists and that disagreement therefore reflects ignorance, irresponsibility, or political sabotage. Sometimes evidence genuinely narrows the range of reasonable choices sharply, but even then decisions may distribute burdens unequally. A lockdown can reduce epidemiological risk while imposing educational, economic, psychological, and civil-liberty costs. Rapid decarbonisation can reduce future environmental danger while affecting regions, industries, and households differently. Security measures can reduce vulnerability while increasing surveillance or restricting openness. Responsible scientific advice must therefore identify consequences beyond the expert's narrow disciplinary objective. This is why interdisciplinary advice matters not merely scientifically but democratically. It prevents one measurable risk from silently becoming the only value that policy recognises. The Academy's responsibility is to make the evidential landscape richer, not to declare political deliberation unnecessary.

The distinction between adviser and decision-maker follows directly from this principle. Sheila Jasanoff's study of scientific advice showed that expert institutions inevitably operate at the boundary between knowledge and public authority rather than in a politically sterile domain (*Jasanoff, 1990*). Roger Pielke later distinguished several possible roles for scientists in policy debates, including the "honest broker" who clarifies available policy options rather than covertly narrowing political choice (*Pielke, 2007*). For AV ČR, this model is useful but should not be interpreted mechanically. There are situations in which evidence makes some options scientifically indefensible, and researchers should say so clearly. There are other situations in which several politically legitimate alternatives remain compatible with available knowledge. Democratic responsibility consists partly in knowing the difference. A researcher who presents a personal political preference as the inevitable conclusion of science risks borrowing professional authority for purposes that scientific methods alone cannot justify. A politician who ignores strong evidence while claiming that experts are simply expressing personal opinions commits the opposite error. The science–policy interface works responsibly only when both sides preserve the distinction between epistemic authority and democratic mandate.

AV ČR's institutional development in the mid-2020s shows increasing recognition that this interface requires deliberate organisation. The Academy's leadership for 2025–2029 has identified deeper engagement with ministries, governmental institutions, advisory bodies, legislation, strategic documents, and European public consultations as a priority. The developing Science for Policy platform is intended to make research-based expertise more systematically available to public administration, complementing AVex expert opinions and other forms of policy communication. In April 2026, the Academy Assembly adopted thirteen strategic priorities extending to 2029, with public policy, research security, communication with the public, knowledge transfer, excellent research, and Strategy AV21 among the defined areas of action (*Czech Academy of Sciences, 2026*). This development can increase the democratic usefulness of Academy research, but it also increases responsibility. The more closely an autonomous research institution enters policymaking, the more carefully it must distinguish scientific assessment from political alignment. Stable contacts with ministries are valuable precisely when they allow experts to offer inconvenient conclusions as well as supportive ones. Institutional influence becomes epistemically dangerous if access to government creates incentives to soften criticism or if political actors selectively use Academy affiliation to legitimise predetermined policies. Science for Policy therefore needs

independence as much as access. The democratic success of the platform will depend not simply on how often researchers are consulted, but on whether their advice remains capable of contradicting those who requested it.

Conflict of interest consequently belongs at the centre of scientific responsibility. Modern research operates within complex financial networks involving public grants, European programmes, commercial partnerships, patents, consultancies, philanthropic funding, and technology-transfer organisations. These relationships are not inherently problematic and often enable research results to produce substantial public benefit. A scientist cooperating with industry may possess uniquely valuable knowledge precisely because of that collaboration. The democratic problem arises when relevant interests are hidden or when audiences cannot distinguish independent assessment from advocacy linked to financial or institutional incentives. The Academy's ethical code therefore prohibits conflicts between employees' positions within Academy institutes and private interests and emphasises honesty and transparency (*Czech Academy of Sciences, 2024*). Disclosure does not automatically invalidate research, but it gives other experts and the public information necessary for evaluating possible bias. The same logic applies to political affiliations, advisory roles, and institutional stakes in technological development. A research organisation entering increasingly active knowledge-transfer relationships must ensure that commercial success does not become the criterion by which inconvenient findings are suppressed. Scientific responsibility therefore requires both engagement with the application sphere and institutional mechanisms that protect the credibility of the knowledge being transferred.

The problem becomes more difficult when scientific knowledge possesses dual-use potential. Chemistry, biology, artificial intelligence, advanced materials, quantum technologies, computer security, satellite systems, and many other fields can generate applications beneficial to society while also creating capacities for surveillance, coercion, military use, or deliberate harm. UNESCO's 2017 recommendation explicitly recognises that scientists have responsibilities when research can be used against human welfare, dignity, human rights, or peace and affirms their right to express ethical concerns about such work (*UNESCO, 2017*). The Academy's ethical code similarly requires employees to oppose unethical and inappropriate uses of scientific findings (*Czech Academy of Sciences, 2024*). Yet "dual use" cannot be solved through a simple rule prohibiting every potentially harmful application. Almost any sufficiently important technology can be misused. Restricting all sensitive knowledge could weaken beneficial research and undermine the openness on which scientific progress depends. Ignoring potential misuse, by contrast, would reduce responsibility to the claim that scientists are accountable only for discovery and never for consequences. Democratic scientific institutions must therefore develop procedures for proportional risk assessment, ethical consultation, and, where justified, limits on dissemination. The issue has become increasingly central as geopolitical competition turns research itself into a strategic resource.

Research security has consequently entered the Academy's contemporary ethical vocabulary. The 2024 code asks employees to strengthen institutional resilience and avoid knowingly creating opportunities for unwanted influence by foreign powers (*Czech Academy of Sciences, 2024*). The European Union has moved in the same direction. A 2024 Council recommendation identified undesirable transfer of sensitive knowledge, foreign interference, and violations of ethics or research integrity among the principal security risks associated with international scientific cooperation (*Council of the European Union, 2024*). Importantly, the European

approach also insists that protective measures respect academic freedom, institutional autonomy, proportionality, fundamental rights, and non-discrimination. International cooperation should remain as open as possible while becoming as closed as necessary. This formulation captures a central democratic tension. Scientific openness can be exploited by authoritarian states or military actors, yet excessive security policy can itself become a mechanism for political control, xenophobia, or the restriction of legitimate international collaboration. Czech science knows from its own 20th-century history how easily the rhetoric of security can be used to limit intellectual freedom. Responsible research security must therefore protect open science against genuine manipulation without recreating political vetting of scholarship. AV ČR's challenge is not to choose between openness and security but to develop institutions capable of defending both simultaneously.

The Russian invasion of Ukraine transformed this abstract tension into an immediate institutional question. In February and March 2022, AV ČR condemned the aggression, suspended or terminated forms of institutional cooperation with Russian and Belarusian organisations, and created the Researchers at Risk Fellowship programme for scholars whose work had become impossible because of war or persecution. Academy representatives explicitly connected the programme with the defence of academic freedom and the ethical values of AV ČR. The initiative subsequently expanded beyond Ukraine to researchers threatened in other countries, and a third call was opened in 2026 for scholars endangered by war, persecution, natural disasters, or other life-threatening circumstances (*Czech Academy of Sciences, 2022*; *Czech Academy of Sciences, 2026*). This development demonstrates that scientific responsibility can require institutional solidarity rather than verbal defence of abstract principles alone. Freedom of research has little practical meaning for a scientist whose laboratory has been destroyed, whose state criminalises their work, or whose political opinions expose them to persecution. Providing temporary employment, infrastructure, and professional continuity converts democratic principles into material institutional practice. It also preserves scientific knowledge that authoritarianism and war might otherwise disperse permanently.

Yet international solidarity creates difficult boundaries. AV ČR's decision after the invasion distinguished between support for individual endangered scholars and institutional cooperation with research organisations operating under regimes where political independence could not be guaranteed. This distinction is ethically significant. Scientists should not automatically be treated as representatives of their governments, particularly when they themselves may be victims of repression. At the same time, research organisations can serve state interests, and international collaboration can transfer sensitive knowledge or legitimise institutions embedded within authoritarian structures. Democratic science therefore needs a more sophisticated concept of international responsibility than either complete isolation or unconditional openness. Researchers must consider institutional context, personal risk, dual-use possibilities, academic freedom, and the broader purposes of cooperation. The Researchers at Risk programme illustrates one possible response: protect individuals whose freedom is threatened while assessing institutional partnerships separately. Such distinctions become increasingly important as scientific diplomacy operates within a more conflictual geopolitical order. The Academy's historical experience of political domination makes it particularly well placed to understand why institutional affiliations cannot always be treated as neutral. At the same time, that same history should encourage caution against collective suspicion directed at scholars on the basis of nationality alone.

Environmental responsibility has also become an explicit component of contemporary academic ethics. The 2024 Academy code requires employees to avoid unnecessary waste of material and energy resources and to seek reductions in the climate and environmental footprint of their activities (*Czech Academy of Sciences, 2024*). This provision may appear operational compared with more dramatic questions of freedom or war, but its inclusion signals a broader change in the concept of scientific responsibility. Research institutions themselves consume energy, construct laboratories, operate data centres, travel internationally, purchase equipment, generate chemical waste, and affect environments through fieldwork and infrastructure. Scientists studying climate change or biodiversity therefore face legitimate questions about the practices through which their own institutions operate. Perfect ecological consistency is neither possible nor necessarily desirable if it prevents socially valuable research, but environmental costs can no longer be regarded as irrelevant externalities. The ethical issue is one of proportionality and institutional learning. Laboratories should reduce avoidable harm while preserving the scientific capacities necessary to understand and respond to environmental crises. The Academy's sustainability commitments therefore extend responsibility from the content of research to the material conditions of knowledge production.

Equality and inclusion form another connection between internal scientific culture and democratic legitimacy. Knowledge institutions historically excluded large parts of society through gender, class, nationality, religion, political discrimination, and other forms of unequal access. Czech academic history contains its own examples, from restrictions on women's educational opportunities in earlier periods to racial persecution under Nazism and political exclusion under communist rule. Contemporary equality policies cannot erase this history, but they can reduce the likelihood that professional authority will continue to reproduce inherited barriers. The Academy's ethical principles emphasise equal opportunity and reject discrimination on grounds including nationality, language, ideology, religion, age, gender, sexual orientation, disability, social origin, and material circumstances (*Czech Academy of Sciences, 2024*). This is relevant to scientific quality as well as fairness. Communities drawn from narrow social backgrounds can share assumptions that remain invisible until challenged by people with different experiences. Diversity does not guarantee correct knowledge, but institutions that permit wider participation enlarge the range of questions and criticisms capable of entering scientific debate. Democratic responsibility therefore includes making research careers accessible according to ability and professional merit rather than inherited social position. The legitimacy of an Academy speaking to the whole country is strengthened when the community producing that knowledge is itself not unnecessarily closed.

This responsibility has a generational dimension as well. Scientific autonomy cannot survive if institutions protect the freedom of established researchers while leaving younger scholars in conditions of insecurity that discourage intellectual risk. Early-career researchers often depend upon supervisors for employment, publications, access to data, references, grants, and future positions. This dependence can create pressure towards conformity even without explicit censorship. Ethical mentorship therefore becomes part of the democratic culture of science. Senior researchers transmit not merely techniques but expectations concerning criticism, attribution, collegiality, and the responsible use of authority. The Academy's 2024 code requires leaders to support the professional development and international contacts of subordinate researchers and to respect their independent thinking (*Czech Academy of Sciences, 2024*). These provisions connect directly with the continuity of scientific schools

discussed in the preceding chapter. A scientific tradition survives democratically when younger researchers inherit methods and knowledge without being required to inherit every conclusion. Intellectual succession should reproduce the capacity for criticism rather than obedience to a founder or director. The freedom of future science is therefore partly determined by how present scientific elites exercise authority.

The responsible use of public resources represents another unavoidable dimension of the Academy's democratic contract. AV ČR enjoys public support because Czech society accepts that some forms of knowledge should be produced independently of immediate commercial demand. This arrangement permits research whose eventual usefulness may remain unknown for years, but it also creates obligations of stewardship. The ethical code requires purposeful and efficient use of research funds and discourages unnecessary duplication except where replication, verification, or comparison provides scientific value (*Czech Academy of Sciences, 2024*). Yet efficiency cannot be defined solely through short-term output counts. Maintaining rare expertise, archival collections, longitudinal datasets, or research infrastructure may appear expensive relative to immediate publications while creating capabilities of enormous future value. The preceding discussion of crisis response demonstrated precisely this phenomenon. Democratic accountability therefore requires more sophisticated reasoning than a simple demand that every public crown produce an immediately visible product. The Academy must explain why long-term capacity matters while also accepting evaluation of whether institutions actually maintain high scientific standards. Public responsibility lies between entitlement and short-term utilitarianism: stable support is justified when autonomy is accompanied by demonstrable quality, transparency, and social contribution.

This raises the difficult question of who should influence research priorities. An extreme interpretation of scientific autonomy might suggest that only researchers themselves are qualified to determine which questions deserve attention. The opposite extreme would make public funding entirely dependent upon political priorities or direct social demand. Neither arrangement would serve a democratic knowledge system well. Scientists possess specialised understanding of emerging research possibilities and are often best positioned to recognise important questions before their public value becomes obvious. Citizens and elected institutions, however, legitimately determine broad priorities concerning public expenditure, health, security, environment, education, or national infrastructure. Philip Kitcher's concept of "well-ordered science" sought to explore how scientific agendas might reflect democratically considered human needs without reducing research to immediate popular preference (*Kitcher, 2001*). AV ČR's institutional structure represents one practical compromise rather than a philosophical solution to the problem. Public authorities establish legal and financial frameworks, the Academy governs itself scientifically, evaluation constrains quality, and programmes such as Strategy AV21 connect independent research with broad societal challenges. Responsibility therefore requires continual negotiation rather than a permanently fixed boundary between society and the scientific community.

Knowledge transfer and innovation create a parallel responsibility. Scientific discoveries financed publicly can generate technologies, medicines, software, materials, cultural products, expert services, and new companies. AV ČR has increasingly sought to professionalise this transition, and its strategic priorities through 2029 include stronger knowledge and technology transfer alongside basic research (*Czech Academy of Sciences, 2026*). The democratic value of this activity is clear when publicly supported knowledge contributes to economic competitiveness, health, environmental solutions, or technological

sovereignty. Yet commercialisation also introduces new incentives capable of reshaping scientific behaviour. Intellectual property can conflict with openness; commercial confidentiality can restrict publication; financial returns can privilege particular research agendas; and institutional reputations can become tied to products whose performance remains uncertain. Responsibility therefore requires governance capable of preserving scientific integrity during application. Technology transfer should translate reliable knowledge into practical use rather than encourage researchers to overstate readiness in order to attract investment. A public academy must be capable of economic engagement without allowing commercial success to become the measure of scientific truth.

Artificial intelligence is rapidly creating another frontier of responsibility. Generative systems can assist literature searches, coding, translation, data processing, modelling, and communication, but they also create risks involving fabricated content, hidden bias, unverifiable sources, authorship, privacy, intellectual property, and the automation of misleading scientific text. The chair of the Academy's Research Ethics Commission acknowledged in 2024 that ethical issues associated with artificial intelligence would probably require further development of existing guidance as the technological environment evolved (*Tůma, 2024*). This admission is institutionally important because ethical codes cannot anticipate every technological change. Responsible governance requires procedures capable of revising norms without waiting for spectacular misconduct. AI also raises questions extending beyond researchers' own use of tools. Academy scientists contribute knowledge about algorithms, language, human behaviour, law, ethics, energy consumption, misinformation, and social transformation that can inform democratic regulation. European research policy is increasingly treating responsible AI and research integrity as linked areas within the European Research Area. The Academy therefore occupies two positions simultaneously: it is a user of emerging technologies and an institution whose expertise can help society evaluate them. This dual role requires particular transparency about limitations, methods, and conflicts of interest.

Scientific responsibility also includes protection of research that is unpopular, inconvenient, or apparently useless. Democratic majorities can be wrong, governments can misjudge future needs, markets can neglect public goods, and contemporary scientific communities can underestimate unconventional ideas. Constitutional freedom of research exists partly because knowledge cannot be organised entirely according to current popularity. Historical scholarship challenging cherished national myths, environmental research revealing economically inconvenient damage, sociology documenting discrimination, or theoretical science without immediate application may all encounter resistance. The Academy should therefore resist the assumption that public responsibility means aligning research with whatever society already believes or desires. Critical knowledge sometimes serves democracy precisely by disturbing established consensus. The legitimate requirement is that such research meet professional standards, not that its conclusions reassure the majority. This principle marks an important difference between public value and public approval. A democratically responsible Academy must remain capable of telling society things that society would prefer not to hear.

At the same time, scientists themselves must remain open to criticism from outside their professional communities. Expertise can generate its own forms of social closure, specialised language, status hierarchy, and institutional arrogance. The public may raise questions that experts initially regard as naïve but that reveal legitimate concerns about risk, fairness, cultural

meaning, privacy, local knowledge, or institutional power. The Academy's recent leadership has explicitly warned against condescension and emphasised listening alongside the clear articulation of scientific positions. Contemporary Academy representatives have argued that credibility and academic excellence should be combined with proactive engagement and that an institution facing disinformation must remain a stable source of verified knowledge while avoiding intellectual isolation (*Czech Academy of Sciences, 2025*). Such statements reflect an important evolution from older models in which scientific communication was primarily conceived as educating an insufficiently informed public. Democratic responsibility requires dialogue without pretending that expertise and opinion are epistemically identical. Citizens need not become professional scientists to possess legitimate knowledge about how policies affect their communities. Researchers need not surrender disciplinary standards in order to take those experiences seriously.

The defence of democratic institutions also creates situations in which scientific organisations cannot remain entirely silent about attacks on the conditions necessary for science itself. AV ČR's response to the invasion of Ukraine illustrates this boundary. The Academy stated that scholars could not remain silent in the face of war in Europe and explicitly associated its response with human rights, freedoms, and democracy (*Czech Academy of Sciences, 2022*). Such a statement differs from endorsing a party programme or intervening routinely in electoral competition. Military aggression against an independent state, destruction of research institutions, persecution of scholars, and suppression of academic freedom directly affect the institutional conditions in which knowledge can exist. Scientific neutrality cannot reasonably require neutrality towards the destruction of scientific freedom itself. UNESCO's framework similarly connects the safety of researchers with society's ability to produce reliable knowledge and participate in scientific advancement (*UNESCO, 2017*). Democratic responsibility therefore includes defending the political conditions that make autonomous research possible. The difficult task is to do so in principled rather than opportunistically partisan ways. The Academy strengthens its credibility when the same standards of human rights, academic freedom, and scientific integrity are applied consistently rather than according to political convenience.

The history of Czech science makes this defence especially meaningful. Generations of Czech scholars experienced closure of universities, political vetting, exile, surveillance, censorship, dismissal, forced ideological conformity, and restrictions on international communication. The post-1989 Academy was reconstructed by people for whom these experiences were not abstract historical lessons. Rehabilitation of scholars excluded after 1948 or 1968 formed part of the restoration of institutional memory, while renewed international integration reconnected Czech research with professional communities from which political barriers had separated it. Contemporary commitments to academic freedom therefore belong to a historical continuum extending through repression, resistance, rehabilitation, and institutional reform. Remembering this history can protect the Academy against two opposite errors. One is complacency—the assumption that scientific freedom, once legally guaranteed, can no longer be threatened. The other is rhetorical inflation, in which ordinary disagreement or administrative inconvenience is casually equated with historical persecution. Institutional memory allows distinctions to be made more carefully. It reminds researchers that freedom can genuinely be lost while also requiring precision when describing threats to it.

Democracy, moreover, depends upon cultural memory as well as current policy expertise. Institutes working in history, archaeology, language, literature, philosophy, ethnology, and

contemporary history preserve sources and interpretative traditions through which Czech society can examine its own development. This function was discussed earlier in “The Academy as a Place of National Memory and Critical Reflection”, but its democratic dimension deserves emphasis here. Authoritarian politics frequently attempts to simplify history into narratives of innocence, heroic continuity, external betrayal, or ideological inevitability. Professional scholarship complicates such narratives by preserving contradictory evidence and by refusing to make archival truth dependent upon political usefulness. Dictionaries, critical editions, archaeological records, historical databases, oral histories, and documentary collections therefore participate indirectly in democratic resilience. They give society the means to challenge invented traditions and retrospective political manipulation. The public value of such work may be difficult to express through conventional innovation indicators, yet democracy itself requires institutions capable of preserving evidence beyond the lifespan of political administrations. The Academy’s cultural responsibilities are therefore not separate from its scientific ones. Both depend upon disciplined inquiry capable of resisting the convenience of official narratives.

Responsibility also extends beyond national borders because contemporary science is structurally international. Czech researchers use European infrastructures, participate in multinational collaborations, exchange data, publish in global journals, supervise foreign researchers, and depend upon professional communities that cannot be reduced to the Czech state. The benefits of this openness create reciprocal obligations. AV ČR contributes to European ethical standards, research-security discussions, Open Science, international researcher mobility, and support for threatened scholars. International cooperation also exposes Czech researchers to standards and criticisms that help prevent national scientific communities from becoming intellectually self-contained. Democratic responsibility consequently has a cosmopolitan dimension: publicly financed Czech research can serve Czech society while contributing to knowledge that benefits people elsewhere. This is not contradictory because many challenges—climate change, infectious disease, biodiversity loss, cybersecurity, energy transformation, migration, or artificial intelligence—cannot be investigated meaningfully within national boundaries. Scientific internationalism therefore complements national public value rather than undermining it. The relevant condition is that international cooperation remain compatible with research integrity, security, and human rights.

The Academy’s strategic priorities adopted in 2026 reveal how many of these responsibilities have now become explicit institutional concerns. The programme through 2029 includes research quality, career development, cooperation with universities, public policy, knowledge and technology transfer, international cooperation, digital transformation, sustainable development, research security, public communication, and Strategy AV21 (*Czech Academy of Sciences, 2026*). This list is historically significant because it shows how far the role of the Academy has expanded beyond the narrower image of an organisation whose sole task is to host specialised research. The institution now defines excellence together with the conditions through which excellence becomes socially sustainable. Communication is connected with credibility, security with responsible internationalisation, transfer with economic and social application, and policy engagement with the public use of expertise. Yet expansion of responsibility also creates the risk of institutional overload. No research organisation can simultaneously solve every social problem, correct every falsehood, advise every ministry, commercialise every useful result, and maintain excellence across all disciplines.

Responsibility therefore requires strategic limits. The Academy serves democracy best when it contributes what a research institution can uniquely provide rather than attempting to become a substitute government, school system, media organisation, or civil society as a whole.

The most durable contribution remains the preservation of epistemic conditions under which society can distinguish better-supported claims from worse-supported ones. Democracy does not guarantee factual accuracy. Citizens may vote on political programmes but cannot vote a chemical reaction into behaving differently, alter historical evidence by majority preference, or change epidemiological probabilities through ideology. At the same time, factual knowledge never determines all legitimate political choices. Democratic society therefore depends upon institutions that preserve this distinction. Science provides structured methods for evaluating empirical claims, while democracy provides legitimate procedures for deciding how knowledge should be incorporated into collective action. Problems arise when either institution attempts to absorb the other. Technocracy treats political disagreement as ignorance, whereas authoritarian or populist politics may treat inconvenient evidence as illegitimate because it lacks electoral approval. AV ČR's public responsibility lies precisely in maintaining an institutional sphere where evidence can retain authority without becoming sovereign power. This is a demanding position because it requires both confidence and restraint.

The moral responsibility of individual researchers ultimately reflects the same balance. Scientists should pursue evidence with enough independence to resist political demand, enough humility to recognise the limits of their methods, enough courage to communicate unwelcome conclusions, and enough discipline to correct themselves when those conclusions prove wrong. They should understand that academic freedom protects disagreement but does not protect fabrication or deliberate deception from professional consequences. They should recognise that expertise creates responsibilities when public audiences may act on their words. They should resist both the temptation to withdraw from society because communication is difficult and the temptation to convert scientific prestige into authority over questions outside their competence. These expectations are demanding precisely because scientific careers are human careers shaped by ambition, competition, loyalty, fear, and institutional incentives. Ethical codes cannot eliminate these pressures. Their value lies in creating shared standards against which behaviour can be criticised and corrected. Institutional responsibility therefore depends upon cultures as much as regulations.

The Academy as an organisation carries an analogous responsibility towards its researchers. It cannot demand ethical courage while leaving individuals unprotected against retaliation. It cannot insist on international excellence without providing conditions in which careful research remains possible. It cannot ask researchers to communicate publicly while failing to support them when legitimate scientific statements provoke harassment or politically motivated attacks. Nor can it defend academic freedom effectively if internal governance becomes opaque or arbitrary. Institutional autonomy therefore carries obligations towards those whose work gives the institution intellectual authority. The protection of scientists, fair evaluation, transparent procedures, professional development, research integrity mechanisms, and secure channels for reporting misconduct all form parts of the same democratic architecture. An Academy is responsible not only for what it says publicly but for the organisational environment through which its knowledge is created.

Seen across the longer institutional history developed in this book, this represents a profound transformation in the relationship between academy, state, and society. Early learned societies depended upon patronage and elite networks, while 19th-century Czech scholarship increasingly connected scientific and cultural work with the formation of national society. The Czech Academy of Sciences and Arts institutionalised research and culture within a modernising national framework. ČSAV then created a powerful centralised scientific system whose public responsibilities were interpreted through the political and ideological structure of the socialist state. The post-1989 Academy inherited much of the human and material capital of that system but rejected the premise that political authority should define legitimate scientific conclusions. Over the following decades it gradually developed a different model of public responsibility based on autonomy, evaluation, communication, international integration, ethical codification, public engagement, policy advice, openness, and institutional self-government. This model remains unfinished because every technological and political transformation creates new ethical questions. Its significance lies precisely in the fact that responsibility is understood as a continuing practice rather than a status conferred once by democratic reform.

Thus, the responsibility of science in democratic society cannot be reduced either to political neutrality or to active intervention in every public controversy. For the Czech Academy of Sciences, it rests upon a more demanding equilibrium between freedom and accountability, expertise and humility, openness and security, national public service and international scientific cooperation. The historical experience of politically subordinated science makes the protection of independent inquiry an essential institutional value, now reinforced by the constitutional guarantee of scientific freedom and by the Academy's own statutes (*Czech National Council, 1993*; *Czech Academy of Sciences, 2006*). Yet autonomy is legitimate only when researchers maintain rigorous standards of integrity, disclose relevant interests, accept criticism, communicate uncertainty honestly, and resist both ideological pressure and the unethical use of knowledge. The revised ethical framework of 2024, Open Science principles, Researchers at Risk programme, Science for Policy development, research-security measures, and strategic priorities adopted through 2029 demonstrate how this responsibility has progressively entered the institutional architecture of AV ČR rather than remaining a general moral declaration. Democratic science must be capable of advising government without becoming government, correcting misinformation without policing legitimate political disagreement, cooperating internationally without ignoring security risks, and creating innovation without allowing commercial interests to determine scientific truth. It must also protect internal conditions of dignity, equality, criticism, and generational renewal because freedom cannot exist convincingly outside an institution that suppresses it within. The Academy's deepest democratic contribution is therefore not any single recommendation, discovery, or public statement. It is the preservation of a social space in which claims about nature, society, history, and technology can be investigated according to evidence and criticised without requiring political permission. Such institutions provide democracy with something political competition cannot produce by itself: organised intellectual resistance to convenient falsehood. At the same time, science depends upon democracy for the freedoms that make such resistance possible. The relationship is consequently reciprocal rather than hierarchical. AV ČR serves democratic society most effectively when it neither withdraws behind the walls of expertise nor confuses expertise with sovereignty, but continually earns its autonomy through responsible research, transparent institutions, critical public engagement,

and the willingness to place knowledge at the service of society without surrendering the independence required to make that knowledge credible.

The Academy and National Development

1. Knowledge as a Strategic Resource of the Czech Republic

The idea that knowledge constitutes a strategic national resource has acquired a meaning in the Czech Republic that extends far beyond the conventional language of science policy. Knowledge is not simply one input among others into economic production, nor can it be reduced to patents, technological inventions, or the number of graduates produced by universities. In a highly industrialised and internationally integrated state, knowledge determines how effectively society can create value, absorb new technologies, respond to external shocks, preserve cultural continuity, and make decisions under conditions of uncertainty. It resides in trained people, scientific institutions, laboratories, databases, archives, collections, research infrastructures, professional communities, technological know-how, and accumulated experience. Unlike many material resources, knowledge is not depleted through use; it can expand when shared, criticised, recombined, and applied to new problems. Yet it is also unusually vulnerable because research communities can disperse, expertise can disappear when careers are interrupted, datasets can be lost, and scientific institutions can take decades to rebuild once their continuity has been broken. The 20th-century history of Czech and Czechoslovak science repeatedly demonstrated this fragility through occupation, political purges, exile, ideological intervention, and institutional restructuring. The post-1989 reconstruction therefore involved more than restoring academic freedom: it required preservation and renewal of a national stock of intellectual capital that had survived several political regimes. In the 21st century, this accumulated capital has become increasingly important as economic competitiveness depends less upon inexpensive labour and more upon technological sophistication, research capacity, organisational learning, and the ability to generate original solutions. Czech national strategy now explicitly describes its desired future as that of an economy and society based upon knowledge and innovation rather than low-cost competition (*Research, Development and Innovation Council, 2020*; *Ministry of Industry and Trade, 2021*). The place of AV ČR within national development must consequently be understood not merely through the annual outputs of its institutes but through its role in maintaining and expanding a strategic reservoir of knowledge available to the Czech Republic over the long term.

This perspective marks a significant departure from the economic environment in which the contemporary Czech Republic emerged. The transformation beginning in 1989 was initially dominated by political democratisation, privatisation, market liberalisation, restructuring of state enterprises, integration into Western markets, and the reconstruction of legal and financial institutions. During the 1990s, rapid economic modernisation depended to a considerable extent upon foreign investment, industrial restructuring, comparatively skilled labour, geographical proximity to Germany and Austria, and integration into European

production chains. The model proved remarkably successful in rebuilding exports and modernising manufacturing after the collapse of the centrally planned economy. Automotive production, machinery, electronics, engineering, chemical industries, and other manufacturing sectors became deeply incorporated into European and global value chains. Yet the same model contained a structural limitation that became increasingly evident as wages rose and international competition intensified. An economy can remain prosperous for a long period by efficiently manufacturing products designed, financed, branded, or strategically controlled elsewhere, but its capacity to capture the highest value added remains constrained when key intellectual property and decision-making functions remain external. The policy problem therefore gradually shifted from attracting capital and raising industrial productivity towards strengthening domestic technological competence and original innovation. Knowledge ceased to be regarded primarily as an educational or academic asset and became a question of economic sovereignty. The Czech state increasingly faced the challenge of moving from successful industrial catching-up towards an economy in which more technologies, methods, companies, and high-value services originate within domestic research and innovation networks. This is precisely the transition in which an institution such as AV ČR becomes strategically important because its central comparative advantage is the creation of knowledge that did not previously exist.

The Academy entered this transition with a historically unusual combination of strengths and weaknesses. It inherited from ČSAV a large network of specialised institutes, laboratories, libraries, archives, collections, experimental facilities, and professional communities covering the natural sciences, engineering-related fields, life sciences, social sciences, and humanities. As discussed in “The Transformation of Inherited Scientific Capital,” the post-1993 institution did not simply receive this inheritance unchanged. Institutes were evaluated, reorganised, merged, reduced, and opened to international competition, while politically compromised structures were transformed and many research programmes were redirected. What survived was therefore neither a socialist institutional fossil nor an entirely new research system constructed after 1989. It was a selectively transformed body of scientific capital whose value depended on whether inherited competence could be integrated into contemporary international science. That integration required new forms of evaluation, foreign collaboration, competitive grants, researcher mobility, modern infrastructure, and a fundamentally different relationship with universities and industry. The outcome was important for national development because institutional continuity reduced the cost of scientific reconstruction. The Czech Republic did not have to create advanced chemistry, physics, mathematics, linguistics, archaeology, biological research, or historical scholarship from the beginning after the political transition. It possessed communities capable of renewing these fields from within, although their success varied substantially among institutes and disciplines. The Academy thus provided the new democratic state with a scientific inheritance that could be modernised rather than replaced. Its strategic importance lay not simply in preserving the past but in preventing the destruction of capacities that might later become difficult or impossible to recover.

By the beginning of the 21st century, Czech policy documents increasingly articulated national development through the language of a knowledge economy. The principle was not uniquely Czech; it reflected broader European debates associated with the Lisbon Strategy, the European Research Area, and later the Europe 2020 framework. Yet it acquired specific importance in a country whose economic structure remained unusually industrial. Czech

manufacturing provided employment, exports, and integration into technologically sophisticated production networks, but national policymakers became increasingly conscious that future competitiveness would depend upon the capacity to move upwards within those networks. The Czech Innovation Strategy 2019–2030 consequently linked research, education, digitalisation, intellectual property, investment, and innovation under the ambition of creating "The Country for the Future". The National Research, Development and Innovation Policy 2021+ subsequently defined its vision as contributing to a prosperous Czech Republic whose economy is based on knowledge and the ability to innovate and whose citizens enjoy high-quality living conditions (*Research, Development and Innovation Council, 2020*). Its priorities include governance and financing of research, human potential, international excellence, cooperation between research and application spheres, and national innovation capacity. Knowledge in this framework is not conceived only as something universities teach or scientists publish. It is treated as an asset whose circulation influences economic structure, public administration, social welfare, and the state's international position. The Academy's relevance therefore depends increasingly upon how effectively it connects the production of knowledge with this broader national transformation while resisting the temptation to make immediate economic use the sole criterion of scientific value.

The National Research and Innovation Strategy for Smart Specialisation carries this logic further. The current RIS3 framework for 2021–2027 is designed to direct European, national, regional, and related private resources towards areas in which Czech research and economic capacities can generate durable competitive advantage. Its long-term vision is explicitly formulated as "a resilient economy based on knowledge and innovation" (*Ministry of Industry and Trade, 2021*). The strategic problem identified by RIS3 is therefore not merely a shortage of research expenditure but the effectiveness with which knowledge moves between scientific institutions, enterprises, regions, skills systems, and public policy. Smart specialisation assumes that a state of Czech size cannot realistically lead in every technological domain. It must instead recognise existing strengths, identify combinations of industrial capability and scientific competence, and concentrate sufficient resources to create internationally distinctive capacities. Such an approach makes the structure of public research strategically important. Academy institutes possess expertise in areas ranging from advanced materials and photonics to organic chemistry, molecular biology, environmental research, artificial intelligence, economics, archaeology, and language technologies. Their significance within smart specialisation cannot be measured by asking whether each institute directly corresponds to one industrial sector. Fundamental discoveries can generate new technological pathways whose economic relevance becomes clear only later, while humanistic and social-scientific knowledge can support regulation, public administration, cultural industries, and social transformation. The national knowledge economy is therefore not a collection of immediately marketable projects but a system capable of generating, absorbing, interpreting, and recombining knowledge across institutional boundaries. AV ČR forms one of the principal public components of that system.

The material scale of the Czech research system shows that this is no marginal sector. According to the Czech Statistical Office, total expenditure on research and development in the Czech Republic reached CZK 146.9 billion in 2024, an increase of 5.1 per cent over the previous year (*Czech Statistical Office, 2025*). Business sources financed CZK 93.1 billion, while national public resources and European Union sources together accounted for CZK 52.3 billion. Approximately 86,948 people were employed in R&D on a full-time-equivalent basis,

while the wider headcount of people involved in research and development remained above 120,000. These numbers demonstrate the emergence of research as a substantial professional and economic system in its own right. Yet the intensity of investment relative to the size of the economy remains revealing: R&D expenditure amounted to 1.82 per cent of GDP in 2024, compared with an EU average of roughly 2.3 per cent and levels exceeding 3 per cent in countries such as Germany and Austria. Government budget allocations for R&D were CZK 40.0 billion in 2024, representing 0.50 per cent of GDP, the lowest ratio recorded in Czechia since 2008 (*Czech Statistical Office, 2025*). Nominal expenditure was therefore increasing while the relative national commitment remained more restrained. This distinction matters strategically because knowledge production depends upon cumulative investment rather than occasional increases in absolute expenditure caused partly by inflation or economic growth. A country seeking to shift from cost-based to knowledge-based competitiveness must ask not only whether research funding is growing but whether it is growing fast enough relative to the scientific capabilities of competing economies. The Academy operates inside this tension between expanding research ambitions and persistent resource constraints.

The composition of Czech R&D expenditure also reveals the complementary roles of public and private knowledge production. More than sixty per cent of national R&D financing in 2024 originated from business sources, and the business-enterprise sector itself performed approximately CZK 95 billion of research and development (*Czech Statistical Office, 2025*). This is an important strength because innovation cannot be sustained if companies merely wait for public laboratories to generate technologies that industry then adopts passively. Firms must develop their own engineering competence, experimental capacity, product development, and technological learning. Yet the dominance of business expenditure does not diminish the strategic necessity of public research. Commercial research is rationally concentrated on areas in which companies expect appropriable benefits within time horizons compatible with investment decisions. A national research system must additionally support questions whose future economic value is uncertain, whose social benefits cannot easily be captured by one company, or whose significance lies in health, environment, culture, security, or public administration rather than commercial profit. Fundamental mathematics, theoretical physics, historical archives, long-term ecosystem monitoring, rare-language resources, or research on basic biological mechanisms may produce profound future value while lacking an obvious immediate customer. Public research institutions therefore provide the exploratory depth from which new technological and intellectual possibilities can emerge. The strategic relationship between Academy and industry is not that the former should imitate the latter, but that different temporal and incentive structures can complement one another. An economy becomes genuinely knowledge-based when public research creates possibilities that private organisations could not rationally generate alone and when enterprises possess enough absorptive capacity to recognise and develop those possibilities.

AV ČR occupies a particularly significant position within this public component. In 2026, it comprised fifty-four research institutes and more than seven thousand researchers, making it the largest non-university research organisation in the Czech Republic (*Czech Academy of Sciences, 2026*). Its scale alone, however, does not explain its strategic value. The organisation combines relatively specialised institutes with an umbrella structure capable of supporting interdisciplinary cooperation, national representation, shared evaluation, public engagement, international partnerships, and knowledge transfer. Unlike a ministry, it does not define research primarily according to administrative competences. Unlike a university, it does not

organise its central mission around mass undergraduate and graduate teaching. Unlike a company, it does not depend upon commercial return as the primary justification for research. These distinctions give it a particular place within the national knowledge system. Academy institutes can maintain specialised scientific programmes over periods longer than many grants, industrial product cycles, or political administrations. They can preserve rare expertise whose usefulness cannot always be predicted in advance. They can also redirect mature research capabilities when new problems emerge, as the pandemic, drought, wildfire, and refugee crises demonstrated. The Academy therefore functions partly as a national repository of scientific optionality: society maintains capacities that may generate value through discoveries, technologies, expert advice, cultural knowledge, or responses to future challenges whose exact form remains unknown.

The strategic character of basic research is easiest to underestimate precisely because its future applications are uncertain. Political discourse often contrasts fundamental and applied research as though the first creates knowledge while the second creates value. Historical experience repeatedly demonstrates a more complicated relationship. Fundamental inquiry generates concepts, methods, trained specialists, instrumentation, and unexpected findings from which later applications can emerge. The relevant time horizon may be much longer than the duration of a conventional innovation programme. Technologies that become economically decisive in one decade may rest upon theoretical or experimental work conducted decades earlier for entirely different purposes. This uncertainty creates a financing problem because neither governments nor investors can reliably identify in advance which basic discoveries will become transformative. A rational national strategy therefore maintains a broad portfolio of high-quality research rather than attempting to fund only projects whose commercial outcome can already be predicted. AV ČR's role in basic science is strategically significant because its institutes can sustain precisely this kind of exploratory capacity. The Czech experience of antiviral chemistry provides an unusually powerful demonstration, but similar principles apply to physics, materials science, molecular biology, mathematics, information theory, ecology, and other fields. Public value arises partly from preserving the freedom to discover results whose uses are not yet known. Knowledge becomes strategic not only when the state knows what it wants but when institutions remain capable of producing answers to questions that the state has not yet learned to ask.

Human capital forms the most mobile and therefore one of the most fragile components of this resource. Laboratories, buildings, and equipment matter, but their strategic value depends upon researchers able to formulate questions, interpret anomalous results, transfer methods, and train successors. Czech science has experienced periods of severe brain drain, particularly after political ruptures and during the early post-socialist transformation, when disparities in salaries, infrastructure, and international opportunities encouraged talented researchers to build careers abroad. International mobility itself is not a loss; modern research depends upon scientists moving between institutions and countries. The strategic problem arises when circulation becomes predominantly one-way and domestic institutions cannot attract people back or recruit equally capable researchers from abroad. The National RDI Policy 2021+ therefore identifies research careers and the development of human potential among its central priorities (*Research, Development and Innovation Council, 2020*). AV ČR has gradually developed programmes supporting early-career researchers, international recruitment, mobility, return from parental leave, and the formation of new research groups. The Academy of the Future and the ERC Incubator, launched within the new leadership period,

extend this effort by seeking to attract excellent researchers and strengthen Czech participation in highly competitive European research (*Czech Academy of Sciences, 2026*). Knowledge as a national resource consequently cannot be separated from the conditions under which knowledgeable people choose where to live and work. Scientific infrastructure competes internationally for human talent just as advanced industries compete for capital.

Physical and digital research infrastructures constitute another form of strategic capital whose value often exceeds the research projects for which they were originally created. High-power lasers, microscopy centres, biological facilities, supercomputing resources, observatories, environmental stations, specialised libraries, archaeological databases, language corpora, experimental reactors, chemical laboratories, and long-term biological collections support communities far beyond the teams directly responsible for their operation. Their existence reduces the cost of future discovery because new research can begin from an already developed technical base. The Czech Republic's use of European structural funds after EU accession dramatically expanded such capacities, particularly during the 2007–2013 and subsequent programming periods. Large research centres outside Prague also altered the geographical distribution of advanced science and created stronger regional clusters around Brno, Central Bohemia, South Moravia, and other areas. Yet infrastructure creates strategic value only when accompanied by sustainable operating resources, excellent researchers, open access where appropriate, and integration into international networks. A sophisticated instrument without a stable scientific community can become an expensive technological monument. The Academy's long-term organisational structure is therefore important because it provides institutional homes capable of maintaining infrastructures after the construction phase has ended. Knowledge policy must consider not only the cost of building scientific capacity but the much longer process of keeping it intellectually productive.

European integration transformed the meaning of these infrastructures and of Czech knowledge more broadly. Accession to the European Union in 2004 opened new funding opportunities, mobility programmes, research infrastructures, collaborative projects, and institutional benchmarking. Czech scientists were increasingly evaluated not only against domestic competitors but against research groups across the European Research Area. This exposed weaknesses but also increased the value of specialised Czech competence. A relatively small country could participate in projects and facilities whose scale no national budget could sustain independently. International scientific co-publication became one of Czechia's stronger innovation indicators, and the 2025 European Innovation Scoreboard placed the country above the EU average in this dimension (*European Commission, 2025*). Foreign doctoral students also represented a relative strength, indicating a growing capacity to attract international research talent. European integration therefore changed knowledge from a predominantly national stock into a networked resource. Czech strategic capacity depends partly upon what domestic institutions know and partly upon their ability to connect rapidly with knowledge produced elsewhere. AV ČR's international networks give the Czech Republic access to scientific communities, data, methods, and infrastructures far larger than its own national system. Knowledge sovereignty in this context does not mean intellectual autarky; it means possessing enough domestic expertise to participate in international networks as a capable partner rather than merely a passive recipient.

Strategy AV21 represents one of the clearest attempts by the Academy to translate this broad reservoir of expertise into a framework explicitly connected with public interest. Introduced in 2015, the strategy organises interdisciplinary research programmes around major societal

challenges rather than around the administrative boundaries of individual institutes. Its motto, "Top research in the public interest," deliberately rejects an opposition between scientific excellence and social relevance. By 2025, fifteen research programmes were active, including fields related to artificial intelligence, food systems, reproductive technologies, resilience, energy, environmental transformation, and other complex challenges (*Czech Academy of Sciences, 2025*). Institutes cooperate not only with one another but with universities, government institutions, public organisations, industrial partners, and other stakeholders. The importance of this architecture lies in the fact that national strategic problems rarely correspond to one academic discipline. Food security combines biology, agriculture, climate, economics, technology, and consumer behaviour. Artificial intelligence connects computer science with law, language, psychology, ethics, labour markets, and public administration. Resilience requires knowledge of health, environment, institutions, communication, and social behaviour. Strategy AV21 therefore demonstrates how the Academy can transform disciplinary diversity into a national problem-solving capacity without abandoning fundamental research. It converts knowledge from a collection of institute-level assets into coordinated intellectual capability.

Knowledge transfer constitutes another essential pathway through which scientific capital becomes a strategic national resource. AV ČR defines knowledge and technology transfer broadly as the dissemination of research results with application potential through mechanisms that accelerate or improve their practical use. The Academy explicitly connects transfer with Responsible Research and Innovation, social impact, financial efficiency, and the competitiveness of Czech industry (*Czech Academy of Sciences, n.d.*). This definition is important because transfer is often understood too narrowly as the licensing of patents. Patents and licences matter, but knowledge can also move through collaborative research, expert services, software, methods, databases, standards, consultancy, public-policy recommendations, cultural resources, and the movement of people between research organisations and other sectors. Different disciplines therefore require different models. A biomedical compound may be patented and licensed to a pharmaceutical company, whereas a linguistic database may generate value through digital language technologies and public access. Historical research may influence museums, schools, state commemorations, or foreign policy without producing patentable intellectual property. Economic research may reshape regulation or social policy. Knowledge transfer is strategically important when it allows the value created within publicly supported research to circulate into society rather than remaining enclosed within academic publication systems. The challenge is to develop pathways appropriate to each type of knowledge rather than forcing every field into a single commercial model.

The history of Antonín Holý and the Institute of Organic Chemistry and Biochemistry remains the most striking Czech demonstration of how fundamental knowledge can acquire strategic economic and social value. Holý's work on nucleotide analogues began as sophisticated organic and medicinal chemistry rather than as a centrally planned commercial product. A patent application for the compound later known as tenofovir was filed in 1984, at a moment when its eventual significance for HIV treatment could not yet have been foreseen. Collaboration with Gilead Sciences subsequently transformed the discoveries into medicines used globally against HIV and hepatitis B. By 2026, medicines derived from this research were still benefiting millions of patients, while the licensing success had generated extraordinary financial returns for IOCB Prague (*Czech Academy of Sciences, 2026*). Between 2001 and 2025,

the institute received more than one billion euros in licensing revenue associated with Holý's discoveries, which it reinvested in research infrastructure, scientific groups, and new projects (*IOCB Prague, 2026*). The significance of this story for national development is not simply that one institute earned substantial income. It demonstrates a self-reinforcing knowledge cycle in which basic research produces intellectual property, commercial development produces global health benefits and licensing revenue, and part of that revenue finances a new generation of basic research. It also illustrates the impossibility of predicting the highest-value applications of fundamental research in advance. A strategy that had required Holý to specify the future global pharmaceutical market before supporting the underlying chemistry might never have produced the discovery at all.

The institutional lessons from IOCB gradually influenced wider Academy policy. IOCB Tech, established in 2009, created professional structures for identifying promising discoveries, managing intellectual property, negotiating licences, providing legal support, and connecting scientists with commercial partners (*Czech Academy of Sciences, 2025*). The Academy later established the Technology Transfer Centre, CETAV, in 2016, seeking to provide similar support across the institutional network. Since 2023, the Applications and Commercialisation Development Programme, PRAK, has supplied targeted resources for projects requiring additional work before market entry. By early 2026, the Academy reported that PRAK had allocated nearly CZK 33 million to seventy-three projects, while at least ten spin-off companies and twelve start-ups had emerged from Academy institutes, with further companies under preparation (*Czech Academy of Sciences, 2026*). In 2026, the Academy began establishing a joint-stock company designed to professionalise the creation and management of spin-offs and create clearer mechanisms for cooperation with external investors. The strategic importance of these steps lies less in the absolute numbers than in the institutional learning they represent. Excellent science does not automatically become innovation simply because an application is technically possible. Researchers need legal advice, market analysis, investment, project management, regulatory knowledge, entrepreneurial partners, and sometimes years of development before a discovery becomes usable outside the laboratory. Knowledge becomes an economic resource only when institutions capable of crossing this intermediate space exist.

Recent Academy examples demonstrate that this transfer potential extends well beyond pharmaceutical chemistry. Researchers at the Institute of Scientific Instruments in Brno developed methods extracting previously overlooked information from high-frequency components of ECG signals. The underlying research began more than a decade before the technology reached wider clinical and commercial application. After independent replication, patent protection, collaboration with physicians, and the establishment of the spin-off VDI Technologies, the method began to reach European hospitals (*Czech Academy of Sciences, 2026*). The HiLASE Centre of the Institute of Physics provides another model. Its advanced laser technologies are being developed in cooperation with industrial partners and applied in areas ranging from precision manufacturing to nuclear-energy components, aerospace, and defence-related production. In 2025, the LASER-PRO consortium connected Czech, Lithuanian, and Ukrainian organisations in an effort to strengthen European high-technology industry through advanced laser applications (*Czech Academy of Sciences, 2025*). These cases show that research transfer is often a lengthy process in which the scientific result itself is only the first stage. The strategic national asset is therefore not merely the patent but the entire chain connecting fundamental knowledge, engineering refinement, validation, industrial

partners, finance, regulation, and specialised human capital. A country that performs strong research but lacks these intermediary institutions risks allowing much of the economic value to be captured elsewhere.

At the same time, the national value of Academy knowledge cannot be judged only through commercial transfer. A state requires knowledge for governing itself, and much of the relevant expertise has no meaningful market price. Demographic forecasts, economic modelling, epidemiological analysis, legal interpretation, climate projections, historical evidence, language resources, biodiversity monitoring, archaeological records, and sociological surveys may influence decisions affecting billions of crowns without generating licensing revenue. The development of AVex and the newer Science for Policy interface reflects growing recognition of this form of transfer. Academy leadership for the 2025–2029 period has explicitly sought deeper engagement with ministries, government advisory bodies, legislation, strategic documents, and European public consultations (*Czech Academy of Sciences, 2025*). Science4Policy coordination is intended to make expertise more accessible to decision-makers rather than relying entirely upon informal contacts between individual researchers and officials. This is knowledge transfer in a direct sense: research moves into regulation, strategic planning, or public administration rather than into a commercial product. Its economic effects can nevertheless be substantial because poor policy based upon weak evidence imposes real costs. National development therefore depends not only upon innovative companies but upon an intelligent state capable of absorbing expert knowledge. The Academy contributes strategically when it improves the quality of the information from which public decisions are made.

Humanities and social-science knowledge similarly expands the meaning of the strategic resource. A narrow economic interpretation of the knowledge economy can leave dictionaries, archival editions, historical databases, philosophical scholarship, sociological research, cultural studies, archaeology, and language research appearing peripheral to national development. Such a conclusion would ignore both their direct applications and their deeper institutional functions. Language resources now support digital communication, education, lexicography, translation technologies, and natural-language processing. Historical scholarship informs museums, education, diplomacy, public memory, and the interpretation of political conflict. Archaeological research contributes to heritage management, construction planning, cultural tourism, and regional identity. Sociology and economics provide evidence on inequality, labour markets, migration, demographic change, trust, education, and public policy. Legal research helps the state understand constitutional limits and design more coherent regulation. Cultural knowledge also shapes the international image through which a country presents itself abroad. The Academy's humanities institutes therefore preserve forms of national capital that cannot be meaningfully represented by patent statistics alone. Knowledge-based development involves the capacity of a society to understand itself as well as the capacity of an economy to manufacture more sophisticated products.

The security environment of the 2020s has further expanded the strategic meaning of knowledge. The COVID-19 pandemic demonstrated that molecular biology, diagnostics, behavioural economics, mathematical modelling, sociology, psychology, and public-health expertise could become components of national resilience almost overnight. The Russian invasion of Ukraine exposed similar dependencies in energy, migration research, area studies, political communication, cyber systems, and historical expertise. Climate-related droughts and wildfires have turned long-term environmental monitoring into an increasingly operational

security resource. These experiences changed the public understanding of research infrastructure because scientific capacity could no longer be viewed solely through annual publication counts or technological commercialisation. Laboratories, expert communities, datasets, and international networks became reserves of national capability. Research whose direct usefulness was uncertain under ordinary conditions suddenly influenced the state's ability to understand and respond to systemic risks. The earlier discussion in "Long-Term Expertise and Rapid Response" showed that rapid scientific action is almost always produced by slow institutional accumulation. Knowledge is therefore strategic partly because it creates options before society knows which option it will require. In security terms, scientific competence functions as a form of preparedness.

Digitalisation adds a further dimension because contemporary knowledge is increasingly stored, analysed, and circulated through data infrastructures. Scientific datasets can become reusable resources whose value increases when combined with new methods or new questions. Open Science therefore has implications for national development beyond academic publishing. The Academy's Open Science principles encourage publications, research data, software, and supporting materials to be made accessible and reusable where ethical, legal, and security conditions permit (*Czech Academy of Sciences, 2024*). Properly managed data can support replication, accelerate new research, allow firms and public institutions to build upon scientific results, and reduce unnecessary duplication. Yet digital knowledge also requires long-term stewardship. Files must be preserved in usable formats, metadata must make them intelligible, repositories must remain technically secure, and restrictions must protect personal, proprietary, or security-sensitive information where necessary. The Czech development of national research-data infrastructure within the broader European Open Science Cloud framework therefore represents an important component of knowledge sovereignty. A state that cannot preserve or access the data generated by its own research investments risks losing part of their long-term value. Digital infrastructure is thus becoming as strategically important as physical laboratories. Knowledge policy increasingly concerns not only what scientists discover but whether their results remain findable, interpretable, and reusable years later.

Regional development presents another important dimension. Czech research and innovation activity remains highly concentrated geographically, with Prague accounting for approximately two-fifths of national R&D employment on a full-time-equivalent basis in 2024 and South Moravia representing the second major concentration (*Czech Statistical Office, 2026*). Such clustering is not necessarily inefficient; advanced research benefits from dense networks of universities, institutes, firms, hospitals, investors, and specialised services. Yet extreme concentration can reinforce regional inequality and limit the ability of other territories to participate in knowledge-based development. Academy institutes and research centres outside Prague therefore play a strategic role in broadening the geography of advanced expertise. Brno, České Budějovice, Ostrava, and other locations host important research communities connected with regional universities, industry, environment, and public institutions. Large scientific infrastructures in Central and South Moravia have similarly contributed to new research clusters. Regional knowledge institutions can help retain highly educated workers, connect local firms with specialised research, support schools, and provide municipalities with expertise. They may also strengthen a region's international visibility in ways unrelated to traditional industrial specialisation. Knowledge as a strategic

national resource consequently has a territorial dimension: its value grows when it creates multiple centres of intellectual capability rather than a single metropolitan enclave.

European innovation comparisons show why the transition remains incomplete. The 2025 European Innovation Scoreboard classified Czechia as a Moderate Innovator, with performance at 80.6 per cent of the EU average and 19th place among EU Member States under the revised methodology (*European Commission, 2025*). Czech strengths included above-average digital skills, international and public-private scientific cooperation, a relatively high share of foreign doctoral students, and especially strong exports of medium- and high-technology products. Yet significant weaknesses remained in venture-capital expenditure, tertiary educational attainment, labour productivity, intellectual assets, and knowledge-intensive service exports. Public-private co-publications reached 129.9 per cent of the EU average, but PCT patent applications stood at only 54.5 per cent. Exports of medium- and high-tech products were among the strongest in the Union, yet knowledge-intensive service exports remained only 55.8 per cent of the EU average. This combination illustrates a central structural paradox. The Czech Republic is deeply embedded in sophisticated industrial production but captures less value through domestic intellectual assets and knowledge-intensive services than its manufacturing profile might suggest. The national challenge is therefore not to abandon industry but to increase the share of research, design, software, proprietary technologies, high-level services, and strategic decision-making generated domestically. Public research alone cannot achieve this transformation, but without strong public research the transition becomes substantially more difficult.

The structure of the Czech economy reinforces this interpretation. According to the same European Commission profile, manufacturing represented approximately 25.3 per cent of Czech employment in the 2022–2024 period, compared with 15.6 per cent across the EU, while foreign-controlled enterprises accounted for a markedly larger share of value added than the European average (*European Commission, 2025*). This has supported export success and technological modernisation but also creates dependency upon strategic decisions made outside the country. Foreign ownership is not itself a weakness; multinational companies can bring technology, management expertise, investment, training, and access to global markets. The strategic question is whether domestic institutions can learn from these networks and progressively develop their own knowledge-intensive functions. Czech subsidiaries that perform manufacturing without significant R&D remain more vulnerable to relocation than organisations embedded through distinctive local research competence. Universities, AV ČR institutes, technology centres, and innovative domestic firms can therefore help anchor higher-value activities by making regions difficult to replace. Knowledge creates economic stickiness: companies are less likely to leave ecosystems in which specialised people, laboratories, suppliers, and research relationships cannot be reproduced cheaply elsewhere. The Academy contributes to national development not only when it creates a Czech-owned company but also when its expertise raises the technological sophistication of the wider economic environment.

This creates a subtle relationship between knowledge and economic sovereignty. Modern European states do not pursue technological independence by attempting to manufacture everything domestically. Such autarky would be economically inefficient and scientifically counterproductive. Strategic autonomy instead requires the capacity to understand critical technologies, evaluate external dependence, negotiate internationally from a position of competence, and maintain domestic capabilities in areas where complete reliance on external

suppliers would create unacceptable vulnerability. The pandemic exposed dependence on diagnostic supplies and pharmaceuticals; the energy crisis revealed dependence upon imported fuels; semiconductor shortages demonstrated the fragility of global production chains; advances in artificial intelligence raise new questions about computational infrastructure and digital platforms. The Czech Republic does not need national substitutes for every foreign technology, but it does require people capable of understanding the technologies on which its economy and public services depend. Academy research in chemistry, physics, energy, materials, informatics, biology, economics, law, and social sciences contributes to this capacity. Strategic knowledge therefore differs from strategic manufacturing stock. It enables a state to adapt when specific suppliers, technologies, or political conditions change. The deeper the domestic knowledge base, the less likely the country is to be limited to accepting solutions designed elsewhere without the ability to assess or modify them.

Cooperation between the Academy and universities is central to this national capacity because knowledge becomes strategic only when it can be reproduced across generations. AV ČR does not award the full range of university degrees, yet its researchers participate extensively in doctoral supervision, specialist teaching, joint laboratories, research centres, and training programmes. Students gain access to advanced instrumentation and research teams, while Academy institutes gain links to the educational pipeline through which future researchers are recruited. This relationship converts current expertise into future human capital. The distinction between education and research becomes increasingly artificial at the doctoral and advanced professional level because training occurs through participation in knowledge production. A national strategy that finances sophisticated laboratories without simultaneously producing people able to use them will ultimately fail. Conversely, education disconnected from strong research environments risks producing graduates without exposure to frontier methods. The Czech knowledge system therefore depends upon institutional complementarity rather than competition between Academy and universities. Strategic policy should strengthen the circulation of people across both sectors while preserving their distinctive missions.

The Academy's current leadership has increasingly framed this complementarity within a broader programme of national research development. In April 2026, the Academy Assembly adopted thirteen strategic priorities extending through 2029, including excellent research, career support, cooperation with universities, public policy, European funding, knowledge and technology transfer, international cooperation, digital transformation, sustainable development, research security, public communication, and Strategy AV21 (*Czech Academy of Sciences, 2026*). The list is revealing because it treats scientific excellence not as a self-contained category but as one component of an interconnected institutional system. Excellent research needs talented people; talented people require careers and international mobility; discoveries need transfer structures; public authorities need access to expertise; digital infrastructures need modern governance; and international openness increasingly requires research-security procedures. The newly created Academy of the Future programme and ERC Incubator similarly seek to strengthen the quality and international competitiveness of Czech research. The creation of the CAS Innovations company adds another institutional layer for converting results into enterprises and investable projects. These reforms suggest a movement from an older model in which the Academy's principal task was to produce science towards a system in which the institution more deliberately manages the pathways through which scientific capital circulates. The danger of such expansion is bureaucratic overload, but the

strategic logic is clear: knowledge generates national value only when an institutional ecosystem exists capable of preserving, connecting, and applying it.

Financing remains the decisive constraint on this ambition. Scientific institutions cannot be treated as strategic during crises and discretionary during ordinary budget negotiations without eventually weakening the very capacities that society later expects them to provide. Czech R&D expenditure has grown substantially in nominal terms, from approximately CZK 90.4 billion in 2017 to CZK 146.9 billion in 2024, yet its share of GDP has remained below the European average (*Czech Statistical Office, 2025*). Government-budget R&D expenditure as a share of GDP declined to 0.50 per cent in 2024 (*Czech Statistical Office, 2025*). This does not imply mechanically that every additional crown would produce an equivalent increase in scientific quality. Funding systems must evaluate performance, discourage institutional complacency, and ensure that resources support strong teams and strategically important capacities. Yet persistent underinvestment relative to leading research economies affects salaries, infrastructure renewal, international recruitment, grant success, and the willingness of young researchers to build careers in Czech institutions. Knowledge behaves differently from physical capital because deterioration may initially remain invisible. A research group can continue publishing for several years while losing promising younger scientists; a laboratory can operate while equipment gradually becomes obsolete; an archive can remain open while specialist expertise required to interpret its collections disappears. By the time decline becomes obvious, rebuilding capacity may require far more resources than maintaining it would have cost. The strategic treatment of knowledge therefore demands consistency as well as scale.

The broader economic return from research also makes conventional annual budgeting an imperfect way to assess value. A government budget records the cost of an institute immediately, whereas many benefits appear elsewhere and later. A scientific discovery may reduce health expenditure decades afterwards, support a company that pays taxes in another sector, prevent environmental damage, improve regulation, or strengthen the education of people who eventually work outside academia. Historical and cultural research may contribute to social cohesion or international reputation without generating a monetary transaction through which the value becomes visible. Crisis preparedness produces benefits partly through events that do not happen because warnings and prevention were effective. Long-term datasets become more valuable as they age, even though their annual maintenance may look repetitive. Measuring knowledge only through immediate financial return therefore systematically undervalues institutions whose benefits are distributed across society and time. This is one reason why public research must be evaluated through multiple criteria: scientific quality, international standing, human-capital formation, transfer, expert contribution, cultural value, and capacity to address long-term risks. The Academy's own periodic evaluation system increasingly attempts to distinguish research quality from broader social relevance rather than reducing both to one indicator. National development depends upon maintaining this multidimensional understanding of return.

At the same time, the Academy cannot invoke the complexity of scientific value as an argument against accountability. Strategic resources require careful management precisely because they are publicly important. Institutes must demonstrate that institutional continuity protects productive scientific communities rather than organisational inertia. Research infrastructures must be sufficiently open and well used to justify their costs. Knowledge-transfer structures need evidence that they help viable projects rather than simply increasing administration.

Public-policy advice must preserve intellectual independence rather than becoming a route to political patronage. International cooperation must generate genuine scientific value, while security risks must be evaluated proportionately. Human-capital programmes need to improve career conditions rather than merely adding temporary schemes to an unstable employment system. Treating knowledge strategically therefore increases rather than decreases the demand for institutional quality. A resource becomes strategic because society cannot afford either to lose it or to manage it badly.

The Czech Republic's position as a medium-sized European state makes this balance particularly important. It cannot compete with the United States, China, Germany, or other much larger systems through scale alone. Its comparative advantage must come from concentrated excellence, specialised expertise, rapid international integration, high-quality education, and the capacity to connect science with sophisticated industry. Historical experience already demonstrates that Czech researchers can produce discoveries with disproportionate global influence. The challenge is to make such excellence less dependent upon isolated exceptional individuals and more strongly embedded within sustainable institutional environments. A national knowledge strategy therefore seeks not simply more inventions but more conditions from which inventions, analyses, and cultural achievements can repeatedly emerge. AV ČR contributes through precisely this institutional depth. Its value lies in making excellence reproducible rather than accidental.

Knowledge also has an intergenerational character that distinguishes it from many other strategic resources. Each generation inherits laboratories, theories, datasets, archives, languages, professional standards, and research questions from those before it. It then either expands this inheritance or allows parts of it to disappear. The institutional history traced throughout this book shows that Czech science repeatedly experienced both outcomes. Political ruptures eliminated careers and programmes, but institutes, archives, collections, and scientific schools often preserved enough continuity for later renewal. Contemporary policy therefore has a responsibility not only to present taxpayers but to future researchers and citizens. Decisions concerning research careers, institutional financing, data preservation, archives, environmental monitoring, and basic science determine what intellectual options will remain available decades later. This is particularly evident in fields whose value increases through continuity, such as climate observation, population studies, language corpora, biodiversity monitoring, and historical documentation. Strategic knowledge policy is consequently a form of intergenerational stewardship.

Thus, knowledge has become one of the most important strategic resources of the contemporary Czech Republic because it connects economic transformation, technological capability, public administration, security, social resilience, and cultural continuity within a single national capacity. The post-1989 economy achieved remarkable success through industrial modernisation, foreign investment, European integration, and participation in sophisticated manufacturing chains, but the next stage of development increasingly depends upon the ability to generate and control a greater share of the knowledge from which high-value economic and social activity is created. Czech policy now explicitly seeks a resilient economy based upon knowledge and innovation, yet the country continues to invest a smaller share of GDP in research than the EU average and remains classified among Europe's Moderate Innovators (*Ministry of Industry and Trade, 2021*; *European Commission, 2025*; *Czech Statistical Office, 2025*). AV ČR occupies a central position within this transition because its fifty-four institutes preserve a broad portfolio of expertise whose value ranges from

fundamental discovery and technological transfer to expert advice, public data, cultural memory, and crisis preparedness. Experiences ranging from Antonín Holý's antiviral chemistry to contemporary laser technologies, environmental monitoring, policy analysis, and digital research infrastructures show that the path from knowledge to national value is neither linear nor predictable. Some discoveries become global commercial successes; others improve legislation, strengthen resilience, preserve language and history, or maintain capabilities that society will need only in a future emergency. The strategic importance of the Academy therefore lies not in converting every research project into an immediate application but in preserving an ecosystem where original knowledge can emerge, circulate, and acquire new uses over time. Its relationship with universities reproduces human capital, its international networks connect Czech science to global knowledge, and its transfer structures increasingly help domestic firms and public institutions absorb research results. In this sense, the Academy is not merely one beneficiary of national science policy; it is part of the infrastructure through which the Czech Republic attempts to move from successful industrial catching-up towards a genuinely knowledge-intensive model of development. Whether that resource can be transformed into sustained international scientific strength, however, depends upon the quality, attractiveness, and competitive position of the Czech research system itself.

2. The Academy and the Competitiveness of Czech Science

Scientific competitiveness is more difficult to define than economic competitiveness because research is simultaneously cooperative and competitive. Scientists depend upon international exchange, shared infrastructures, open publication, and the cumulative work of other researchers, yet institutions also compete intensely for talented people, prestigious grants, journal space, infrastructure investment, partnerships, and intellectual leadership. A national research system is therefore competitive not simply when it produces a large number of publications, but when researchers working within it can formulate problems that shape international agendas rather than merely follow them. Competitiveness is visible when institutions attract researchers who possess realistic alternatives elsewhere, when strong students remain or return after international training, when laboratories can participate as equal partners in leading collaborations, and when Czech teams are trusted to coordinate difficult international projects. It is also visible when discoveries, concepts, databases, methods, or interpretations produced in the country become resources used by researchers abroad. None of these characteristics can be created by one indicator. Publication impact, grant performance, mobility, research infrastructure, career conditions, institutional governance, collaboration with universities and industry, and international reputation all contribute to the position of a scientific system. The national innovation-system literature has long emphasised that scientific performance depends upon relationships among institutions rather than isolated excellence (*Lundvall, 1992*; *Nelson, 1993*). This is particularly relevant to the Czech Republic because a medium-sized country cannot achieve global leadership through scale. It must create sufficiently concentrated areas of excellence while remaining deeply integrated into European and international networks. The Czech Academy of Sciences has consequently become one of the principal institutions through which the Czech Republic attempts to convert a comparatively small national research base into internationally competitive scientific capacity.

The starting point for this process was unusually difficult. In 1989, Czechoslovakia possessed a substantial scientific infrastructure and highly capable researchers, but much of the system had spent four decades operating under conditions fundamentally different from those of competitive Western science. International contacts had never disappeared completely, and certain institutes maintained strong scientific reputations despite political constraints, yet mobility, publication networks, equipment, access to literature, career structures, and the distribution of resources were all affected by the political order. Normalisation had further damaged the system by removing or marginalising researchers, restricting contacts, and reinforcing forms of institutional hierarchy whose logic was not primarily scientific. The post-1989 transformation therefore required Czech researchers to enter an international competitive environment at the same moment when their own institutions were being reorganised. Scientists had to publish in different journals, apply to unfamiliar grant systems, build foreign collaborations, learn new forms of project administration, modernise laboratories, and compete with institutions that had spent decades accumulating advantages under much more stable conditions. The transformation of ČSAV into AV ČR did not eliminate these asymmetries immediately. Rather, it created an institutional framework within which they could gradually be reduced. The Academy's post-1993 history can therefore be interpreted partly as an extended process of competitive reintegration. Its institutes moved from a nationally organised scientific hierarchy towards a system in which their relevant comparison increasingly became universities and laboratories in Germany, France, Britain, Austria, the Netherlands, Scandinavia, the United States, and other advanced research environments. Competitiveness required not simply institutional survival after socialism but a fundamental change in the standards by which survival was justified.

This change made evaluation one of the central instruments of Academy reform. Since 1993, AV ČR has repeatedly subjected its institutes to periodic assessment rather than treating their existence and funding as historically guaranteed. The logic is significant because a system of permanent specialised institutes can easily become vulnerable to organisational inertia if continuity is not combined with external criticism. Evaluation therefore became one of the mechanisms through which institutional stability was reconciled with scientific competition. The Academy's assessments have evolved considerably in methodology, but they increasingly place research groups and institutes within an international rather than merely domestic frame. The most recent completed round covered research and professional activities during 2020–2024. Fifty-two research institutes and more than four hundred research teams were examined in a process extending from spring 2025 into early 2026. Fifty-two international commissions were established, with one commission responsible for the two assessment phases of each institute, and the process used qualitative informed peer review alongside information about selected scientific outputs and institutional activities (*Czech Academy of Sciences, 2026*). The purpose was explicitly to obtain independent information about institutes and teams and position their performance within an international context. The resulting recommendations are intended to influence Academy and institute management during the next five-year period. Evaluation thus functions not simply as retrospective accounting but as one of the instruments through which future scientific competitiveness is governed.

The significance of this model lies partly in its movement away from mechanically equating scientific quality with bibliometric quantity. Publication and citation data remain useful, particularly when interpreted within appropriate disciplinary contexts, but their apparent precision can become misleading when numbers substitute for expert judgement. A highly

cited biomedical paper, an internationally important mathematical proof, a critical edition of a medieval source, an archaeological database, and a major Czech dictionary cannot be assessed meaningfully through the same numerical scale. The Academy therefore joined the Agreement on Reforming Research Assessment in 2022 and participates in the Coalition for Advancing Research Assessment, CoARA. Its action plan for assessment reform emphasises qualitative peer judgement and aligns Academy procedures with wider European efforts to reduce inappropriate dependence upon simplistic publication metrics (*Coalition for Advancing Research Assessment, 2022*; *Czech Academy of Sciences, 2024*). The 2020–2024 evaluation consequently relied upon informed peer review rather than automatic bibliometric ranking. This does not represent a rejection of quantitative evidence. It reflects the more demanding proposition that indicators should support rather than replace scholarly judgement. The principle is consistent with the Leiden Manifesto, which warned that research evaluation becomes distorted when numerical measures cease to be contextual tools and become targets in themselves (*Hicks et al., 2015*). Competitiveness is therefore defined not by maximising countable outputs but by producing work that informed international experts regard as significant within the intellectual norms of the relevant field.

The latest evaluation offered the Academy encouraging evidence about its international position. When the results were discussed publicly in April 2026, President Radomír Pánek reported that approximately 70 per cent of the selected outputs examined in the 2020–2024 assessment had received the two highest ratings, “Outstanding” or “Excellent” (*Czech Academy of Sciences, 2026*). Such figures should be interpreted cautiously. They do not mean that seventy per cent of everything produced within the Academy belongs to a vaguely defined “world elite”, nor can selected-output evaluation be converted directly into an international league table. Their value lies instead in demonstrating that a substantial proportion of the work chosen for detailed external scrutiny survived demanding international peer assessment at a very high level. The result also showed the unevenness inherent in a large research organisation. Some teams operate at or near global frontiers, others perform strongly at European or national levels, and still others face structural or scientific weaknesses requiring correction. A competitive Academy therefore cannot be understood through the reputation of its strongest institutes alone. Its institutional challenge is to preserve exceptional teams, raise the quality of weaker environments, and determine when organisational restructuring is more appropriate than continued support. Periodic international evaluation gives the Academy evidence with which to make such distinctions, although the political difficulty of acting upon negative evaluations should never be underestimated. Competitiveness requires not merely measuring quality but allowing evaluation to have consequences.

The turn towards international evaluation also transformed internal academic authority. Under the older centralised system, an institute’s position could depend heavily upon its history, disciplinary prestige, relationships with Academy leadership, or political standing. In the contemporary model, directors and research teams must increasingly explain themselves to reviewers whose primary frame of reference lies outside Czech institutional traditions. This changes the meaning of institutional memory. A distinguished past remains valuable insofar as it has produced capabilities that generate strong present research, but historical prestige cannot substitute indefinitely for current performance. International evaluation similarly places pressure upon locally dominant scientific schools when their assumptions have become isolated from developments abroad. At the same time, an external review system must avoid assuming that internationalisation automatically means imitation of dominant

Anglo-American models. Some research questions acquire their significance precisely from Czech languages, archives, ecosystems, industrial traditions, legal institutions, or historical experience. Competitiveness therefore requires a double orientation: research should meet international standards while retaining the ability to recognise intellectually important problems rooted in the national environment. The Academy's multidisciplinary structure makes this distinction particularly important because the appropriate balance differs radically between particle physics and Czech lexicography, molecular genetics and contemporary history, or astrophysics and archaeology. A mature competitive system does not force these fields into one institutional template. It requires each to demonstrate excellence according to standards that are internationally intelligible and scientifically defensible.

International publication became one of the most visible manifestations of this transformation. During the socialist period, many Czech and Czechoslovak scientists published abroad, but political barriers, limited access to journals, language constraints, and the organisation of academic publishing restricted international circulation unevenly. After 1989, English-language publication in international journals became increasingly central to careers in most natural, technical, biomedical, economic, and social-science disciplines. The change had several consequences. Czech researchers entered wider citation and peer networks, domestic findings became more visible, and institute reputations became increasingly dependent upon external rather than national audiences. International co-authorship grew in importance because modern research frequently requires complementary methods, facilities, and datasets unavailable within one country. Czech science thereby became less nationally self-contained but more vulnerable to international stratification. Researchers were no longer competing primarily for recognition within a Czech or Czechoslovak scientific hierarchy; they were competing with laboratories whose budgets, salaries, equipment, and institutional reputation could be substantially stronger. The relevant question consequently shifted from whether Czech researchers could publish internationally to whether they could shape research directions within those international communities. The distinction between participation and leadership remains one of the central indicators of scientific competitiveness.

European comparative evidence shows a research system with genuine strengths but also persistent structural distance from the strongest innovation environments. Under the revised European Innovation Scoreboard methodology for 2025, Czechia was ranked 19th among EU Member States and classified as a Moderate Innovator, with overall performance at about 81 per cent of the EU average (*European Commission, 2025*). This composite innovation measure extends well beyond academic research and should therefore not be interpreted as a ranking of Czech science itself. Nevertheless, its internal indicators reveal aspects of the ecosystem within which Academy research operates. Czechia performed strongly in public-private scientific co-publications, reaching 129.9 per cent of the EU average, and it also showed notable strength in digital skills and the share of foreign doctoral students. By contrast, weaknesses included venture-capital expenditure, tertiary educational attainment, labour productivity, intellectual-property indicators, and mobility of highly qualified personnel. The resulting pattern is characteristic of a country capable of producing internationally connected research and sophisticated industrial output while still struggling to convert this capacity into a fully developed high-value innovation ecosystem. AV ČR cannot solve those structural weaknesses alone. Yet the Academy is directly implicated in several of them through researcher mobility, collaboration with industry, advanced training, intellectual-property development, and the international attractiveness of Czech research careers.

Participation in European framework programmes provides a more direct test of competitive integration. Horizon Europe and its predecessor programmes require Czech institutions to compete or cooperate within a large European research market in which scientific quality, project design, partnership structure, and strategic positioning all matter. Czech participation has improved substantially compared with the country's early years in European programmes, but analyses continue to identify differences between the Czech structure of participation and that of Europe's most research-intensive countries. Technology Centre Prague found that in the first years of Horizon Europe, Czech organisations performed comparatively well in Widening instruments and European partnerships, while the share of funding obtained in some competitive parts of Pillar II remained relatively weak. Czechia's share of Horizon Europe support linked to ERC grants compared favourably with other Moderate Innovators but still remained below the levels characteristic of several Strong Innovators and Innovation Leaders (*Technology Centre Prague, 2023*). This distinction matters because European programmes perform two functions simultaneously. They provide resources to Czech institutions, but they also expose those institutions to external comparison. High participation generated primarily through instruments designed specifically to strengthen less research-intensive countries cannot be interpreted in the same way as strong performance in competitions open under identical conditions to Europe's leading institutions. The long-term objective must therefore be convergence not merely in the amount of European funding received but in the types of competition in which Czech institutions succeed.

The European Research Council has consequently acquired exceptional symbolic importance within Czech science. ERC grants are awarded primarily on the basis of scientific excellence and the originality and ambition of the investigator's proposed research, making them unusually powerful markers of international competitiveness. They also give principal investigators substantial intellectual freedom and resources with which to establish or expand teams. Czech performance was initially modest after the ERC began operating in 2007, reflecting both the limited number of researchers accustomed to this type of competition and structural weaknesses in the domestic environment. Over time, however, the Academy developed a disproportionately strong position within the Czech ERC landscape. As of September 2026, 116 ERC grants had gone to the Czech Republic or Czech principal investigators since 2007, and researchers associated with AV ČR had secured forty-six of them. Charles University accounted for thirty-two and Masaryk University for eighteen, making the Academy the most successful Czech institutional system in cumulative ERC performance (*Czech Academy of Sciences, 2026*). This should not be interpreted as a simple competition between Academy and universities because investigators move between institutions and many projects rely upon wider national and international networks. Nevertheless, the figure demonstrates that AV ČR provides environments in which a substantial share of Czech frontier-research success has been concentrated.

The development since 2024 has been particularly instructive. In the 2024 ERC Consolidator Grant competition, four investigators working at AV ČR institutes received awards, including researchers from plasma physics, organic chemistry and biochemistry, ethnology, and the Biology Centre. Academy reporting noted that this number equalled the Consolidator Grants awarded in that round to Oxford University and exceeded the number secured by Cambridge University, although direct comparison among individual annual rounds should naturally be treated cautiously (*Czech Academy of Sciences, 2024*). The disciplinary distribution was perhaps more significant than the headline comparison because the awards extended across

natural sciences and the humanities. In 2025, researchers at Academy institutes participated successfully in two ERC Synergy projects, including work on genetic disorders involving the Institute of Microbiology and Biology Centre and research into party systems and social cleavages in the post-Ottoman Middle East and North Africa associated with the Oriental Institute. Only about one proposal in ten succeeded in the 2025 Synergy competition (*Czech Academy of Sciences, 2025*). Such results demonstrate that international competitiveness within the Academy is not confined to a single historically strong research cluster. They also show that comparatively small Czech humanities institutes can compete in funding schemes usually associated publicly with laboratory science.

The 2026 Starting Grant results reinforced this trend in a particularly revealing way. Six ERC Starting Grants were awarded to researchers hosted in the Czech Republic in that round, and three of them went to AV ČR institutes. Hana Polášek-Sedláčková at the Institute of Biophysics, Ondřej Mrózek at the Institute of Inorganic Chemistry, and Hedwig Waters at the Institute of Ethnology each received up to €1.5 million for five years (*Czech Academy of Sciences, 2026*). The three projects range from the molecular mechanisms of DNA-replication memory to new luminescent compounds for OLED technologies and ethnographic research into changing relationships between people, plants, climate, and the concept of “wildness”. The range again matters. Competitiveness is strongest when it is reproduced across disciplines and generations rather than concentrated in one celebrated institute. The Starting Grant category is especially important because it allows relatively young researchers to build independent teams, thereby influencing the future internal structure of Czech science. A country that produces senior scientific stars but fails to establish conditions for the next generation cannot remain competitive for long. ERC success therefore functions not merely as an award for work already completed but as an instrument through which future scientific leadership is created.

The Academy’s decision to create an ERC Incubator in 2026 shows that such success is increasingly being treated as a matter of institutional strategy rather than individual fortune. The Incubator helps researchers develop proposals, understand the structure of ERC competitions, and prepare for a selection process whose demands differ from many domestic grant schemes. This form of support does not lower the scientific threshold; the proposals still face external ERC competition. Its purpose is to prevent strong scientific ideas from failing because applicants lack familiarity with project framing, interview preparation, or the institutional expectations of the programme. Such professional support is routine in leading European universities and research organisations, and Czech institutions historically entered this competition with less developed administrative ecosystems. Building these capacities therefore represents part of competitive catch-up. The broader lesson is that excellence depends upon organisational competence surrounding the scientist as well as the scientist’s intellectual quality. A brilliant researcher burdened with inefficient administration, weak grant support, unstable employment, or inadequate project management competes at a disadvantage against an equally brilliant researcher embedded within a more effective institution. International scientific competition increasingly occurs between institutional environments as much as between individuals. The Academy’s challenge is therefore to create environments in which talent is amplified rather than consumed by avoidable organisational friction.

This issue leads directly to the competition for human capital. Research careers are among the most internationalised professional labour markets, particularly at the postdoctoral and senior-investigator levels. A promising Czech scientist can apply for positions in Vienna,

Munich, Berlin, Zurich, Copenhagen, Amsterdam, London, Paris, Boston, or many other research centres, while AV ČR institutes simultaneously seek researchers from abroad. The competitiveness of Czech science therefore depends upon whether the country participates in genuine brain circulation rather than simply losing talented researchers after training. International mobility is scientifically valuable because people carry methods, networks, organisational knowledge, and research cultures between institutions. A Czech researcher spending several years abroad can return with stronger expertise and international contacts, while a foreign researcher joining an Academy institute can alter the culture and intellectual ambitions of a local team. The strategic problem emerges when salary structures, career uncertainty, administrative barriers, or research conditions make return and recruitment systematically unattractive. In that situation, mobility becomes asymmetric. Countries with stronger institutions absorb talent produced elsewhere, while weaker systems finance education without capturing later scientific leadership. National competitiveness therefore depends upon the attractiveness of the entire career environment rather than upon patriotic expectations that Czech researchers should eventually return.

The Academy's growing use of tenure-track arrangements, junior group programmes, fellowships, mobility schemes, and targeted support for emerging leaders reflects awareness of this problem. Its strategic programme for the 2025–2029 leadership period identifies career development and the attraction of excellent scientists among its central priorities. The new Academy of the Future initiative and related measures aim to strengthen environments in which internationally competitive researchers can establish or develop teams, while the ERC Incubator seeks to connect career development with frontier European funding (*Czech Academy of Sciences, 2026*). These mechanisms are important because the period between the doctorate and an independent senior position is often the most vulnerable stage of a scientific career. Repeated short contracts can delay intellectual independence, encourage talented researchers to leave science, and create excessive dependence upon senior group leaders. Conversely, premature career security without rigorous evaluation can reduce dynamism. A competitive system therefore requires transparent pathways in which young researchers can take genuine scientific risks while facing demanding but predictable assessment. The Academy's ability to reform these pathways will influence its competitiveness over decades rather than merely one evaluation cycle.

Remuneration remains an inseparable part of this question. Scientific careers cannot be reduced to salary because researchers also value intellectual freedom, colleagues, infrastructure, family conditions, institutional reputation, and the ability to pursue ambitious projects. Nevertheless, sustained differences between Czech salaries and those available at leading Western European institutions inevitably affect recruitment and retention, particularly in fields where researchers also possess strong private-sector alternatives. Informatics, artificial intelligence, biotechnology, engineering, quantitative economics, and advanced instrumentation can expose public research organisations to competition not merely from foreign universities but from technology companies and financial institutions. Underfunding therefore influences science through human behaviour before it necessarily appears in publication statistics. A group may remain productive while progressively losing its best postdoctoral researchers; experienced technicians may move to better-paid sectors; project administrators with international expertise may be difficult to retain. By the time scientific output declines visibly, the underlying human-capital erosion may already be advanced. Academy leadership has consequently connected the results of the 2020–2024 international

evaluation with warnings that Czech R&D expenditure remains below the European average and that stagnant public funding threatens the sustainability of excellent teams (*Czech Academy of Sciences, 2026*). Competitiveness cannot be maintained indefinitely by asking institutions to produce Western European scientific quality under substantially weaker financial conditions.

Funding quality matters as much as funding volume. Stable institutional resources allow institutes to preserve teams, maintain infrastructure, undertake risky preliminary work, and support research whose value cannot be demonstrated within a three-year project cycle. Competitive grants, by contrast, allow resources to move towards strong proposals and expose researchers to external evaluation. European programmes provide international benchmarking and access to larger networks. Czech Grant Agency competitions support basic research, while the Technology Agency of the Czech Republic and other schemes strengthen application-oriented work. No single form of support is sufficient. A system relying almost entirely upon institutional budgets can become conservative, while one dependent excessively upon temporary projects may fragment careers and encourage researchers to tailor questions continuously to funding calls. Competitiveness therefore requires a funding ecology in which institutional continuity and competitive selection reinforce rather than undermine one another. The Academy's history since 1993 has been shaped by attempts to find precisely this balance. The strongest institutes use stable support as a platform from which to win additional national and international resources, while external success in turn strengthens institutional capability. The danger arises when basic institutional resources become so constrained that teams must use competitive grants merely to preserve ordinary operations rather than expand scientific ambition.

Research infrastructures represent another decisive competitive factor because many contemporary scientific questions cannot be addressed without expensive facilities, specialised databases, long-term collections, or high-performance computing. Czech policy has gradually constructed a national system of large research infrastructures aligned with the European Strategy Forum on Research Infrastructures. The current national roadmap for 2023–2026 contains forty-three large infrastructures across physical sciences and engineering, energy, environmental sciences, biological and medical sciences, social sciences and humanities, and digital research infrastructure (*Ministry of Education, Youth and Sports, 2024*). Their operating costs are financed substantially from the Czech state budget, while major investments have also relied heavily upon European cohesion-policy resources. Academy institutes operate or participate in a substantial part of this landscape, including biomedical imaging and phenotyping, chemical biology, structural biology, environmental monitoring, particle-physics collaborations, observatories, language and cultural resources, and other facilities. The strategic importance of these infrastructures lies in their open-access character and international integration. An instrument becomes more competitive when it attracts excellent external users, produces collaborative networks, and embeds Czech researchers inside European infrastructures rather than serving only one domestic team. Infrastructure policy therefore moves Czech science from ownership towards participation in shared scientific capacity.

The transformation associated with ELI Beamlines, BIOCEV, HiLASE, and related centres illustrates the scale of the post-accession change. European structural funds enabled the Czech Republic to construct facilities whose technological sophistication would have been extremely difficult to finance solely from ordinary institutional budgets. ELI Beamlines in Dolní

Březany developed from an Institute of Physics project into part of the international ELI ERIC infrastructure, while BIOCEV brought Academy institutes and Charles University together in advanced biotechnology and biomedicine. Interdisciplinary programmes such as ELIBIO subsequently linked high-power laser science with structural and molecular biology, creating research possibilities that did not fit older disciplinary boundaries. These investments altered international perceptions of what Czech laboratories could host. They also created a demanding second-stage problem: buildings and instruments do not automatically produce globally competitive research. Long-term operating finance, exceptional group leaders, technical staff, international user communities, and integration with European networks determine whether infrastructure becomes an intellectual centre or merely an expensive facility. The competitiveness question therefore shifts over time from construction towards utilisation. Czech science demonstrated that it could build world-class facilities; its continuing task is to populate them with research communities whose performance justifies the scale of the investment.

This infrastructural transformation has also strengthened the relationship between AV ČR and universities. Czech scientific competitiveness cannot be maximised if the two institutional sectors behave as separate systems competing for the same state resources. Universities possess the central educational pipeline, large student populations, accredited doctoral programmes, and broad disciplinary faculties. Academy institutes provide concentrated research environments, specialised infrastructure, long-term research teams, and often a higher ratio of research activity to teaching obligations. Their comparative advantages are therefore complementary. Many doctoral students formally enrolled at Charles University, Masaryk University, Czech Technical University, or other universities conduct substantial research within Academy laboratories or under Academy supervision. Shared centres such as BIOCEV demonstrate the institutional logic of this cooperation physically, while countless less visible joint appointments and projects reproduce it across disciplines. Competition between institutions can improve quality when it concerns ideas and recruitment, but destructive duplication of infrastructure or administrative rivalry can weaken the national system as a whole. The relevant unit of international competition is ultimately not one Czech institute against one Czech faculty. It is Czech science against research environments capable of integrating their national institutions more effectively.

International collaboration must similarly be evaluated through the quality of participation rather than its mere existence. A Czech group can appear in a large multinational consortium without exercising much intellectual influence over the programme. Conversely, a small team may provide a unique method or dataset that makes it indispensable. Competitive maturity is therefore associated with the ability to initiate collaborations, coordinate work packages, host infrastructure, lead scientific questions, and attract partners rather than merely respond to invitations. This is particularly important within Horizon Europe, where the organisational demands of coordination are substantial and research institutions from countries with long experience in framework programmes often possess specialised administrative teams that give them an advantage. Czech organisations have improved considerably in this respect, but national analyses still show areas where participation patterns differ from those of more research-intensive EU states (*Technology Centre Prague, 2023*). Increasing the number of Czech evaluators, coordinators, panel members, and programme-level participants can gradually improve this position because researchers learn how European agendas are formed rather than encountering them only when calls are published. Competitiveness is partly

procedural knowledge: institutions that understand how international science is organised can position strong ideas more effectively.

Scientific networks also have reputational effects that accumulate slowly. When Czech researchers repeatedly publish with respected foreign groups, host international conferences, serve on editorial boards, review European projects, and train successful students, the institutional affiliation itself begins to function as a quality signal. This matters for recruitment because researchers often make career decisions under uncertainty. A young scientist considering Prague or Brno may know little about the Czech administrative system but may recognise the names of individual supervisors, facilities, or internationally successful groups. ERC grants, major publications, international awards, and leadership within European infrastructures therefore produce benefits extending beyond the projects themselves. They make future recruitment easier. Reputation can become self-reinforcing: excellent researchers attract excellent colleagues, who strengthen grants and outputs, which in turn improve institutional visibility. The reverse dynamic is equally possible. Once an institute becomes perceived as peripheral, recruitment becomes harder, ambitious researchers leave, and international collaboration becomes increasingly dependent upon stronger partners. Periodic evaluation, targeted recruitment, and support for independent young teams can therefore be understood partly as mechanisms designed to prevent such cumulative decline.

The humanities and social sciences require particular care within this competitive framework. Internationalisation is essential to these fields, and Czech scholars increasingly publish in leading international journals and presses, obtain ERC grants, and participate in global research networks. Yet a system that defines competitiveness entirely through English-language citation databases risks undervaluing research whose primary objects and audiences are Czech. A definitive Czech historical synthesis, critical edition, archaeological corpus, language dictionary, legal commentary, or national bibliography may have enormous scholarly and cultural importance while attracting fewer international citations than a comparatively minor article in a globally fashionable field. The 2024–2026 evaluation reform therefore matters greatly to these institutes because informed international peer review can assess intellectual significance more flexibly than a universal bibliometric formula. The recent ERC achievements of the Institute of Ethnology and the Oriental Institute also demonstrate that international excellence and locally or regionally grounded scholarship are not opposites. The Institute of Ethnology had obtained five ERC grants by September 2026 despite its relatively small size, an exceptional concentration of success for a humanities and social-science workplace (*Czech Academy of Sciences, 2026*). Such cases challenge the old assumption that competitive research must necessarily converge towards laboratory disciplines or large-scale technological projects.

Evaluation reform must nevertheless confront a genuine tension between comparability and disciplinary diversity. Policymakers require some basis for deciding how public resources should be distributed among institutions, yet scientific fields produce different kinds of outputs over different timescales. Citation cultures vary enormously. Large experimental collaborations can generate papers with hundreds of authors, while historians may work for a decade on a monograph authored alone. Theoretical mathematics can produce few publications of exceptional depth, whereas biomedical fields may publish more frequently. Patents are meaningful in some technological areas and almost meaningless in philosophy or linguistics. A competitive research system therefore needs differentiated criteria without allowing every discipline to define success so generously that external comparison

disappears. Informed peer review offers one solution, but it is expensive, time-consuming, and itself dependent upon evaluator quality. International commissions can also reproduce biases dominant in the wider research system. The Academy's turn towards CoARA and DORA principles should therefore be understood as an evolving governance experiment rather than a final methodological solution (*Coalition for Advancing Research Assessment, 2022*; *Hicks et al., 2015*). Competitiveness improves when evaluation rewards genuine intellectual contribution rather than skill in optimising indicators.

Interdisciplinarity introduces another dimension. Many of the most internationally competitive research problems now lie between conventional fields: climate change combines atmospheric science, ecology, economics, social behaviour, and law; artificial intelligence links computer science with mathematics, language, psychology, ethics, and regulation; biomedical research increasingly combines molecular biology, physics, chemistry, engineering, and computation. The institute-based structure of AV ČR can hinder such research if disciplinary boundaries become organisational walls. Yet it can also support it because specialised institutes preserve deep expertise that can be recombined through collaborative programmes. Strategy AV21 has served as one of the principal mechanisms for creating these cross-institute networks around societal challenges. Its value for competitiveness should not be measured only through direct applications. Researchers who learn to cooperate across disciplinary cultures can enter European consortia more effectively and formulate questions difficult for narrower institutions to address. Interdisciplinary excellence, however, cannot be created simply by administratively instructing disciplines to collaborate. It depends upon strong disciplinary competence first. Weak research groups placed together do not become internationally competitive because the project label is interdisciplinary. The Academy's challenge is therefore to connect existing excellence rather than substitute coordination for scientific depth.

Knowledge transfer provides another increasingly important indicator of competitiveness, although it too requires careful interpretation. Institutes able to generate patents, licences, spin-offs, industrial collaborations, analytical services, or policy expertise demonstrate that their research possesses value beyond the academic publication system. The Institute of Organic Chemistry and Biochemistry provides the most spectacular historical example through the global success of discoveries associated with Antonín Holý, but the Academy has gradually built broader transfer mechanisms through IOCB Tech, CETAV, the PRAK programme, and the development of new spin-off structures. Such activities can strengthen competitiveness by attracting researchers who want their findings to move towards practical use, by connecting institutes with technologically capable firms, and by generating additional resources. Yet commercial success should not become a proxy for scientific excellence. Some world-leading basic research will never generate a patent, while commercially useful work is not necessarily intellectually frontier research. A competitive Academy therefore benefits from transfer precisely when it preserves plurality: some teams produce foundational knowledge, some create technologies, and others contribute expert or cultural resources whose public value follows completely different routes. The national strength lies in the coexistence of these functions rather than the conversion of every institute into a quasi-company.

Research integrity and openness are similarly components of competitiveness rather than merely ethical obligations. International collaborators, funders, and researchers deciding where to work must be confident that Czech institutions operate according to credible standards of authorship, data management, ethics, and professional conduct. Scientific

misconduct damages individual careers, but repeated or poorly handled cases can damage the reputational capital of entire institutions. AV ČR's revised Code of Ethics, Open Science principles, participation in research-assessment reform, and increasing attention to institutional transparency therefore affect its ability to compete internationally. Open and well-managed data can make Czech research more reusable, improve collaboration, and increase the visibility of specialised resources. Transparent career rules can make recruitment more credible. Strong mechanisms for addressing harassment or abuse of seniority can influence whether international researchers regard an institute as professionally safe. Competitive excellence is consequently inseparable from organisational culture. Researchers choose institutions partly according to whether they expect their work and careers to be treated fairly. Scientific quality is not produced in a vacuum detached from institutional ethics.

The geopolitical environment has added research security to this competitive equation. International openness remains indispensable to Czech science, but technologies, data, and expertise increasingly have strategic and dual-use significance. Universities and Academy institutes may cooperate with partners linked to states whose political or military interests create risks of unwanted knowledge transfer. Overreaction would be equally damaging because excessive restrictions could isolate Czech researchers from the international networks on which scientific quality depends. The emerging European principle of remaining "as open as possible and as closed as necessary" therefore captures a real competitive dilemma. Research organisations must protect sensitive technologies and institutional integrity without creating a climate in which foreign researchers are treated primarily through suspicion. AV ČR's 2024 ethical framework and strategic priorities through 2029 increasingly recognise research security as an organisational responsibility. Competitiveness in the 2020s consequently includes the capacity to manage international cooperation intelligently rather than simply maximise its volume. A research institution that cannot protect sensitive knowledge may become a security liability, while one that closes itself excessively will cease to be internationally competitive.

Digital transformation creates a similar dual challenge. Research increasingly depends upon high-performance computing, artificial intelligence, data-intensive methods, secure networks, digital repositories, and advanced software. These technologies are no longer confined to computer science. Biologists analyse genomic and imaging datasets, historians work with digitised corpora, linguists train language models, astronomers process enormous observational datasets, and social scientists integrate increasingly complex survey and administrative information. The Czech national e-INFRA CZ infrastructure supplies high-performance communication, computing, cloud, grid, storage, and authentication services across the research system, demonstrating how competitiveness now depends upon shared digital infrastructure as much as individual laboratories (*Ministry of Education, Youth and Sports, 2024*). Academy institutes also contribute directly to artificial-intelligence research and computational methods. The strategic problem is that digital technologies evolve rapidly, so investment cycles shorter than those of traditional research buildings become necessary. Institutions must also compete for software engineers and data specialists against private-sector salaries. Scientific competitiveness therefore increasingly depends upon occupations that older academic organisational models sometimes treated as technical support rather than core intellectual infrastructure.

Regional geography also shapes Czech scientific competitiveness. Prague concentrates a large share of Academy institutes, universities, foreign researchers, cultural institutions,

government bodies, and innovative firms, while Brno has developed a second powerful research ecosystem around universities, CEITEC, Academy workplaces, technology companies, and advanced infrastructure. Other centres, including České Budějovice and Ostrava, possess important specialised strengths but operate in less dense scientific environments. Clustering creates advantages because researchers can move among institutions, share equipment, recruit partners, and interact with firms without crossing large geographical distances. Yet excessive concentration can make national talent recruitment dependent upon only a few urban labour markets and leave other regions with weaker access to advanced research. Academy workplaces outside Prague therefore contribute to competitiveness not merely through their own publications but by anchoring knowledge-intensive communities regionally. The Biology Centre in České Budějovice, for example, creates a scientific concentration whose importance to South Bohemia exceeds what its institutional size alone would suggest. Research centres in Brno and Ostrava similarly connect Academy expertise with local universities and industries. A competitive national system requires enough concentration to achieve critical mass but enough territorial distribution to avoid reducing advanced science to one metropolitan enclave.

Administrative burden is a less visible but increasingly important competitive factor. Modern research projects require ethical documentation, procurement, financial reporting, data-management plans, personnel rules, security procedures, open-science compliance, grant audits, and increasingly complex European administrative requirements. Many of these obligations protect legitimate public interests. Yet when procedures become unnecessarily slow or duplicative, they consume scientific time and reduce the attractiveness of institutions. Researchers comparing positions internationally notice not only salary and equipment but the ease with which staff can be hired, purchases made, grants administered, and foreign researchers integrated. The administrative modernisation included among the Academy's strategic priorities is therefore not simply an internal management exercise. It directly affects scientific competitiveness. High-quality research administration has become a specialised profession requiring knowledge of European programmes, legal rules, intellectual property, mobility, data protection, and financial management. Institutes able to provide this support allow scientists to devote more attention to intellectual work. Those that treat administration as a peripheral afterthought impose hidden costs upon their own researchers.

The Czech system also faces the broader problem of scale. The country cannot maintain internationally leading capacity in every narrow field, yet scientific discovery is difficult to plan because areas initially regarded as peripheral may later become strategically important. Excessive concentration of funding into a small number of fashionable topics can therefore increase short-term visibility while reducing long-term adaptability. Complete dispersion of resources, however, risks leaving too many groups below the critical mass required to compete internationally. AV ČR's institute network continually negotiates this tension. Specialised institutions preserve disciplinary depth and rare expertise, while evaluation and restructuring provide mechanisms for determining when fragmentation becomes scientifically inefficient. Strategy AV21 and shared infrastructures provide ways to create larger networks without abolishing institutes. ERC and other external grants allow exceptional teams to expand beyond ordinary institutional limits. Scientific competitiveness therefore requires selective concentration without intellectual monoculture. The most resilient system maintains a sufficiently broad portfolio to recognise emerging opportunities while giving exceptional researchers enough resources to pursue them at internationally significant scale.

This is particularly important for a country whose overall innovation position remains below that of Europe's Strong Innovators. The 2025 European Innovation Scoreboard showed Czechia moving to 19th place and remaining at around four-fifths of average EU performance under the revised methodology, while national RIS3 monitoring warned that the distance from Strong Innovators would not close automatically without significant structural improvement (*European Commission, 2025*). Strong public-private co-publication and advanced manufacturing demonstrate that the Czech system already possesses important components of a competitive knowledge economy. Weak venture-capital investment, lower tertiary educational attainment, limited international patenting, and human-capital bottlenecks demonstrate that those components are not yet integrated strongly enough to produce the performance of Austria, Germany, Belgium, or other more advanced European innovation systems. The Academy's task within this landscape is specific. It cannot repair venture-capital markets or redesign the entire university system, but it can produce frontier research, train and attract researchers, create transferable knowledge, strengthen European networks, and provide high-quality infrastructures. Its contribution is therefore necessary but not sufficient. National competitiveness emerges only when research institutions, universities, companies, public administration, finance, and education reinforce one another.

The Academy's own recent performance suggests that Czech science does not face a simple problem of insufficient scientific quality. The success of individual institutes in ERC competitions, high ratings in international evaluations, world-class chemical and biomedical research, advanced laser and materials programmes, strong environmental science, and internationally competitive humanities research demonstrate that excellence already exists within the system. The central problem is whether such excellence can become more widely reproducible and institutionally sustainable. A country can produce outstanding scientists while maintaining a research system that remains only moderately competitive overall. Isolated peaks do not automatically transform the surrounding landscape. The Academy therefore needs to convert individual success into institutional learning: successful grant applicants can mentor younger colleagues, strong institutes can share project-support practices, major infrastructures can serve wider communities, and international recruitment experience can be transferred across workplaces. The difference between episodic excellence and systemic competitiveness lies precisely in this capacity for reproduction.

There is also a temporal dimension. Scientific reputation develops slowly but can deteriorate surprisingly quickly. A leading team may depend upon one generation of researchers whose retirement creates a vacuum if succession has not been prepared. An instrument can become obsolete within a few years. A highly successful institute can lose international position if recruitment stops or funding becomes unpredictable. Conversely, a previously peripheral group can move rapidly towards the frontier when a strong young leader, appropriate infrastructure, and external grant coincide. Competitive governance must therefore look beyond current output. Evaluation should ask whether institutes possess convincing future trajectories, whether younger researchers are gaining independence, whether infrastructures remain internationally relevant, and whether foreign recruitment is improving intellectual diversity. The 2020–2024 Academy evaluation is significant partly because its reports are intended to shape management during the next five-year period rather than merely certify past achievement (*Czech Academy of Sciences, 2026*). A research institution becomes competitive by continually rebuilding the conditions of its own future performance.

The international position of Czech science consequently depends upon institutional confidence as much as catch-up. During the 1990s, adaptation to Western standards was an unavoidable priority because decades of political division had separated Czech institutions from dominant European research systems. By the 2020s, however, competitiveness cannot mean permanent imitation. Mature scientific systems contribute distinctive ideas because researchers are sufficiently integrated internationally to know the frontier and sufficiently independent to challenge it. The growth of Czech ERC success is particularly important in this respect because ERC funding rewards investigator-driven proposals rather than work designed around predetermined thematic priorities. Winning such competitions indicates that researchers hosted in Czech institutions can formulate questions judged internationally to be ambitious on their own terms. This is a different achievement from successfully implementing tasks inside a consortium designed elsewhere. The long-term aim of the Academy must therefore be intellectual agenda-setting. Czech researchers should participate not only in European science but in defining what European and global science investigates.

Thus, the competitiveness of Czech science depends upon far more than the number of publications produced or the volume of research funding obtained in any single year. Since 1989, AV ČR has played a central role in transforming a scientific system inherited from state socialism into one increasingly assessed by international standards, integrated into European networks, and capable of producing areas of research recognised at the global frontier. Periodic evaluation has made external peer judgement a normal element of institutional governance, while the 2020–2024 assessment indicated that a substantial share of the Academy's selected research outputs achieved the highest levels in international review (*Czech Academy of Sciences, 2026*; *Czech Academy of Sciences, 2026*). ERC performance offers another particularly demanding measure: by September 2026, Academy researchers had secured forty-six of the 116 ERC grants associated with the Czech Republic or Czech principal investigators since the programme began, and three of the six Czech Starting Grants awarded in the 2026 round went to AV ČR institutes (*Czech Academy of Sciences, 2026*). Yet these successes coexist with broader structural weaknesses. Czechia remains a Moderate Innovator, public R&D investment remains below the level characteristic of many stronger European systems, career and salary conditions complicate international recruitment, and Czech participation in European research programmes remains uneven across funding instruments (*European Commission, 2025*; *Technology Centre Prague, 2023*). The Academy's competitive advantage therefore lies in combining several assets that few other Czech organisations possess simultaneously: long-term institutional continuity, specialised research teams, international evaluation, large infrastructures, strong participation in frontier science, cooperation with universities, disciplinary breadth, and increasingly professional mechanisms for grant support and knowledge transfer. Its future position will depend on whether these strengths can be converted from isolated peaks of excellence into a more consistently attractive research environment. The decisive question is not whether Czech scientists are capable of world-class work—they repeatedly demonstrate that they are—but whether the national system can provide enough continuity, freedom, resources, mobility, administrative competence, and generational renewal for such work to become normal rather than exceptional. In this sense, the competitiveness of AV ČR and the competitiveness of Czech science are inseparable: the Academy succeeds internationally only within a healthy national research ecosystem, while that ecosystem would be significantly weaker without the Academy's concentrated research capacity. Scientific competitiveness is therefore best understood not as a permanent race for rankings but as the ability of a country to create

institutions in which original knowledge can repeatedly emerge, survive rigorous international comparison, attract talented people, and circulate into the wider society.

3. Research, Education, Innovation, and Cultural Identity

The relationship among research, education, innovation, and cultural identity brings together several themes that have appeared separately throughout the institutional history of Czech science. None of these functions is sufficient on its own to explain the public value of the Czech Academy of Sciences. Research generates new knowledge, but knowledge acquires continuity only when it is transmitted to another generation. Education reproduces scientific competence, but it becomes intellectually dynamic when students encounter knowledge at the stage at which it is still being created rather than merely reproduced from textbooks. Innovation transforms some discoveries into technologies, procedures, services, companies, or public policies, yet an innovation system deprived of strong fundamental research gradually loses the capacity to generate genuinely new possibilities. Cultural identity gives society historical, linguistic, and symbolic continuity, but it remains intellectually healthy only when the interpretation of that identity is open to evidence, criticism, and comparison with other cultures. AV ČR occupies an unusual position because all four functions coexist within the same institutional system. Its statutes explicitly connect international scientific advancement with education, culture, the competitiveness of the Czech Republic, and the solution of current societal problems (*Czech Academy of Sciences, 2006*). The Academy therefore embodies a conception of national development broader than technological modernisation alone. It treats the production of knowledge, the education of researchers, its translation into practice, and the preservation and reinterpretation of cultural inheritance as interconnected public responsibilities. This integration is one of the most distinctive features of the modern Czech academy model.

This combination has deep historical roots in the Czech lands. The earliest learned societies were created by comparatively narrow scholarly elites, but their activities gradually became entangled with educational reform, publishing, language development, natural-history collections, museums, and the formation of a wider educated public. During the Czech National Revival, scholarly work became inseparable from the effort to establish Czech as a language capable of expressing modern scientific, philosophical, administrative, and cultural concepts. Natural scientists, historians, philologists, physicians, and writers therefore participated in the same broader transformation of society even when their research questions differed radically. The 19th-century growth of Czech-language scholarship was simultaneously an educational project and an institutional project. Knowledge had to be created, but it also had to be named, classified, published, taught, and incorporated into a national cultural vocabulary. The later Czech Academy of Sciences and Arts inherited this connection between scientific advancement and cultural self-definition. It supported scientific research while also fostering scholarship in language, literature, history, art, archaeology, and other fields through which Czech society interpreted itself. The Academy tradition consequently never fitted comfortably into a distinction between economically “useful” science and culturally “symbolic” scholarship. Both contributed to the modernisation of the Czech lands by creating intellectual infrastructures that an increasingly complex society required. Contemporary AV ČR preserves this inheritance in a substantially transformed democratic and international

context, but the underlying connection between knowledge and cultural capacity remains recognisable.

The establishment of ČSAV in 1952 altered this relationship by concentrating research on a scale that earlier Czech academic institutions had never possessed. Its institutes became major centres of physics, chemistry, biology, mathematics, medicine-related research, engineering sciences, history, archaeology, linguistics, philosophy, economics, and other disciplines. The socialist system also developed a relatively clear institutional division between the Academy and universities, although the boundary was never complete. Universities retained formal responsibility for degree education, while ČSAV was expected above all to concentrate scientific research and specialised postgraduate training. Academy researchers nevertheless taught students, supervised younger scholars, wrote textbooks and reference works, and influenced disciplinary education through the authority of their institutes. This model produced genuine scientific advantages because researchers could devote comparatively large portions of their professional time to research. It also produced tensions, particularly when the separation between research institutions and universities made the transmission of knowledge less organic than in systems where advanced research was concentrated more heavily inside universities. Political control compounded the problem because education and research alike could be affected by ideological restrictions, personnel decisions, and the changing priorities of the regime. After 1989, Czech science did not simply choose between preserving the Academy and transferring all research to universities. It gradually developed a complementary system in which specialised Academy research and university education became more closely connected. The resulting relationship has become one of the most important institutional foundations of contemporary Czech scientific reproduction.

This complementary role is now explicitly embedded in the legal and statutory definition of AV ČR. The Academy's institutes contribute to the development of knowledge and education, cooperate with universities in doctoral programmes, educate researchers, participate in teaching, provide research infrastructures, and support the application of scientific results (*Czech Academy of Sciences, 2006*). The Academy's current mission similarly states that researchers participate in education particularly through doctoral study programmes and university teaching while simultaneously cooperating with applied research and industry (*Czech Academy of Sciences, n.d.*). These provisions prevent the Academy from being interpreted as an institution concerned exclusively with research outputs. Education is part of the mechanism through which research capacity itself is sustained. The relationship is especially significant at doctoral level because the distinction between education and research becomes increasingly artificial once students are expected to produce original knowledge. A doctoral student working in an Academy laboratory, archive, archaeological team, or theoretical research group is not simply receiving information from established researchers. The student is learning how to formulate questions, design methods, evaluate evidence, handle uncertainty, participate in international debate, and eventually contribute independently to the discipline. Education therefore becomes a process of scientific socialisation. The Academy's contribution lies precisely in creating environments in which this process occurs within communities organised primarily around research.

The institutional scale of cooperation with universities has expanded substantially. By 2026, the Academy publicly listed fifty-three cooperation agreements with Czech higher-education institutions, including a series of recently renewed or newly concluded arrangements

concerning doctoral education. Agreements or memoranda signed during 2025–2026 involved Charles University, Masaryk University, Palacký University, the University of South Bohemia, the University of Chemistry and Technology Prague, Brno University of Technology, the University of Ostrava, and Jan Evangelista Purkyně University, among others (*Czech Academy of Sciences, n.d.*). The pattern demonstrates that cooperation is no longer limited to a few historically privileged relationships in Prague. It extends across a substantial part of the Czech higher-education system and involves institutions in several regions. These agreements cannot by themselves guarantee high-quality cooperation because the real substance lies in laboratories, supervisors, students, shared projects, and personal networks. Nevertheless, formal frameworks matter because doctoral education requires stable rules concerning supervision, institutional responsibilities, access to infrastructure, financing, evaluation, and the position of students who work across organisational boundaries. The Academy and universities are thereby constructing a more integrated research-training system without abolishing their institutional differences. The university provides degree-granting structures and a broader educational environment, while the Academy can provide concentrated research teams and specialised facilities. This complementarity strengthens the Czech capacity to reproduce advanced expertise across generations.

The educational role of AV ČR also extends below doctoral level and thereby influences the longer pipeline through which future scientists emerge. The Open Science programme has introduced secondary-school students to research through sustained internships rather than limiting contact to public lectures or laboratory visits. Science fairs, institute open days, educational videos, specialist courses, teacher programmes, and public lectures similarly expose younger audiences to research cultures before they enter university. These activities were discussed earlier in “Popularisation, Education, and Citizen Engagement,” but their relevance to national development lies in the continuity they create between public curiosity and professional formation. A pupil may first encounter an Academy researcher through a science festival, later join an internship, enter a Czech university, conduct a doctoral project in an Academy institute, and eventually become a professional researcher. Few individuals will follow this complete trajectory, and public education should not be valued solely as a recruitment instrument. Nevertheless, a research system requires channels through which scientific careers become visible and imaginable. Advanced research can appear socially distant when children encounter scientists only as historical figures in textbooks. Direct engagement makes the profession concrete and demonstrates that scientific work is performed by contemporary people within Czech institutions. The Academy thus contributes to a culture in which the production of knowledge can be regarded as a viable part of national professional life rather than an exceptional occupation accessible only abroad.

The educational contribution is not confined to the reproduction of professional scientists. Scientific knowledge increasingly influences decisions made by citizens who will never work in laboratories or research institutes. Medical choices, environmental policy, digital technologies, energy, artificial intelligence, economic reform, demographic change, historical memory, and media literacy all require some capacity to evaluate complex claims. The Academy’s public educational role therefore participates in what might be called the cognitive infrastructure of democracy. A society does not need every citizen to become an expert, but it benefits when citizens understand why evidence is collected systematically, why uncertainty does not make knowledge worthless, and why professional disagreement differs from arbitrary opinion. This function becomes especially important in digital environments where

authoritative and fabricated information can appear visually identical. Educational communication by AV ČR can provide access to reliable resources while also demonstrating the methods through which reliable knowledge is produced. Such activities connect research with civic culture rather than only career preparation. They also reinforce the argument developed in "Public Trust in Expert Knowledge" that trust is most durable when citizens understand something about the procedures behind expertise. Education is therefore not merely a supporting activity of science. It helps create the social conditions in which science can perform its democratic role.

The transmission of research into innovation introduces a different but complementary pathway. Innovation studies have long emphasised that new technologies do not normally emerge through a simple linear sequence in which a scientist discovers something and a company immediately converts it into a product. Knowledge circulates among research organisations, universities, firms, governments, users, investors, and regulatory institutions through repeated interactions (*Lundvall, 1992*; *Etzkowitz & Leydesdorff, 2000*). AV ČR occupies several positions within this network at once. Its institutes produce fundamental knowledge, train researchers who later move into companies and universities, provide specialised infrastructure, cooperate with industrial partners, license intellectual property, create spin-offs, supply expertise to government, and participate in European innovation networks. The educational and innovative functions are therefore linked through the movement of people as much as through patents. A researcher trained in an Academy institute who later joins a technology company carries methods, professional standards, and tacit knowledge into the private sector even if no formal licence is involved. Conversely, industrial collaboration can expose researchers and students to practical problems whose solution generates new scientific questions. Innovation thus becomes a circulation of competence rather than merely a transfer of finished inventions. The Academy contributes most effectively when it remains a strong producer of original research while developing institutions capable of making that knowledge accessible to other sectors.

This transfer architecture has become progressively more professional. Academy institutes historically created applied results and cooperated with industry, but the 21st century has brought more systematic mechanisms for intellectual-property management, commercialisation, and the creation of new companies. IOCB Tech demonstrated the value of professional transfer structures around the Institute of Organic Chemistry and Biochemistry, while CETAV and the PRAK programme widened support across the Academy. In February 2026, AV ČR announced the creation of a joint-stock company intended to professionalise the establishment and management of spin-offs and to create transparent procedures through which external capital could enter Academy-derived projects (*Czech Academy of Sciences, 2026*). Eight institutes were among the first shareholders, with the possibility of wider participation across the Academy's fifty-four institutes. The Academy simultaneously emphasised that this development was intended to strengthen rather than replace its basic-research mission. Examples presented in 2026 ranged from advanced ECG analysis to industrial laser technologies, illustrating different routes from prolonged research towards practical application (*Czech Academy of Sciences, 2026*). These initiatives demonstrate that innovation increasingly requires institutional competences not traditionally associated with academic research: legal expertise, market analysis, regulatory knowledge, investment negotiations, business development, and professional project management. The modern Academy therefore cannot simply expect researchers to perform transfer individually in

addition to their scientific work. It must construct intermediary institutions through which different professional cultures can cooperate.

Innovation should nevertheless be interpreted more broadly than technological commercialisation. An archaeological information system, a linguistic database, a historical digital archive, a methodological standard, an economic policy model, or a public-health recommendation may be highly innovative even when no spin-off company results. The distinction is particularly important for a multidisciplinary academy because the forms through which research reaches society differ radically among fields. A chemical discovery may enter a pharmaceutical licence, whereas a new historical database may transform scholarship and public education by creating open access to previously dispersed evidence. A language tool may support schools, publishing, journalism, software development, and natural-language processing simultaneously. Social-science research may alter administrative practice or legislation without generating intellectual property in a commercially conventional sense. Humanities researchers increasingly employ digital technologies that themselves require methodological innovation and produce reusable research infrastructures. The Academy's statutory conception of application is therefore appropriately broader than market transfer alone. Its institutes are expected to disseminate information, provide expert opinions, educate researchers, and apply scientific results in ways relevant to culture and society as well as competitiveness (*Czech Academy of Sciences, 2006*). Such plurality is essential if innovation policy is not to reduce the public value of research to whatever can most easily be monetised.

The Czech language provides perhaps the clearest example of how research, education, innovation, and cultural identity can converge in one field. The Czech Language Institute defines its core mission as scientific research into the Czech national language, its current state, historical development, relationship with other languages, vocabulary, grammar, style, text construction, general linguistics, and language didactics (*Czech Language Institute, n.d.*). This work belongs unmistakably to fundamental research, yet its consequences extend into schools, publishing, media, government, digital communication, and everyday linguistic practice. Institute researchers teach at universities and make linguistic research accessible to the wider public. The Language Consulting Centre provides professional advice and uses recurrent public questions as material for research into actual language needs. The relationship is therefore reciprocal rather than one-directional: scholarship informs public language practice, while real-world language use generates new research evidence. Czech identity is present here not as an immutable linguistic essence but as the historically changing practice of a language community. Academic linguistics contributes by documenting change, explaining variation, and providing evidence-based reference resources rather than merely policing linguistic behaviour. This is a particularly characteristic form of public scholarship because the object studied by researchers is simultaneously a central medium through which citizens understand themselves and communicate with one another.

Digitalisation has transformed this linguistic role into a form of technological infrastructure. The Czech Language Institute now provides an extensive ecosystem of electronic dictionaries, historical-language resources, bibliographies, corpora, dialect materials, lexical databases, and reference tools. Its Internet Language Reference Book contains more than 112,000 dictionary entries and detailed guidance on a wide range of grammatical, orthographic, phonological, and stylistic questions (*Czech Language Institute, n.d.*). More than four million users had used the resource by the publication of the third expanded *Academic Handbook of the Czech Language* in 2024 (*Pravdová & Svobodová, 2024*). The Institute also makes resources

available on Old Czech, dialects, place names, spoken language, academic Czech, and the historical development of vocabulary. These are products of long-term linguistic scholarship, yet they also function as digital public services and research infrastructure. They can support education directly, provide structured data for language technologies, and preserve linguistic phenomena that are disappearing from everyday use. The Dictionary of Czech Dialects, for example, documents Czech, Moravian, and Silesian dialect vocabulary accumulated across roughly the last century and a half (*Czech Language Institute, n.d.*). Digital innovation therefore does not displace cultural preservation; it can substantially increase its accessibility and analytical power. The traditional academic function of producing dictionaries has evolved into a technologically sophisticated system connecting cultural memory with contemporary data science.

Literary scholarship provides a comparable example. Czech literature has long been one of the principal media through which national experience, political conflict, exile, linguistic experimentation, and social transformation have been interpreted. Yet literary culture survives as an object of rigorous scholarship only when texts, editions, bibliographies, archives, and contextual information are systematically preserved. The Czech Literary Bibliography maintained within the Institute of Czech Literature has transformed this traditional scholarly infrastructure into an open digital resource. Its downloadable datasets include the retrospective bibliography of Czech literature from 1770 to 1945, contemporary bibliography from 1945 onwards, bibliographies of samizdat and exile literature, Czech literature in translation, web literature, almanacs, calendars, and other specialised corpora (*Czech Literary Bibliography, n.d.*). These resources are stored in machine-readable form with descriptive and administrative metadata and are made available for further use. A project covering literary studies from 1945 to 1960 alone generated more than seventy thousand records drawn from scholarly periodicals, newspapers, and other publications. The result is not merely an archive of national culture but an infrastructure capable of supporting digital humanities, computational analysis, education, translation research, and international Czech studies. Literary memory thus becomes both cultural heritage and reusable research data. The case demonstrates how innovation can emerge through new forms of access to traditionally humanistic knowledge rather than through the replacement of such knowledge by technology.

Archaeology creates another intersection between scientific research and collective identity because material evidence links contemporary landscapes with societies that existed long before modern national categories. The Institute of Archaeology in Prague investigates the human past through fieldwork, material analysis, environmental evidence, and increasingly sophisticated scientific methods. It simultaneously maintains the largest specialised archaeological library in the Czech Republic, archives of excavation reports, photographic documentation, maps, plans, aerial images, digital systems, and registers relevant to archaeological heritage (*Institute of Archaeology of the CAS, Prague, n.d.*). More than thirty thousand archaeological sites are recorded in the Czech Republic, meaning that archaeological expertise also intersects directly with construction, planning, heritage management, and regional development. The Institute works with developers, museums, public authorities, volunteers, and the general public while maintaining professional responsibility for the documentation and interpretation of sources. Its own institutional description emphasises that archaeological objects do not constitute knowledge automatically; material remains must be critically analysed, contextualised, and interpreted (*Institute of Archaeology of the CAS, Prague, n.d.*). This distinction is crucial for cultural identity.

Archaeology can be politically attractive because artefacts appear to provide tangible proof of national continuity, yet professional research repeatedly shows that populations, cultures, technologies, and identities were historically mobile and interconnected. Scientific archaeology therefore contributes to cultural identity by complicating simple narratives of origin rather than merely confirming them.

The archaeological case also demonstrates how innovation and cultural heritage can reinforce one another materially. Digital mapping, remote sensing, archaeogenetics, radiocarbon dating, isotope analysis, geophysical survey, three-dimensional documentation, and database infrastructures have radically altered the capacity to reconstruct past societies. These technologies frequently depend upon cooperation among archaeologists, physicists, chemists, biologists, geologists, statisticians, and computer scientists. Cultural research therefore becomes a site of interdisciplinary technological development rather than a separate sphere insulated from modern science. At the same time, applied archaeological knowledge can reduce conflicts between heritage protection and economic development by identifying risks before construction begins and by documenting threatened sites systematically. The Prague Institute explicitly provides archaeological risk-assessment services for development and maintains a dedicated heritage-management function. Public programmes, museums, exhibitions, virtual presentations, and events such as Archaeological Summer then return the resulting knowledge to society. The path can therefore run from field research through laboratory technology and digital infrastructure to planning policy, education, tourism, and public memory. Cultural identity is not the opposite of innovation in this model. It is one of the domains in which scientific and technological innovation acquires a particularly visible human meaning.

Archival institutions perform a related function for the documentary past. The Masaryk Institute and Archives of the Czech Academy of Sciences combines research into modern Czech and Central European history, the life and work of T. G. Masaryk, the history of science, codicology, and archival studies with responsibility for extensive archival collections. It preserves records of the Academy and its predecessor organisations as well as personal archives of significant Czech scientists and important political figures including Masaryk and Edvard Beneš (*Masaryk Institute and Archives of the CAS, n.d.*). The Institute therefore preserves evidence relevant both to national political history and to the institutional history of Czech scholarship itself. This dual function is particularly significant because democratic identity depends partly upon the ability of society to investigate its own institutions historically. Masaryk's legacy can be commemorated symbolically, but scholarly research makes that legacy open to documentary criticism rather than ceremonial idealisation. The closure of the original Masaryk Institute under the communist regime in 1954 and its restoration after the Velvet Revolution also form part of this institutional memory. An archive that preserves evidence across regimes provides society with materials through which official narratives can later be questioned. Cultural identity here becomes inseparable from documentary accountability.

The Institute of Contemporary History occupies an even more direct position within public debates about recent memory. Its principal research concerns the period from 1938 to the present, including the institutionalisation of power, social and systemic transformations, and the history of thought and science. Its projects address democracy, dictatorship, Roma history, marginalised groups, the communist regime, 1968, dissidence, the 1989 revolution, and the social memory of COVID-19 (*Institute of Contemporary History of the CAS, n.d.*). Such topics cannot be isolated from living political identities because many citizens or their families

directly experienced the events under investigation. Research therefore enters a public sphere in which evidence competes with nostalgia, trauma, political mythology, and partisan interpretation. The Institute's educational activities for teachers and the wider public help transmit research beyond specialised historiography. This does not mean that historians should produce a single authorised democratic narrative to replace the ideological narratives of the socialist period. Their contribution lies instead in maintaining access to sources, methodological criticism, and plural interpretations constrained by evidence. A democratic cultural identity is strengthened when society can examine its past without requiring every historical conclusion to serve contemporary political convenience. The Academy thus participates in cultural continuity while preserving the possibility of critical discontinuity with inherited myths.

Philosophical research adds another dimension because societies require concepts through which technological and cultural change can be interpreted. The Institute of Philosophy describes its mission as contributing to international research in philosophy, classical and medieval studies, Comenius studies, intellectual history, philosophy of science, and environmental and technological ethics. It explicitly connects fundamental research with questions of cultural memory, social transformation, politics, ethics, science, and technology (*Institute of Philosophy of the CAS, n.d.*). Such work demonstrates why innovation cannot be considered purely a technical process. Artificial intelligence, biotechnology, environmental interventions, surveillance, or data-driven administration all generate questions about responsibility, autonomy, justice, evidence, and the legitimate limits of technological action. Engineers and scientists can describe what a system is capable of doing; philosophical analysis helps clarify what assumptions are built into decisions about whether and how it should be used. Historical philosophy similarly preserves intellectual traditions through which Czech and European societies have interpreted statehood, civil society, dissent, knowledge, and moral responsibility. The Institute's public lectures, school activities, and cooperation with teachers extend this critical function into education. Innovation therefore becomes culturally sustainable when technological capability is accompanied by institutions capable of reflecting critically upon its purposes and consequences.

The Oriental Institute demonstrates why cultural knowledge of societies beyond the Czech Republic has also become a national strategic capacity. Founded in 1922 with the support of T. G. Masaryk, it developed traditions of research into the Middle East, South and East Asia, languages, religions, history, politics, literature, and social transformation. It now maintains extensive collections and research expertise covering regions from the Arab world and Iran to India, Central Asia, China, Japan, and Southeast Asia (*Oriental Institute of the CAS, n.d.*). Such specialisation might once have appeared primarily as a traditional humanistic field. In an internationally integrated Czech Republic, it also has significance for diplomacy, trade, migration, security analysis, cultural exchange, and public understanding of geopolitical change. Knowledge based on languages, local sources, archival research, and prolonged regional expertise cannot be replaced reliably by rapid media commentary when a crisis suddenly brings a region to public attention. The Institute's contemporary research platforms therefore address subjects such as political power, propaganda, cultural security, migration, and cultural diplomacy alongside historical and philological research. Its researchers also teach at Czech universities, thereby transmitting forms of specialised area knowledge that university departments alone may not always be large enough to sustain. Cultural research

thus becomes both an educational resource and part of the state's ability to understand an increasingly complex external environment.

Publishing provides one of the oldest mechanisms connecting all these domains. Academia was established in 1953 as the publishing house of ČSAV and has used its present name since 1966. Its programme now includes original scientific monographs, works by Czech scholars, translations, popular science, encyclopaedias, dictionaries, university textbooks, non-fiction, fiction, and the long-established journal *Živa* (*Academia, n.d.*). The significance of this publishing infrastructure extends beyond the dissemination of research results. Scientific communities require books and reference works through which knowledge becomes teachable, while national culture requires high-quality publication of works that may never attract sufficiently large commercial audiences to guarantee their survival through market demand alone. Dictionaries and scholarly editions can take years to prepare and can remain useful for generations. Translations connect Czech readers with intellectual traditions produced elsewhere, while Czech scholarly books make domestic research visible to professional and public audiences. Academia therefore acts as an intermediary between research institutions, education, cultural life, and the book market. In an increasingly digital environment, the continued importance of professionally edited long-form scholarship also provides a counterweight to communication systems organised around speed and brevity. The Academy's public culture consequently depends upon publishing as much as upon laboratories or public events.

The relationship between cultural identity and scientific research should nevertheless be treated cautiously because "national culture" can easily acquire an exclusionary interpretation. Academic institutions have historically participated in nation-building, and 19th-century scholarship often classified language, folklore, history, and archaeology within frameworks designed partly to demonstrate the antiquity or coherence of national communities. Contemporary research has made such categories themselves objects of investigation. Nations, identities, traditions, and memories are historical constructions shaped by institutions, communication, education, migration, conflict, and selective remembrance (*Anderson, 2006*; *Assmann, 2011*). This does not make them unreal or unimportant. It means that their significance lies in how communities create and reproduce them rather than in the assumption that they have existed unchanged throughout history. AV ČR's humanities institutes contribute most responsibly to cultural identity when they investigate these processes critically rather than producing scholarship intended simply to confirm preferred national narratives. Czech identity includes Czech-language traditions and state history, but it is also shaped by German, Slovak, Jewish, Roma, Polish, Ukrainian, Austrian, European, and numerous other historical relationships. Research can show both continuity and conflict within this complex inheritance. Cultural identity thereby becomes an object of knowledge rather than a political doctrine that research is expected to legitimise.

This critical approach is particularly visible in Strategy AV21's programme "Identities in a World of Wars and Crises." Introduced in 2024 under the coordination of the Masaryk Institute and Archives and the Institute of Ethnology, the programme connects much of the Academy's humanities and social-science research around questions of history, language, nationality, religion, political manipulation, migration, war, and social cohesion (*Czech Academy of Sciences, 2024*). Its organisers explicitly note that identity-forming elements can be manipulated within geopolitical conflicts and public communication. The programme therefore treats identity simultaneously as a cultural phenomenon and as a contemporary

political resource. Researchers from multiple institutes cooperate with foreign universities, creating an international framework for analysing processes that might otherwise be treated narrowly as domestic cultural questions. This orientation illustrates a broader transformation in the Academy's approach to cultural research. National identity is not studied as an isolated Czech possession but as part of comparative European and global dynamics. The public value lies precisely in providing evidence where public debate is often dominated by simplified or deliberately manipulative narratives. Cultural scholarship thereby becomes relevant to democratic resilience without being reduced to political messaging.

Strategy AV21 more broadly demonstrates how the boundaries among research, innovation, social knowledge, and culture are becoming increasingly permeable. In 2025 the Academy was operating fifteen programmes under the principle of "top research in the public interest", bringing institutes together with universities, public institutions, state bodies, companies, and industrial partners (*Czech Academy of Sciences, 2025*). Newer programmes have addressed artificial intelligence, food production and consumption, households and technology, assisted reproduction, biodiversity, infectious disease, and the materiality of objects. The programme "The Power of Objects: Materiality Between the Past and the Future," for example, deliberately combines archaeology, history, ethnology, materials research, chemistry, and informatics in order to connect present technological and environmental problems with their historical roots (*Czech Academy of Sciences, 2026*). This is a revealing departure from the assumption that humanities preserve the past while natural sciences create the future. Materials have histories; technologies transform identities and everyday life; consumption patterns influence environmental risk; and cultural practices affect whether technical solutions are accepted. Interdisciplinary research becomes innovative precisely because it reconnects domains that institutional specialisation had previously separated. Strategy AV21 thus provides one organisational mechanism through which the Academy's disciplinary diversity can become an integrated national resource.

Artificial intelligence makes this integration especially visible. AI is simultaneously a field of mathematical and computational research, a technological platform for scientific discovery, an industrial opportunity, a challenge to education, a transformation of labour, a regulatory problem, and a cultural technology affecting language and representation. The Academy's Strategy AV21 programme "AI: Artificial Intelligence for Science and Society" therefore necessarily extends beyond computer science. Philosophers investigate questions of rationality, ethics, and technological responsibility, linguists provide structured knowledge about Czech, social scientists analyse consequences for institutions and work, while other disciplines use machine-learning methods within their own research. The cultural dimension is strategically important for a language community of Czech scale. Digital technologies increasingly mediate communication through systems developed from enormous multilingual datasets in which globally dominant languages possess structural advantages. Long-term Czech linguistic resources, dictionaries, annotated data, bibliographies, and digital humanities infrastructures therefore acquire a new technological value. Preserving Czech as a fully functional language of education, science, administration, and digital communication is no longer only a traditional cultural-policy question. It increasingly depends upon whether Czech-language knowledge exists in forms that contemporary computational systems can process responsibly. Research infrastructure created to document culture thus becomes part of technological sovereignty.

Education is the crucial mechanism connecting these new technologies with society. Universities must train specialists capable of working with artificial intelligence, biotechnology, advanced materials, environmental modelling, and data-intensive research, but they must also educate professionals able to evaluate the social implications of such technologies. Academy institutes contribute to this process because their researchers participate directly in frontier research and can introduce students to methods before they become standard textbook material. The value is greatest when education does not separate technical competence from critical understanding. A computer scientist working on language technologies benefits from linguistic knowledge, just as a historian employing machine-learning methods needs to understand how digitisation and source selection shape the resulting dataset. A biomedical researcher requires not only molecular expertise but knowledge of research ethics and data protection. Environmental innovation depends upon public policy and social acceptance as well as accurate models. The Academy's multidisciplinary environment can therefore support educational cultures in which students learn that complex problems cannot always be solved within the conceptual limits of one field. Such interdisciplinarity should not eliminate disciplinary depth, because meaningful cooperation requires participants who first understand their own methods well. It does, however, alter what constitutes advanced scientific education in a knowledge-intensive society.

Regional development adds another dimension to this relationship. Prague remains the largest concentration of Academy institutes and Czech research infrastructure, but substantial research communities also exist in Brno, České Budějovice, Ostrava, and other locations. University cooperation allows these workplaces to contribute to local educational ecosystems rather than functioning as isolated research enclaves. A strong Academy institute can attract doctoral students, international researchers, public events, specialised infrastructure, and collaborations with regional firms or cultural institutions. The resulting concentration of knowledge can influence whether highly educated young people see a future in a region or feel compelled to leave permanently. Cultural research can similarly strengthen regional identity by documenting landscapes, dialects, industrial history, archaeological heritage, and local social transformation. Innovation and cultural continuity therefore intersect geographically. A former industrial region does not modernise sustainably by erasing its past, just as historical identity cannot substitute for new economic opportunities. Research institutions can help regions interpret transformation while simultaneously providing scientific and educational capacities for the future. In this sense, national development depends upon networks of knowledge centres rather than one exclusively metropolitan intellectual core.

The internationalisation of Czech science might appear at first to weaken this connection with national culture, because research careers increasingly depend upon English-language publication, international mobility, foreign collaborators, and European funding. In practice, the relationship is more complex. International integration can strengthen culturally grounded research by exposing it to comparative methods and making Czech materials visible beyond the country. Archaeological findings from Bohemia acquire broader significance when interpreted within European prehistoric networks. Czech literature becomes part of world-literature research through translation, bibliographical infrastructure, and international scholarship. Research on communism or dissidence becomes relevant to comparative histories of dictatorship and democratisation. Czech linguistic data can contribute to general linguistics and language technology. Internationalisation therefore need not replace national

intellectual traditions with generic global science. It can transform locally grounded knowledge into a contribution to wider research while bringing external concepts and methods back into Czech scholarship. The strategic question is whether Czech institutions participate as intellectually confident partners capable of offering distinctive materials and ideas rather than merely importing frameworks developed elsewhere.

This balance also affects language use within science itself. English has become indispensable as the principal lingua franca of international research, and Czech scientists cannot remain competitive if important findings circulate only domestically. At the same time, a complete abandonment of Czech scientific and scholarly vocabulary would weaken the transmission of complex knowledge into education, public administration, media, professional practice, and national cultural debate. Different disciplines require different balances. Experimental physics may reasonably communicate almost all frontier research internationally in English, while Czech law, history, language, literature, archaeology, and social policy retain substantial domestic audiences for whom Czech publication is intellectually essential. Even natural scientists need terminology through which difficult subjects can be explained to pupils, policymakers, journalists, and citizens. The Academy's publishing, linguistic, and popularisation infrastructures help preserve this two-level system. Scientific internationalisation and national-language communication therefore perform complementary functions. A mature knowledge society needs researchers able both to speak internationally and to make advanced knowledge part of its own public language.

The relationship between innovation and cultural identity also reveals why national development should not be reduced to economic convergence. A country can increase productivity while weakening institutions of memory, public education, language, and cultural confidence. Conversely, cultural preservation without technological and scientific development can become nostalgic rather than socially sustainable. The Academy's broad disciplinary structure allows these dimensions to coexist institutionally. Research in chemistry or physics may generate technologies that improve competitiveness, while historical and linguistic institutes preserve resources without which Czech cultural life would become poorer. Social sciences analyse how technological transitions distribute benefits and costs. Philosophy examines ethical assumptions behind innovation. Archaeology and art history help manage cultural heritage within rapidly changing landscapes. These functions do not compete for one abstract category of value; they contribute differently to the capacity of society to reproduce itself. Development in this broader sense means the ability to modernise without losing the knowledge required to understand what is being transformed.

There are nevertheless significant risks in attempting to integrate all these functions. The first is instrumentalisation. If every research programme is required to demonstrate an immediate contribution to education, innovation, public policy, and culture simultaneously, institutions may produce rhetorical claims rather than genuine impact. Different forms of knowledge mature on different timescales and possess different routes to social value. The second risk is the opposite: institutes may invoke the autonomy of research to avoid serious consideration of education, transfer, or public responsibility. A third danger lies in institutional competition between Academy and universities if cooperation over doctoral training is overshadowed by disputes over funding, infrastructure, or political influence. A fourth lies in commercialisation if economically promising work begins to dominate institutional priorities disproportionately. Cultural scholarship faces its own risk when public or political demand encourages researchers to confirm preferred narratives of identity rather than investigate them critically.

None of these tensions can be eliminated through a single organisational reform. The sustainability of the Academy model depends upon recognising that plurality is not an administrative inconvenience but one of the reasons the institution retains public value.

The strategic priorities adopted by the Academy Assembly in April 2026 reflect an attempt to manage precisely this plurality. Thirteen priorities through 2029 include excellent research, career development, cooperation with universities, public-policy engagement, knowledge and technology transfer, internationalisation, digital transformation, sustainable development, research security, communication, and Strategy AV21 (*Czech Academy of Sciences, 2026*). More than seven thousand researchers across fifty-four institutes are expected to operate within this framework. The programme is significant because it does not establish a hierarchy in which basic research is displaced by application. Instead, Academy leadership presents stronger application and public engagement as dependent upon excellent research. Cooperation with universities appears alongside career development because human-capital formation is understood as part of scientific performance. Digital transformation appears alongside research security because openness and technological dependence must now be governed together. Strategy AV21 provides interdisciplinary structures through which some of these priorities meet at the level of concrete research. The Academy is therefore moving towards an institutional model in which scientific excellence is treated as the centre of a network of educational, economic, cultural, and public functions rather than as an isolated output.

The durability of this model ultimately depends upon intergenerational transmission. Scientific knowledge disappears surprisingly quickly when specialist communities cease to reproduce themselves. A rare experimental technique may be lost when the last experienced researcher retires without training a successor. A historical archive can remain physically intact while the expertise required to read its languages or institutional conventions disappears. Dialect data may become impossible to recollect once speakers die. Long environmental time series can be broken by a few years of neglected monitoring. Research, education, and cultural preservation therefore meet most fundamentally in the transmission of competence. Innovation also depends upon this continuity because new combinations of knowledge can arise only from resources that have survived long enough to be recombined. The Academy's institutes function as institutional bridges across generations by maintaining teams, collections, databases, facilities, and professional traditions. Universities provide the educational pathways through which new researchers enter those traditions, while international mobility introduces external methods and intellectual challenges. Continuity is therefore neither static preservation nor repetition. It is the capacity to transmit enough knowledge that another generation can transform it.

The same principle applies to national identity. Cultural continuity is not produced by preserving one unchanging interpretation of Czech history, language, or society. It depends upon preserving sources, institutions, languages, memories, and scholarly traditions sufficiently well that each generation can ask new questions of them. Jan Assmann's concept of cultural memory emphasises the institutional forms through which societies preserve selected representations of the past across generations (*Assmann, 2011*). Scientific scholarship adds a critical dimension because the inherited material remains open to revision. Archives may reveal evidence contradicting an established national story. Linguistic research may demonstrate that forms once criticised as decline are ordinary processes of language change. Archaeology may expose prehistoric mobility inconsistent with modern ethnic

categories. Contemporary-history research may complicate heroic or victim-centred narratives. Cultural identity sustained by research is therefore reflexive rather than merely commemorative. It preserves belonging while accepting that responsible scholarship can change the way a community understands itself.

This reflexive character is particularly valuable within the European Union. Czech national identity no longer develops inside a politically or intellectually isolated nation-state, if indeed it ever did. Czech researchers, students, firms, cultural institutions, and citizens operate within European structures of mobility, law, funding, communication, and shared political problems. The Academy's international cooperation allows Czech scholarship to participate in this European intellectual space while retaining specific responsibilities towards Czech society and culture. These responsibilities are not contradictory. European integration creates additional contexts in which Czech historical experience, language, scientific expertise, and cultural resources can acquire significance. The memory of communist dictatorship contributes to European debates about authoritarianism; Czech environmental research contributes to continental climate adaptation; Czech linguistic resources add diversity to European language technology; and Czech discoveries in chemistry or physics become components of shared scientific advancement. National identity therefore becomes more rather than less intellectually demanding under conditions of internationalisation. It must be capable of recognising both distinctiveness and interdependence.

The Academy's place in national development can consequently be understood through circulation rather than through institutional possession. Research generates knowledge, but the public value of that knowledge expands when it circulates into universities, schools, companies, government, museums, cultural organisations, media, regions, and international scientific networks. Education returns trained people to research while also carrying scientific habits into professions outside academia. Innovation converts some research into technologies and services while presenting scientists with new practical questions. Cultural institutions preserve records and identities while providing materials that inspire new research and digital innovation. Citizens themselves participate through public events, consultation, archives, citizen science, language questions, and debates about historical memory. The Academy is therefore not simply a place in which knowledge is stored. It is one of the institutional nodes through which knowledge circulates across Czech society. Its effectiveness depends upon the density and quality of those connections rather than upon complete institutional self-sufficiency. This is why cooperation with universities, industry, cultural institutions, government, and the public does not weaken the Academy's distinctive identity when properly organised. It demonstrates why a specialised research institution can remain relevant within a much larger democratic knowledge system.

The broader historical trajectory is striking. The learned societies of the 18th century sought to create communities in which systematic knowledge could be cultivated within the Habsburg lands. 19th-century scholars linked knowledge increasingly with language, education, cultural institutions, and national emancipation. The Czech Academy of Sciences and Arts institutionalised a model in which scientific and cultural scholarship both contributed to the maturity of Czech society. ČSAV created a much larger research system and dramatically expanded specialised scientific capacity, but placed that capacity within the political structures of state socialism. The transformation after 1989 separated scientific legitimacy from ideological command while preserving a substantial part of the accumulated institutional capital. AV ČR subsequently internationalised its research, developed new evaluation

systems, intensified cooperation with universities, professionalised transfer, expanded public engagement, digitalised scientific and cultural resources, and increasingly organised interdisciplinary work around societal challenges. The contemporary Academy is therefore neither a continuation of the 19th-century national academy in unchanged form nor simply a post-socialist network of research institutes. It is the result of successive layers of institutional adaptation in which the meanings of research, education, public usefulness, and cultural identity have repeatedly changed.

Thus, research, education, innovation, and cultural identity constitute not four separate missions of the Czech Academy of Sciences but four interconnected dimensions of its role in the development of the Czech Republic. Research provides the intellectual foundation because neither education nor innovation can remain dynamic if institutions cease to generate new knowledge. Education gives that knowledge continuity by forming new researchers and by spreading scientific methods and critical habits beyond the professional scientific community. Innovation connects research with technologies, services, public policy, digital infrastructures, and new forms of economic activity, while the Academy's expanding transfer mechanisms demonstrate that fundamental science and practical application can reinforce rather than exclude one another. Cultural scholarship preserves language, archives, literature, archaeological evidence, historical memory, philosophical traditions, and knowledge of other societies, thereby enabling Czech society to understand both its inheritance and the transformations through which it is passing. Digitalisation increasingly connects these older cultural functions with contemporary innovation, turning dictionaries, bibliographies, archives, and historical sources into reusable data infrastructures. Cooperation with universities links institutional research to formal education, and the Academy's fifty-three cooperation agreements show how extensively this relationship has become embedded within the contemporary Czech research system (*Czech Academy of Sciences, n.d.*). Strategy AV21 similarly connects institutes with universities, public institutions, and industry around problems that cross traditional disciplinary boundaries. The most productive national development therefore does not require a choice between laboratories and libraries, technology and history, international excellence and national culture, or basic research and application. It requires institutions capable of maintaining these capacities together while allowing each to retain its own standards and temporal horizon. AV ČR's historical importance lies precisely in having preserved such breadth through repeated political and institutional transformations. Its contemporary responsibility is to ensure that this inheritance remains intellectually open, internationally competitive, educationally productive, technologically adaptable, and culturally critical rather than merely commemorative. In this sense, the Academy's contribution to national development is not exhausted by discoveries, patents, doctoral students, expert reports, dictionaries, archives, or exhibitions considered individually. It consists in maintaining an institutional environment in which a democratic society can continually create new knowledge, transmit it, apply it, and use it to reconsider who it is. The public value of science and the cultural continuity of the Czech Republic consequently meet within the same fundamental process: the organised transmission and renewal of knowledge across generations.

References

Academia. (n.d.). *O nás* [*About us*]. Nakladatelství Academia.

Akademický bulletin. (1993). *Na cestu novému Akademickému bulletinu* [*Launching the new Academic Bulletin*]. *Akademický bulletin, 1/93*.

ALLEA. (2023). *The European code of conduct for research integrity* (Rev. ed.). All European Academies.

Anderson, B. (2006). *Imagined communities: Reflections on the origin and spread of nationalism* (Rev. ed.). Verso. (Original work published 1983)

Assmann, J. (2011). *Cultural memory and early civilization: Writing, remembrance, and political imagination*. Cambridge University Press.

Bartoš, V. (2020). *Jak komunikovat s veřejností? Poznatky behaviorální ekonomie v boji proti COVID-19* [*How to communicate with the public? Insights from behavioural economics in the fight against COVID-19*]. IDEA anti COVID-19, Economics Institute of the Czech Academy of Sciences.

Bartoš, V., Bauer, M., Cahlíková, J., & Chytilová, J. (2022). Communicating doctors' consensus persistently increases COVID-19 vaccinations. *Nature, 606*, 542–549.

Bauer, M., & Chytilová, J. (2020). *Lekce behaviorální ekonomie v prevenci: Jak také bojovat s COVID-19* [*Lessons from behavioural economics in prevention: Another way of fighting COVID-19*]. IDEA anti COVID-19, Economics Institute of the Czech Academy of Sciences.

Bonney, R., Cooper, C. B., Dickinson, J., Kelling, S., Phillips, T., Rosenberg, K. V., & Shirk, J. (2009). Citizen science: A developing tool for expanding science knowledge and scientific literacy. *BioScience, 59*(11), 977–984.

Bucchi, M., & Trench, B. (Eds.). (2014). *Routledge handbook of public communication of science and technology* (2nd ed.). Routledge.

Büntgen, U., Urban, O., Krusic, P. J., Rybníček, M., Kolář, T., Kyncl, T., Ač, A., Koňasová, E., Čáslavský, J., Esper, J., Wagner, S., Saurer, M., Tegel, W., Dobrovolný, P., Cherubini, P., Reinig, F., & Trnka, M. (2021). Recent European drought extremes beyond Common Era background variability. *Nature Geoscience, 14*, 190–196.

Burns, T. W., O'Connor, D. J., & Stocklmayer, S. M. (2003). Science communication: A contemporary definition. *Public Understanding of Science, 12*(2), 183–202.

Centre of Administration and Operations of the CAS. (n.d.). *Popularizační akce* [*Popularisation events*]. Centre of Administration and Operations of the Czech Academy of Sciences.

Centre of Administration and Operations of the CAS. (n.d.). *Výzkum v oblasti společenských věd zaměřený na popularizaci a percepci vědy a vědecké práce* [*Social-science research on the popularisation and perception of science and scientific work*]. Centre of Administration and Operations of the CAS.

Coalition for Advancing Research Assessment. (2022). *Agreement on reforming research assessment*. CoARA.

Cologna, V., Mede, N. G., Berger, S., Besley, J., Brick, C., Joubert, M., Maibach, E. W., Oreskes, N., Schäfer, M. S., van der Linden, S., et al. (2025). Trust in scientists and their role in society across 68 countries. *Nature Human Behaviour, 9*, 713–730.

Council of the European Union. (2024). *Council recommendation on enhancing research security*. Council of the European Union.

Czech Academy of Sciences. (2006). *Statutes of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2017). *Strategy AV21: Top research in the public interest*. CAS.

Czech Academy of Sciences. (2018). *Dlouhé babí léto přineslo do Česka velká sucha* [*A long Indian summer brought severe drought to Czechia*]. CAS.

Czech Academy of Sciences. (2019). *Pitná voda — je a bude?* [*Drinking water — is it available and will it remain so?*]. *AVex: Expertní stanovisko AV ČR, 2/2019*. CAS.

Czech Academy of Sciences. (2019). *Současný problém sucha v ČR* [*The current problem of drought in the Czech Republic*]. *AVex: Expertní stanovisko AV ČR, 3/2019*. CAS.

Czech Academy of Sciences. (2019). *Vražda české vědy: Od vládních škrtů uplynulo deset let* [*The murder of Czech science: Ten years since the government funding cuts*]. CAS.

Czech Academy of Sciences. (2019). *Výroční zpráva Akademie věd České republiky za rok 2019* [*Annual report of the Czech Academy of Sciences for 2019*]. Czech Academy of Sciences. CAS.

Czech Academy of Sciences. (2020). *2020 Annual Report of the Czech Academy of Sciences*. Czech Academy of Sciences.

Czech Academy of Sciences. (2020). *Antibiotická krize* [*The antibiotic crisis*]. *AVex: Expertní stanovisko AV ČR, 1/2020*. CAS.

Czech Academy of Sciences. (2020). *Klimatická změna — fenomén současnosti* [*Climate change – a phenomenon of the present*]. *AVex: Expertní stanovisko AV ČR, 4/2020*. CAS.

Czech Academy of Sciences. (2020). *Viry a boj s nimi* [*Viruses and the fight against them*]. *AVex: Expertní stanovisko AV ČR, Special/2020*. CAS.

Czech Academy of Sciences. (2021). *Archeologové představují platformu pro spolupráci s amatérskými hledači* [Archaeologists introduce a platform for cooperation with amateur detectorists]. CAS.

Czech Academy of Sciences. (2021). *Důsledky těžby na Ostravsku a Karvinsku* [*The consequences of mining in the Ostrava and Karviná regions*]. *AVex: Expertní stanovisko AV ČR, 3/2021*. CAS.

Czech Academy of Sciences. (2021). *Jak lépe učit český jazyk a literaturu? Pedagogové se inspirují v Akademii věd* [How to teach Czech language and literature better? Educators find inspiration at the Academy of Sciences]. CAS.

Czech Academy of Sciences. (2022). *Migrace a občané ze „třetích zemí" v ČR* [*Migration and third-country nationals in the Czech Republic*]. *AVex: Expertní stanovisko AV ČR, 1/2022*. CAS.

Czech Academy of Sciences. (2022). *Spravedlivá transformace: Přechod k nízkouhlíkové ekonomice z pohledu práva* [*Just transition: The transition to a low-carbon economy from a legal perspective*]. *AVex: Expertní stanovisko AV ČR, 3/2022*. CAS.

Czech Academy of Sciences. (2022). *The Czech Academy of Sciences supports scientists in Ukraine*. CAS.

Czech Academy of Sciences. (2022). *The Czech Academy of Sciences announces fellowships for researchers from Ukraine*. CAS.

Czech Academy of Sciences. (2024). *Code of ethics for scientific research of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2024). *Čtyři projekty z AV ČR získaly ERC grant, každý obdrží dva miliony eur* [*Four projects from the Czech Academy of Sciences receive ERC grants, each receiving two million euros*]. CAS.

Czech Academy of Sciences. (2024). *New Strategy AV21 programmes to explore space, rare fungi, and our identities*. CAS.

Czech Academy of Sciences. (2024). *Open Science principles of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2024). *Otevřená věda slaví 20 let, stážemi prošlo více než 2000 studentů* [Open Science celebrates 20 years: More than 2,000 students have completed internships]. CAS.

Czech Academy of Sciences. (2024). *The Academy presents Action Plan to reform research evaluation at the CAS*. CAS.

Czech Academy of Sciences. (2024). *Veletrh vědy 2024* [*Science Fair 2024*]. CAS.

Czech Academy of Sciences. (2024). *Výroční zpráva o činnosti Akademie věd České republiky za rok 2024* [Annual report on the activities of the Czech Academy of Sciences for 2024]. CAS.

Czech Academy of Sciences. (2025). *How does the Academy Council plan to strengthen the Academy's role?* Czech Academy of Sciences. CAS.

Czech Academy of Sciences. (2025). *LASER-PRO: Linking science and industry to shape Europe's high-tech future*. CAS.

Czech Academy of Sciences. (2025). *Martin Fusek končí v čele společnosti IOCB Tech. Střídá ho Milan Prášil* [*Martin Fusek steps down as head of IOCB Tech and is succeeded by Milan Prášil*]. CAS.

Czech Academy of Sciences. (2025). *Ochranná pásma vodních zdrojů v ČR: Proč dosavadní postupy nestačí?* [*Water-resource protection zones in the Czech Republic: Why are existing approaches insufficient?*]. *AVex: Expertní stanovisko AV ČR, 2/2025*. CAS.

Czech Academy of Sciences. (2025). *Open Science principles of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2025). *Přírodní požáry a jejich dopady na životní prostředí a společnost* [*Wildfires and their impacts on the environment and society*]. *AVex: Expertní stanovisko AV ČR, 3/2025*.

Czech Academy of Sciences. (2025). *Týden Akademie věd České republiky 2025* [*Week of the Czech Academy of Sciences 2025*]. CAS.

Czech Academy of Sciences. (2025). *Úspěšnou dekádu Strategie AV21 podtrhují nové výzkumné programy* [*New research programmes underline a successful decade of Strategy AV21*]. CAS.

Czech Academy of Sciences. (2025). *Vice-Presidents of the CAS set priorities for 2025–2029 term*. Czech Academy of Sciences.

Czech Academy of Sciences. (2025). *Výroční zpráva o činnosti Akademie věd České republiky za rok 2025* [*Annual report on the activities of the Czech Academy of Sciences for 2025*]. CAS.

Czech Academy of Sciences. (2025). *Web InterSucho má novou podobu, ukáže míru sucha až na úroveň katastru* [*The InterSucho website has a new form and shows the extent of drought down to the cadastral level*]. CAS.

Czech Academy of Sciences. (2025). *Two ERC Synergy Grants awarded to the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2026). *Academy Assembly — Thirteen priorities to boost basic and applied research*. CAS.

Czech Academy of Sciences. (2026). *Antonín Holý 90: Vědecký odkaz, který stále mění svět i českou vědu* [*Antonín Holý at 90: A scientific legacy that continues to change the world and Czech science*]. Czech Academy of Sciences.

Czech Academy of Sciences. (2026). *AV ČR posiluje ve Strategii AV21 uplatnění výsledků, spustila nové programy* [*The Czech Academy of Sciences strengthens the application of results in Strategy AV21 and launches new programmes*]. CAS.

Czech Academy of Sciences. (2026). *Better ECGs and industrial superlasers — Real-world results of CAS research*. CAS.

Czech Academy of Sciences. (2026). *Czech Academy of Sciences to launch a joint-stock company*. Czech Academy of Sciences.

Czech Academy of Sciences. (2026). *Evaluations of the research and professional activities of the institutes of the Czech Academy of Sciences for 2020–2024*. Czech Academy of Sciences.

Czech Academy of Sciences. (2026). *Researchers at Risk Fellowship*. CAS.

Czech Academy of Sciences. (2026). *Three researchers from the Czech Academy receive prestigious ERC grants*. CAS.

Czech Academy of Sciences. (n.d.). *Brain Awareness Week*. CAS.

Czech Academy of Sciences. (n.d.). *Mission of the CAS*. CAS.

Czech Academy of Sciences. (n.d.). *NEZkreslená věda* [*Undistorted science*]. CAS.

Czech Academy of Sciences. (n.d.). *Občanská věda* [Citizen science]. CAS.

Czech Academy of Sciences. (n.d.). *Podcasts*. CAS.

Czech Academy of Sciences. (n.d.). *Popularizační časopisy AV ČR* [*Popular science magazines of the Czech Academy of Sciences*]. CAS.

Czech Academy of Sciences. (n.d.). *Pro veřejnost* [For the public]. CAS.

Czech Academy of Sciences. (n.d.). *Spolupráce s vysokými školami* [*Cooperation with higher-education institutions*]. CAS.

Czech Academy of Sciences. (n.d.). *Stáže pro studenty: Otevřená věda* [Student internships: Open Science]. CAS.

Czech Academy of Sciences. (n.d.). *Transfer znalostí a technologií* [*Knowledge and technology transfer*]. CAS.

Czech Academy of Sciences. (n.d.). *Týden Akademie věd ČR* [Week of the Czech Academy of Sciences]. CAS.

Czech Language Institute. (n.d.). *Our mission and work*. CAS.

Czech Language Institute. (n.d.). *Internetová jazyková příručka* [*Internet Language Reference Book*]. CAS.

Czech Language Institute. (n.d.). *Slovník nářečí českého jazyka* [*Dictionary of Czech Dialects*]. CAS.

Czech Literary Bibliography. (n.d.). *Datasets to download*. Institute of Czech Literature of the CAS.

Czech National Council. (1993). *Listina základních práv a svobod* [*Charter of Fundamental Rights and Freedoms*], Constitutional Act No. 2/1993 Coll.

Czech Statistical Office. (2025). *Government budget allocations for R&D*. Czech Statistical Office.

Czech Statistical Office. (2025). *R&D expenditure*. Czech Statistical Office.

Czech Statistical Office. (2026). *Výzkum a vývoj v mezikrajském srovnání v roce 2024* [*Research and development in interregional comparison in 2024*]. Czech Statistical Office.

Douglas, H. (2009). *Science, policy, and the value-free ideal*. University of Pittsburgh Press.

Drahoš, J. (2011). Úloha Akademie věd ČR ve vzdělávací činnosti a spolupráce s vysokými školami [The role of the Academy of Sciences of the Czech Republic in education and cooperation with universities]. *Živa, 59*(1), 2.

Ďurďovič, M. (2016). *Metodika pro komunikaci a účast na rozhodování o hlubinném úložišti vyhořelého jaderného paliva a vysokoaktivních odpadů v ČR* [*Methodology for communication and participation in decision-making on a deep geological repository for*

spent nuclear fuel and high-level radioactive waste in the Czech Republic]. Sociologický ústav AV ČR.

Duží, B., Osman, R., Lehejček, J., Nováková, E., Taraba, P., & Trojan, J. (2019). Exploring citizen science in post-socialist space: Uncovering its hidden character in the Czech Republic. *Moravian Geographical Reports, 27*(4), 241–253.

Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: From National Systems and "Mode 2" to a Triple Helix of university–industry–government relations. *Research Policy, 29*(2), 109–123.

European Commission. (2024). *A comprehensive legal, policy, and comparative analysis for promoting freedom of scientific research in the EU*. Publications Office of the European Union.

European Commission. (2025). *European citizens' knowledge and attitudes towards science and technology*. Special Eurobarometer. Publications Office of the European Union.

European Commission. (2025). *European Innovation Scoreboard 2025*. Directorate-General for Research and Innovation, Publications Office of the European Union.

European Commission. (2025). *European Innovation Scoreboard 2025: Country profile Czechia*. Directorate-General for Research and Innovation.

European Research Executive Agency. (2026). *Science for democracy*. European Commission.

Federičová, M., & Korbel, V. (2020). *Pandemie COVID-19 a sociálně-ekonomické nerovnosti ve vzdělávání* [*The COVID-19 pandemic and socioeconomic inequalities in education*]. IDEA anti COVID-19, Economics Institute of the CAS.

Filáček, A. (2011). Public engagement in science: Current debates in the Czech Republic. In J. Loudín & J. Hochgerner (Eds.), *Social and cultural dimensions of innovation in knowledge societies* (pp. 81–103). Filosofia.

Gluckman, P. D., Bardsley, A., & Kaiser, M. (2021). Brokerage at the science–policy interface: From conceptual framework to practical guidance. *Humanities and Social Sciences Communications, 8*, 84.

Hicks, D., Wouters, P., Waltman, L., de Rijcke, S., & Rafols, I. (2015). Bibliometrics: The Leiden Manifesto for research metrics. *Nature, 520*, 429–431.

Hruška, J., Cienciala, E., Krajhanzl, J., Kudláčková, L., Možný, M., Trnka, M., Šamonil, P., Zahradníček, J., et al. (2023). Faktory vzniku a šíření požáru v Českém Švýcarsku v roce 2022 [Factors involved in the origin and spread of the fire in Bohemian Switzerland in 2022]. *Živa, 71*(5), 262–266.

Institute of Archaeology of the CAS, Prague. (n.d.). *About us*. CAS.

Institute of Archaeology of the CAS, Prague. (n.d.). *Our mission*. CAS.

Institute of Philosophy of the CAS. (n.d.). *About us*. CAS.

IOCB Prague. (2026). *Antonín Holý at 90: The scientist whose discoveries transformed HIV treatment*. Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences.

Irwin, A. (1995). *Citizen science: A study of people, expertise and sustainable development*. Routledge.

Jann, O. (2020). *Sběr osobních údajů pro chytré trasování COVID-19: Jak lidi motivovat a neodradit* [*Collection of personal data for smart COVID-19 tracing: How to motivate people without discouraging them*]. IDEA anti COVID-19, Economics Institute of the CAS.

Jasanoff, S. (1990). *The fifth branch: Science advisers as policymakers*. Harvard University Press.

Kitcher, P. (2001). *Science, truth, and democracy*. Oxford University Press.

Longino, H. E. (1990). *Science as social knowledge: Values and objectivity in scientific inquiry*. Princeton University Press.

Lundvall, B.-Å. (Ed.). (1992). *National systems of innovation: Towards a theory of innovation and interactive learning*. Pinter.

Masaryk Institute and Archives of the CAS. (n.d.). *About the Institute*. Czech Academy of Sciences.

Merton, R. K. (1973). The normative structure of science. In N. W. Storer (Ed.), *The sociology of science: Theoretical and empirical investigations* (pp. 267–278). University of Chicago Press. (Original work published 1942)

Mihelj, S., Kondor, K., & Štětka, V. (2022). Establishing trust in experts during a crisis: Expert trustworthiness and media use during the COVID-19 pandemic. *Science Communication, 44*(3), 292–319.

Ministry of Education, Youth and Sports of the Czech Republic. (2024). *Roadmap of large research infrastructures of the Czech Republic for the years 2023–2026* (Updated ed.). Ministry of Education, Youth and Sports.

Ministry of Industry and Trade of the Czech Republic. (2021). *National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027*. Ministry of Industry and Trade.

Nelson, R. R. (Ed.). (1993). *National innovation systems: A comparative analysis*. Oxford University Press.

OECD. (2018). *Scientific advice during crises: Facilitating transnational co-operation and exchange of information*. OECD Publishing.

OECD. (2020). *Providing science advice to policy makers during COVID-19*. OECD Publishing.

OECD. (2024). *OECD survey on drivers of trust in public institutions — 2024 results: Country note — Czechia*. Organisation for Economic Co-operation and Development.

Oreskes, N. (2019). *Why trust science?* Princeton University Press.

Oriental Institute of the CAS. (n.d.). *Who we are*. CAS.

Pew Research Center. (2020). *Public views about science in the Czech Republic*. Pew Research Center.

Pielke, R. A., Jr. (2007). *The honest broker: Making sense of science in policy and politics*. Cambridge University Press.

Pravdová, M., & Svobodová, I. (Eds.). (2024). *Akademická příručka českého jazyka* [*Academic handbook of the Czech language*] (3rd expanded ed.). Academia.

Protivínský, T. (2023). *Vývoj postojů české veřejnosti k válečným uprchlíkům z Ukrajiny* [*The development of Czech public attitudes towards war refugees from Ukraine*]. IDEA, Economics Institute of the CAS.

Research, Development and Innovation Council. (2020). *National Research, Development and Innovation Policy of the Czech Republic 2021+*. Office of the Government of the Czech Republic.

Šamanová, G., Škodová, M., & Vinopal, J. (2006). *Obraz vědy v českém veřejném mínění* [*The image of science in Czech public opinion*]. Sociologický ústav AV ČR.

SAPEA. (2019). *Making sense of science for policy under conditions of complexity and uncertainty*. Science Advice for Policy by European Academies.

Stilgoe, J., Lock, S. J., & Wilsdon, J. (2014). Why should we promote public engagement with science? *Public Understanding of Science, 23*(1), 4–15.

Tabery, P., & Pilnáček, M. (2021). The network structure of trust in the COVID-19 pandemic. *European Societies, 23*(sup1), S56–S81.

Technology Centre Prague. (2023). *What does financial support look like in specific parts of Horizon Europe in the period 2021–2023? Is the structure of Czech participation similar to the research and innovation developed countries of the EU?* National Information Centre for European Research.

Tůma, O. (2024). *Etický kodex AV ČR reaguje na aktuální výzvy a proměny světa* [*The CAS Code of Ethics responds to current challenges and changes in the world*]. CAS.

UNESCO. (2017). *Recommendation on science and scientific researchers*. United Nations Educational, Scientific and Cultural Organization.

Zárybnická, M., & Trojan, J. (2024). Občanská věda — bez systémové podpory, silou jednotlivců [Citizen science — Without systemic support, with the power of individuals]. *Živa, 72*(1), 25.

Živa. (n.d.). *Živa: Rozhled v oboru veškeré přírody* [Živa: A survey across the whole field of nature]. Academia, Centre of Administration and Operations of the Czech Academy of Sciences.

Chapter 18

Conclusion: Historical Continuity and the Future of the Czech Academy of Sciences

The Academy as a Long-Term Institution of Czech Science

1. From Learned Societies to the Modern Research Organisation

To view the Czech Academy of Sciences merely as an institution created in 1992–1993 would be legally defensible but historically misleading. The contemporary Academy belongs to a much longer institutional genealogy in which the organisational forms of science repeatedly changed while certain underlying functions survived. From the 18th-century learned society to the 21st-century network of research institutes, Czech non-university science gradually acquired permanent structures for communication, publication, collective judgement, research employment, infrastructure, international cooperation, and public responsibility. Each stage added something that its predecessors had possessed only incompletely. Learned societies created durable communities of scholars; 19th-century academies strengthened disciplinary representation and national cultural authority; specialised institutions transformed scholarship into organised research; ČSAV assembled a large institute-based system; and the post-1989 Academy reconstructed that system under democratic conditions. The trajectory was neither linear nor politically neutral. Institutional expansion sometimes occurred simultaneously with the contraction of intellectual freedom, while political liberation could initially be accompanied by financial insecurity and organisational reduction. What endured was therefore not an unchanged organisation but a repeatedly renegotiated idea that scholarly knowledge required institutions capable of surviving beyond individual careers and political moments. The Czech experience is particularly revealing because several political orders—Habsburg monarchy, democratic Czechoslovakia, occupation, communist dictatorship, post-communist democracy, and European integration—successively inherited, reshaped, or challenged the same accumulated scientific landscape. In this sense, the history reconstructed throughout this book is best understood as a history of institutional translation: older forms were translated into new legal, political, and epistemic languages rather than simply replaced. The modern Czech Academy of Sciences embodies this accumulated history precisely because its present structure contains elements that originated in very different historical environments. Its institutes belong to a 20th-century model of professional research, its culture of scholarly representation reaches back to learned societies and academies, and its contemporary governance reflects the democratic reconstruction after 1989. The passage from learned societies to the modern research organisation is therefore not merely the opening chapter of Czech academic history; it is the conceptual thread connecting the entire institutional development of Czech science (*Franc et al., 2010*; *Mádlová, 2024*).

The earliest phase of this genealogy emerged from the learned-society culture of the Enlightenment. The short-lived *Societas incognitorum* founded in Olomouc in 1746 demonstrated that scholars in the Habsburg lands were already experimenting with collective

forms of intellectual exchange, even before such associations acquired stable institutional foundations. More consequential was the Prague circle that developed during the second half of the 18th century around mathematics, natural knowledge, historical scholarship, and the systematic study of the Bohemian lands. The association that evolved into the Royal Bohemian Society of Sciences obtained an officially approved form in the 1780s and subsequently received the royal designation by which it became known for most of its history. Unlike an informal correspondence network, it possessed membership, regular meetings, records of proceedings, publication activities, scholarly competitions, and mechanisms through which research could be publicly recognised. These features appear modest when compared with a modern research institute employing hundreds of scientists, yet historically they represented a decisive institutional innovation. Knowledge ceased to depend solely upon universities, clerical structures, private patronage, or the personal resources of individual scholars. A learned society could preserve manuscripts, discussions, correspondence, and scholarly reputations across generations. It could also create an audience for investigations that had no immediate educational or administrative purpose. The Royal Bohemian Society thus established an important principle: science could possess a corporate existence independent of the life of any single scholar. Its significance lay less in the scale of research it financed than in the continuity of intellectual procedures that it made possible. Meeting, debating, electing, judging, publishing, and preserving became institutional routines rather than accidental scholarly practices. These routines constituted an early institutional grammar from which later Czech academic organisations would continue to draw (*Franc et al., 2010*).

The Royal Bohemian Society also introduced forms of scientific memory that became increasingly important as disciplines professionalised. Proceedings did more than communicate discoveries; they created records of what a scholarly community considered worth discussing at a particular moment. Membership lists defined circles of recognised expertise, even though recognition was influenced by contemporary social hierarchies and networks. Prize questions transformed intellectual curiosity into publicly articulated research problems. Libraries and collections accumulated resources that could be used by scholars who had never known the individuals responsible for acquiring them. Correspondence linked Prague with scientific centres elsewhere in the Habsburg Monarchy and across Europe. The Society thereby inserted scholarship in the Czech lands into a transregional republic of letters while simultaneously encouraging systematic investigation of local history, language, geography, and natural conditions. This dual orientation would become characteristic of Czech science long before the modern opposition between national and international research appeared. Local subjects did not necessarily imply intellectual provincialism, just as international communication did not require the abandonment of culturally specific questions. Learned societies were particularly well suited to this combination because they were simultaneously territorial institutions and nodes within broader scholarly networks. Their prestige depended partly on demonstrating that the intellectual life of their territory could participate in European standards of scholarship. Over time, such organisations also acquired the authority to distinguish recognised knowledge from amateur erudition. They did not yet exercise the formal evaluation procedures of a modern academy, but they already organised reputation, disciplinary judgement, and intellectual legitimacy. In that respect, the institutional distance between 18th-century proceedings and contemporary research evaluation is enormous, yet both belong to the same historical problem: how a scholarly community makes knowledge visible, assessable, and transmissible (*Franc et al., 2010*).

It is equally important that the early learned institutions of Bohemia cannot be retrospectively described as straightforwardly Czech national organisations. The Royal Bohemian Society of Sciences developed in a multilingual intellectual environment in which German, Latin, and increasingly Czech participated in different domains of scholarly communication. Its territorial identity was initially more significant than an ethnolinguistic national identity in the 19th- and 20th-century sense. This distinction matters because the later nationalisation of scientific institutions was itself a historical process rather than an original condition. Scholars associated with the Society investigated Bohemian history and natural conditions while often belonging culturally and linguistically to overlapping Central European worlds. Figures such as Joseph Stepling, Gelasius Dobner, and Josef Dobrovský illustrate the difficulty of imposing later national categories on Enlightenment scholarly communities. Their importance to Czech scientific development resulted not from conformity to a later national programme but from their role in constructing traditions of critical scholarship. The emergence of modern Czech science therefore began within an environment where territorial patriotism, dynastic loyalty, Enlightenment universalism, linguistic scholarship, and the early formation of national consciousness could coexist. During the 19th century those elements became more politically differentiated. Czech became increasingly central to cultural and scholarly mobilisation, while German-speaking scientific institutions developed their own organisational trajectories. Academic life consequently became entangled with the broader national conflicts of the Bohemian lands. Yet the older multilingual tradition did not disappear without leaving traces. It helps explain why Czech academic institutions repeatedly understood themselves both as representatives of a national scientific culture and as participants in a wider European intellectual order. This tension between national anchoring and international validity would remain one of the most productive features of their institutional identity (*Franc et al., 2010*).

The 19th-century National Revival altered the symbolic meaning of scholarly organisation. Historical research, linguistics, philology, archaeology, ethnography, and natural science increasingly participated in the cultural demonstration that Czech society possessed the intellectual resources of a modern European nation. František Palacký, who became one of the most important figures in the Royal Bohemian Society, personified the close relationship between historical scholarship and national political imagination. Scientific institutions could now serve not only communities of specialists but also broader projects of cultural representation. Publications in Czech expanded the language's capacity to operate as a medium of specialised knowledge. Terminology had to be created, translated, stabilised, and circulated. Historical sources had to be collected and critically edited if a national past was to be reconstructed according to scholarly rather than purely legendary criteria. Naturalists similarly contributed to knowledge of the territory through geology, botany, zoology, geography, and related disciplines. This work helped create an intellectual map of the Czech lands alongside the political and cultural map being developed by the national movement. Yet the national function of science should not be confused with simple political instrumentalisation. The strongest scholarly traditions gained authority precisely when they demonstrated methodological seriousness that exceeded immediate patriotic usefulness. Czech intellectual elites therefore faced a recurring challenge: knowledge was expected to strengthen cultural self-confidence while retaining credibility beyond the national community that sponsored it. The long-term institutional importance of the Academy tradition arose partly from its ability to mediate this tension. It provided a place where national scientific development could be pursued without defining scientific truth according to national criteria (*Franc et al., 2010*).

By the middle of the 19th century, however, the learned-society model was becoming insufficient for the expanding requirements of professional science. Laboratories, systematic collections, long-term observations, specialised libraries, experimental apparatus, technical staff, and coordinated research could not always be sustained through periodic meetings of distinguished scholars. Universities remained indispensable, but university organisation was structured around teaching as well as research, and the growth of knowledge increasingly produced research tasks whose scale exceeded the capacity of individual chairs. Jan Evangelista Purkyně recognised this problem with exceptional clarity. In his writings *Academia* of 1861–1863, he envisaged a self-governing non-university scientific institution organised around research establishments representing major fields of knowledge. The proposal is striking because it anticipated a distinction that would become fundamental in the 20th century: an academy could be more than a fellowship of eminent individuals and could instead support permanent organisations devoted principally to research. Purkyně's idea did not immediately create such a system. The political, financial, and institutional environment of the Habsburg Monarchy was not yet prepared to establish the structure he imagined on the scale later achieved by state academies. Nevertheless, his proposal demonstrates that institute-based research in the Czech lands cannot be interpreted exclusively as a communist-era import. An indigenous debate about autonomous non-university research had already emerged almost a century before the foundation of ČSAV. Purkyně thereby occupies an important conceptual position between the 18th-century learned society and the 20th-century research academy. His vision retained scholarly self-government while adding permanent research capacity. The modern Academy can consequently recognise in this 19th-century project an intellectual ancestor of its own combination of institutional research and academic autonomy (*Franc et al., 2010*). The Czech Academy itself explicitly identifies Purkyně's proposal as remarkably close to the later concept of an academy organised around scientific institutes.

The increasing professionalisation of European science during the later 19th century gave this institutional question greater urgency. Disciplines became more specialised, journals multiplied, scientific careers became more clearly differentiated, and research increasingly depended on collective infrastructures. At the same time, the Czech national movement acquired stronger educational and political institutions of its own. The division of Charles-Ferdinand University into Czech and German universities in 1882 symbolised the degree to which scientific life had become intertwined with national institutional development. Yet a university alone could not satisfy every expectation placed upon Czech intellectual culture. National elites wanted an institution capable of recognising achievement across disciplines, sponsoring major scholarly projects, supporting publications, and representing Czech science and culture in a prestigious corporate form. The academy idea therefore acquired both scientific and symbolic force. It promised to place Czech scholarship within the European landscape of academies while demonstrating the institutional maturity of Czech society. This development did not render the Royal Bohemian Society irrelevant. Instead, it created a more differentiated scientific environment in which different organisations could perform overlapping but distinct functions. Learned society, university, academy, museum, library, technical association, and specialised research body gradually became elements of a broader institutional ecology. Such differentiation is itself a sign of scientific modernisation. A mature research culture is rarely concentrated in a single organisation, and 19th-century Czech science increasingly displayed this institutional plurality. The later Czech Academy inherited not one predecessor but an entire ecosystem whose organisations had learned to divide,

compete over, and sometimes coordinate scientific authority (*Franc et al., 2010*; *Mádlová, 2024*).

The establishment in 1890 of the Czech Academy of Emperor Franz Joseph for Sciences, Literature and Arts represented the most important institutional response to these developments. Its creation was closely associated with Josef Hlávka, whose financial support, organisational energy, and conception of national cultural patronage helped make the project possible. The Bohemian Diet had approved the establishment in 1888, and imperial authorisation followed in January 1890, after which the Academy began to develop its activities at the beginning of the following decade. Its very title reflected the political conditions of the monarchy: it combined an explicitly Czech cultural mission with dynastic recognition. The Academy was organised in classes covering major areas of scholarship, literature, and the arts. This breadth distinguished it from a narrowly scientific research organisation in the modern sense. Recognition of poets, artists, humanists, natural scientists, physicians, and other intellectual figures belonged to a conception of the academy as a representative institution of national culture. Nevertheless, the organisation also supported publication, scholarly projects, research activity, prizes, and the formation of specialised scholarly structures. It therefore stood at a transitional point between the classical academy of eminent members and the later academy of permanent research institutes. Membership itself was an instrument of cultural canonisation because admission declared that an individual's work belonged to the highest recognised level of Czech intellectual production. At the same time, committees and projects created spaces in which scholarly work could acquire continuity beyond ceremonial representation. The Czech Academy of Sciences and Arts thus institutionalised a more ambitious conception of scientific and cultural authority than the earlier learned society could alone provide (*Mádlová, 2024*; *Šlechtová & Levora, 2004*). Its establishment, institutional breadth, and later status as a direct predecessor of the contemporary Academy are also emphasised in the Czech Academy's own historical account.

The coexistence of the Royal Bohemian Society of Sciences and the Czech Academy of Sciences and Arts is particularly important for understanding the non-linear character of institutional development. The newer academy did not simply abolish or supersede the older society. Both continued to operate, sometimes sharing members and participating in overlapping scholarly networks. Their parallel existence shows that institutional genealogy cannot be reduced to a sequence in which one organisation disappears whenever another is founded. Scientific communities preserve older bodies when those bodies continue to perform useful symbolic, communicative, or disciplinary functions. The Royal Bohemian Society retained the prestige of historical continuity and a learned-society culture rooted in the 18th century. The Czech Academy possessed stronger national representational ambitions and a broader cultural structure. Individual scholars could move between universities, academies, societies, museums, archives, and specialised institutions without considering those affiliations mutually exclusive. This overlapping membership created channels through which intellectual standards and professional relationships circulated among organisations. It also meant that institutional memory was distributed rather than monopolised by one central body. Such plurality differs substantially from the highly centralised system established after 1952. Yet it anticipated an important feature of the post-1989 environment, in which the Czech Academy again coexists with universities, scientific societies, grant institutions, professional associations, and the independent Learned Society. The long history therefore contains not a movement from fragmentation to a final ideal of centralisation, but successive adjustments

between concentration and plurality. Modern Czech science ultimately inherited traditions generated by both models (*Franc et al., 2010*; *Mádlová, 2024*).

The establishment of Czechoslovakia in 1918 transformed the political setting without eliminating the institutional heritage created under the monarchy. The Czech Academy removed the imperial reference from its name and operated as the Czech Academy of Sciences and Arts, while the Royal Bohemian Society continued its activities within the new republic. Institutions that had previously participated in Czech national emancipation now had to redefine themselves inside a state in which Czechs formed part of the governing political nation. This was a fundamental change of function. Before 1918, scholarly institutions could demonstrate the cultural maturity of a national community seeking greater recognition within an empire. After independence, they increasingly became components of a national scientific system expected to contribute to the intellectual standing of the Czechoslovak state. The state could provide new forms of support, but it also developed new expectations concerning the practical, educational, technological, and representational value of science. Universities expanded, state research activities diversified, and specialised scientific organisations gained importance. The Academy therefore operated within a more complex environment than that of the late 19th century. Its national mission no longer meant merely defending the legitimacy of Czech-language scholarship. It now included participation in building the scientific prestige, cultural memory, and expertise of a modern republic. At the same time, Czechoslovakia's multinational structure complicated any simple identification of Czech institutions with the whole state's scientific life. The relationship between Czech, Slovak, German, and other scholarly traditions remained historically layered and politically sensitive. The First Republic thus moved Czech academic institutions closer to modern public research while preserving many organisational forms inherited from the 19th century (*Franc et al., 2010*; *Mádlová, 2024*).

The interwar scientific landscape also demonstrated that modernisation did not proceed exclusively through the Czech Academy itself. The Masaryk Academy of Labour, established in 1920, represented a different relationship between knowledge, technical expertise, economic development, and the state. Specialised institutes and scholarly associations addressed fields that could no longer be contained within the traditional activities of an academy of eminent members. Museums, archives, observatories, technical institutions, medical research establishments, and university laboratories each accumulated their own forms of expertise. The significance of this institutional diversity becomes clearer when viewed from the perspective of 1952. The later ČSAV was able to become a large research organisation partly because research units, collections, personnel, projects, and professional cultures already existed outside the structure that would eventually absorb or reorganise them. In other words, state-socialist centralisation did not create scientific capacity out of an institutional vacuum. It recombined resources produced by several generations of Czech and Czechoslovak scientific development. The interwar period was particularly important for the social formation of professional research communities. Scientific careers increasingly depended on institutional employment, equipment, collaboration, and access to international literature. Long-term projects required administrative continuity and budgets that exceeded the means of private scholarship. This gradually shifted the practical centre of science away from an older model based primarily on eminent individuals and towards collective research environments. The academy of members did not disappear, but the institute became an increasingly consequential unit of scientific production. The eventual 20th-century transformation of the

academy was therefore prepared by developments occurring throughout the wider scientific system rather than by institutional design alone (*Franc et al., 2010*).

The German occupation of the Czech lands after 1939 exposed the vulnerability of this accumulated scientific infrastructure to political violence. The closure of Czech universities in November 1939 removed one of the principal institutional bases of national intellectual life. Scholars faced dismissal, persecution, imprisonment, forced displacement, censorship, and in some cases death. Under these circumstances, surviving non-university institutions acquired a significance that exceeded their ordinary organisational functions. Learned societies, academies, museums, archives, libraries, and other cultural bodies could preserve fragments of scholarly continuity when normal university life had been violently interrupted. Their capacity to do so was constrained by occupation policy and could never compensate fully for the destruction inflicted upon Czech higher education. Yet the survival of collections, scholarly networks, editorial activities, and institutional records helped preserve resources necessary for post-war reconstruction. The experience also demonstrated that scientific institutions are repositories of human and cultural capital vulnerable to political destruction but not reducible to their legal statutes. An institute can be closed while its intellectual network survives informally, and an organisation can formally continue while its autonomy is radically restricted. This distinction between organisational survival and substantive scientific continuity would recur after 1948 and after 1968. The occupation therefore became one of several moments in Czech history when scientific memory had to be carried through a period of profound institutional constraint. It also reinforced the association between academic institutions and the wider survival of national culture. The post-war demand for scientific reconstruction cannot be understood without recognising the losses, interrupted careers, and preserved institutional resources produced by the occupation years (*Franc et al., 2010*; *Mádlová, 2024*).

The years after 1945 opened a period of reconstruction but also accelerated the movement towards a fundamentally different model of scientific organisation. Liberation restored universities and created expectations that damaged institutions would be rebuilt, personnel replaced, and interrupted research programmes resumed. At the same time, the experience of modern war had strengthened the perception that science was a strategic resource for industry, medicine, agriculture, defence, and national economic development. The older academy model centred upon elected members and scholarly patronage appeared increasingly insufficient for a world of large laboratories, planned technological programmes, and permanently employed research staffs. Even before the communist seizure of power in February 1948, pressure was growing for stronger coordination of research. After 1948, this modernising impulse was absorbed into a new political project that sought to reorganise science according to socialist state priorities. The Scientific Research Centre established in 1949 and the transformation of specialised departments into more permanent research units provided important organisational bridges towards the later ČSAV. Some of the institutions ultimately integrated into the Academy had histories extending well before communist rule. Others were newly established or substantially reorganised in response to post-war priorities. This combination of inheritance and institutional engineering is essential to understanding 1952. The new Academy was not simply a renamed Czech Academy of Sciences and Arts, nor was it an organisation created ex nihilo from a Soviet blueprint. It drew personnel, facilities, research units, collections, and traditions from an existing Czech and Czechoslovak scientific landscape while subjecting them to a radically different framework of authority. The

institutional leap of 1952 was therefore simultaneously cumulative and revolutionary (*Franc & Dvořáčková, 2020*; *Franc et al., 2010*). Official retrospective accounts likewise note that research departments of the older Academy and other central research institutes formed part of the institutional resources incorporated into ČSAV.

The creation of the Czechoslovak Academy of Sciences in 1952 was the decisive point at which the historical academy tradition became a large-scale research organisation. Act No. 52/1952 explicitly stated that ČSAV arose through the reconstruction of the Royal Bohemian Society of Sciences and the Czech Academy of Sciences and Arts and that it continued the progressive traditions of Czech and Slovak science. This legal formula is historically revealing because even a revolutionary socialist regime found it useful to claim institutional inheritance. Continuity was therefore not merely imposed retrospectively by the present Academy; it was embedded in the founding legislation of ČSAV itself. At the same time, the law defined the new Academy according to political and economic purposes characteristic of the communist state. It was to serve the development of science and technology, socialist construction, state planning, and the practical needs of society. It was also designated the highest scientific institution of the republic and given responsibility for research, coordination, and governmental advice. Most importantly for the history of scientific organisation, it was authorised to establish and direct its own research workplaces. This transformed the meaning of an academy. The institution was no longer principally a corporation of eminent scholars that sponsored and judged scientific work performed largely elsewhere. It became an employer, administrator, planner, owner or controller of scientific infrastructure, and organiser of full-time research on a national scale. The formal continuity claimed with older academies therefore concealed a profound change in institutional technology. The learned society had become an institute system, and scientific authority was now inseparable from administrative capacity (*National Assembly of Czechoslovakia, 1952*; *Franc & Dvořáčková, 2020*). The wording and institutional ambitions of the 1952 law make this transformation explicit.

The difference in scale between the 19th-century academy and ČSAV cannot be overstated. A learned society primarily organised scholarly communication, prestige, and publication, whereas ČSAV increasingly organised scientific labour itself. Research institutes employed permanent staffs whose professional lives were centred upon projects rather than periodic academy meetings. Laboratories required buildings, technical services, instruments, maintenance, and procurement. Humanities institutes organised archives, editorial enterprises, dictionaries, bibliographies, archaeological research, and large source-based projects that could extend across decades. Natural-science institutions supported experimental programmes that depended upon expensive equipment and specialist teams. Central services provided publication, library, computational, and other forms of infrastructure. Career structures, doctoral training, internal hierarchies, research plans, and institutional budgets became central questions of academic governance. Science thereby acquired a bureaucratic dimension inseparable from its intellectual dimension. This was not uniquely Czech or socialist; 20th-century research internationally was becoming increasingly organisational and capital-intensive. What distinguished ČSAV was the degree to which this process occurred within a highly centralised state academy possessing broad authority across fundamental research. Institutional capacity increased dramatically, yet the autonomy governing its use remained politically constrained. The history of ČSAV consequently demonstrates that modern scientific organisation and scientific freedom are related but not identical achievements (*Franc & Dvořáčková, 2020*).

The political cost of the new organisational capacity was particularly evident during the Stalinist phase of the 1950s. Scientific institutions were required to operate within a political system that treated ideological conformity as a legitimate criterion of academic authority. Leadership appointments, membership, research priorities, international contacts, and individual careers could all be affected by political evaluation. Marxism-Leninism acquired compulsory status in domains where the regime regarded ideological interpretation as essential. Certain disciplines, especially in the humanities and social sciences, experienced direct restructuring and the exclusion or marginalisation of scholars associated with politically unacceptable traditions. Even areas of natural science that possessed stronger methodological protection were not entirely insulated from ideological pressure, resource priorities, or restrictions on contact with Western colleagues. Yet the Academy cannot be understood adequately if its history is reduced to repression alone. The same institutional system created laboratories, sustained major research teams, trained younger scientists, and concentrated resources in ways that could support internationally important work. Jaroslav Heyrovský's Nobel Prize in Chemistry in 1959 and the later international influence of scientists such as Otto Wichterle demonstrate that creative scientific achievement remained possible within an authoritarian structure. The resulting paradox is central to the institutional history of ČSAV. Political dependence and scientific professionalisation developed inside the same organisation. Scientists learned to negotiate institutional spaces that could be intellectually productive even when the surrounding governance system remained coercive. This capacity for partial scientific autonomy inside a politically subordinated organisation became one of the sources from which later reformist demands emerged (*Franc & Dvořáčková, 2020*). The Czech Academy's historical overview similarly stresses both the ideological pressure exercised under the communist regime and the persistence of internationally significant scientific achievement.

During the 1960s, the Academy demonstrated more clearly that an institute-based system could develop internal scientific dynamics not reducible to the intentions of the political authorities that had created it. Generational change, professional differentiation, expanding international contacts, and the partial liberalisation of Czechoslovak public life created opportunities for greater intellectual initiative. Researchers increasingly measured themselves against international disciplinary standards rather than solely against domestic ideological expectations. In several fields, collaboration with Western institutions became more feasible. Scientific leadership under František Šorm was associated with efforts to strengthen professional criteria and improve the position of research within the Academy. The institution therefore became one of the environments in which the contradictions of reform socialism were experienced particularly intensely. Its scientists benefited from public resources and substantial research infrastructure while increasingly resisting excessive political control over intellectual work. Humanities and social sciences participated in the broader recovery of critical historical, philosophical, sociological, economic, and legal discussion. Natural sciences gained from expanding professional networks and greater opportunities for exchange. The Academy's relationship with universities also remained complex, combining cooperation, competition, and debates concerning the appropriate distribution of research and teaching. By 1968, demands for reform could draw upon a research community more institutionally mature than that of the early 1950s. This maturation mattered because autonomy was no longer merely an abstract liberal principle; it had become a practical requirement articulated by professional communities whose work depended on international credibility. The reform era thus demonstrated that the modernisation of scientific organisation

could generate pressures for the modernisation of scientific governance (*Franc & Dvořáčková, 2024*).

The Soviet-led invasion of August 1968 and the subsequent period of normalisation violently interrupted this trajectory. Political reviews and personnel purges removed or marginalised scholars who had participated in reform, expressed politically unacceptable positions, or were judged unreliable by the restored party leadership. Research institutes that had briefly experienced wider intellectual horizons were subjected once again to stronger ideological supervision. International mobility became selectively restricted, and careers could depend on political accommodation. Certain scholarly agendas were narrowed or redirected, particularly in fields directly concerned with politics, recent history, philosophy, sociology, and cultural interpretation. Yet normalisation did not dismantle the institute system itself. Buildings remained, laboratories continued to operate, collections were preserved, technical staffs retained specialised competences, and many research programmes continued in modified forms. This distinction became historically decisive after 1989. The same organisation that transmitted political restrictions also transmitted scientific capital across the authoritarian decades. Some scientists maintained international networks wherever circumstances permitted, while others concentrated on domains in which ideological intervention was less direct. Informal mentoring could preserve standards that official institutional language did not always acknowledge. Libraries, archives, experimental traditions, research techniques, and accumulated datasets provided forms of continuity that political decrees could alter only partially. The Academy under normalisation therefore became another example of the broader historical principle visible since the occupation period: an institution can simultaneously embody political discontinuity and scientific continuity. Its later democratic transformation would depend heavily on the ability to separate these two inheritances rather than accepting or rejecting the whole ČSAV legacy as a single undifferentiated object.

By the 1980s, ČSAV possessed an institutional density that made any simple abolition increasingly impractical even for critics of the communist scientific system. Thousands of professional careers were tied to research institutes whose competencies could not quickly be reproduced elsewhere. Certain laboratories had become nationally unique centres of equipment and expertise. Humanities institutes preserved source collections, language corpora, archival materials, bibliographical projects, and scholarly editions accumulated over decades. Archaeology, astronomy, physics, chemistry, biology, earth sciences, mathematics, and other fields depended upon infrastructures whose value could not be measured solely by the political system under which they had been financed. Scientific communities also contained internal memories of earlier institutional periods. Older researchers remembered pre-normalisation reform, while institutional archives preserved deeper histories extending through the founding of ČSAV and sometimes back into pre-1952 organisations. This layering of memory complicated the meaning of institutional inheritance. ČSAV was undoubtedly a creation of the socialist state in its organisational form, but much of the knowledge housed within it had genealogies that preceded socialism or transcended its ideological boundaries. Likewise, scientists trained under socialism could later become important participants in democratic and international science. Institutional capital does not carry a single political meaning simply because it was accumulated under a particular regime. Its future significance depends upon the rules according to which it is governed and the purposes to which it is directed. This became one of the central lessons of the post-1989 transformation. The problem

facing Czech science was consequently not how to begin again, but how to decide what should be preserved, what should be reformed, and what should be abandoned.

The Velvet Revolution of 1989 transformed this problem from an intellectual question into an immediate institutional task. Communist political authority collapsed, but laboratories, institutes, employees, buildings, budgets, libraries, and ongoing research did not disappear with it. The scientific community therefore had to democratise an existing research system rather than construct a new one on empty ground. Otto Wichterle's return to academic leadership carried particular symbolic significance because his scientific authority had been established independently of the political legitimacy of the normalisation establishment. His presidency of ČSAV from 1990 to the end of 1992 represented both institutional continuity and moral rupture. New mechanisms of representation were introduced, politically compromised leadership arrangements were challenged, and researchers debated the future scale and purpose of the Academy. International contacts expanded rapidly once administrative and political restrictions were removed. Universities also entered a period of renewal, raising new questions about whether institute-based fundamental research should remain concentrated in an academy or be transferred more extensively into higher education. The answer that emerged was neither preservation without reform nor wholesale dissolution. Instead, the Academy underwent extensive evaluation, restructuring, reduction, and redefinition. Institutes and teams had to justify themselves according to scientific rather than ideological priorities. Resources became more competitive, and access to international scientific communities fundamentally changed the standards by which research quality was assessed. The post-revolutionary transition thus transformed inherited institutional capital by subjecting it to a new regime of legitimacy based on self-government, professional evaluation, public accountability, and international scientific recognition.

The dissolution of the Czech and Slovak Federal Republic made a further institutional settlement unavoidable. The Czechoslovak Academy of Sciences could not continue unchanged after the disappearance of the state whose name and legal authority it embodied. Act No. 283/1992 of the Czech National Council established the Academy of Sciences of the Czech Republic, which began operating in connection with the creation of the independent Czech Republic at the end of 1992 and beginning of 1993. The legislation preserved the central principle that the Academy conducts research through its own workplaces. It also created a governance structure including an Academic Assembly, Academic Council, president, and Scientific Council, thereby giving self-governing representation a substantially different constitutional meaning from that which similar terminology had possessed under the communist regime. State financing remained fundamental, but state support no longer implied subordination to a ruling party's ideological programme. This distinction represents one of the most important institutional achievements of the transformation. The modern Academy remained publicly funded because long-term fundamental research requires resources and stability that cannot be guaranteed solely by markets or short project cycles. At the same time, the legitimacy of public financing had to rest increasingly upon demonstrable research quality, transparent governance, and contribution to the broader scientific system. International cooperation was explicitly recognised within the Academy's legal framework. The new institution therefore inherited the material and organisational substance of the institute-based academy while rejecting its previous political conception of scientific authority. It was a successor institution, but succession meant constitutional reinterpretation rather than restoration of ČSAV under a different national name (*Czech National Council, 1992*). The 1992

law remains the legal foundation for this combination of public responsibility, institute-based research, and institutional self-government.

The restructuring of the early 1990s also established a new relationship between continuity and evaluation. Under the socialist planning system, the existence of an institute could be justified by administrative position, historical inertia, strategic classification, or political preference as well as by scientific performance. The democratic Academy could not simply assume that every inherited structure should survive because it already existed. International assessment, peer judgement, publication performance, disciplinary relevance, and the ability to formulate credible research programmes became increasingly important. Some institutes were reorganised, merged, divided, or abolished, while others emerged from the transformation with clearer profiles. Personnel numbers were reduced substantially during the difficult transition years, and funding uncertainty placed real pressure on research communities. These processes were painful because evaluation inevitably translated abstract reform principles into consequences for careers and institutions. Yet without selective restructuring, the Academy would have struggled to establish legitimacy in the new political environment. The result was not a complete break with ČSAV but an institutional filtration of its inheritance. Scientific teams, collections, laboratories, and research traditions judged capable of contributing to competitive research were retained and modernised. Structures associated principally with obsolete administrative or ideological functions lost their former rationale. This selective continuity became one of the defining principles of the modern Academy. The research organisation that entered the 21st century was therefore smaller and differently governed than late socialist ČSAV, but much of its scientific capability had been transformed rather than newly created.

As the transition stabilised, the Academy increasingly moved from emergency post-socialist restructuring towards the construction of a durable democratic research model. Competition for research grants supplemented institutional financing and encouraged institutes to formulate projects within national and international evaluation systems. Access to European programmes and growing participation in transnational collaborations changed expectations concerning publication, mobility, infrastructure, and research management. Younger researchers entered a scientific environment in which international study and collaboration were no longer exceptional privileges controlled by political authorities. Institutes had to develop administrative capacities for competitive funding, intellectual-property management, international recruitment, and collaboration with universities and industry. At the same time, the fundamental rationale for non-university research remained recognisable from Purkyně's 19th-century vision: certain kinds of inquiry benefit from organisations whose primary purpose is research rather than teaching. Large infrastructures, long-duration research programmes, specialised collections, field stations, observatories, archives, and laboratory platforms all reinforce the usefulness of this institutional form. The modern Academy consequently did not survive merely because of historical sentiment. It survived because a reformed institute system continued to perform functions not reducible to those of universities, private enterprises, or short-term project organisations. Historical continuity acquired contemporary legitimacy only when inherited institutions demonstrated present scientific value. This is why the transformation of the 1990s should be understood as constitutive rather than merely corrective. It converted an inherited organisational system into a research actor capable of functioning within the competitive and internationalised environment of European science.

A further institutional step occurred when the legal position of Academy institutes was reshaped within the Czech system of public research institutions in the mid-2000s. From 2007, the Academy's workplaces operated as public research institutions under the new legal framework, strengthening the distinction between the central Academy as a public organisational body and its institutes as legally defined research organisations. This arrangement reflected the increasing complexity of research governance. Modern institutes needed sufficient organisational capacity to manage projects, property, employment, contracts, partnerships, intellectual property, and international cooperation while remaining part of a coherent Academy-wide system. The development also illustrates how distant the contemporary organisation had become from an 18th-century learned society in purely administrative terms. The modern Academy operates through budgets, institutional strategies, formal evaluation, governance bodies, legal responsibilities, and complex relations with ministries, universities, grant agencies, European organisations, and private partners. Yet this bureaucratic sophistication should not obscure the older principles that continue beneath it. Scientific judgement still depends upon communities of specialists. Institutional authority still requires reputational legitimacy. Publication and communication remain central to the social life of knowledge. Interdisciplinary exchange continues to be one of the advantages claimed by an academy embracing multiple fields. The modern research organisation is therefore not the negation of the learned society but its transformation under conditions in which scientific knowledge has become a professional, resource-intensive, and strategically important social activity. Act No. 283/1992, as subsequently amended, preserves the Academy's public position while defining research through its network of workplaces (*Czech National Council, 1992*).

One of the most illuminating consequences of the post-1989 transformation was the re-emergence of a separate learned-society function. Under ČSAV, two historically distinct principles had been combined within one organisation: a fellowship of distinguished members and a system of research institutes. The political method by which academy membership was constituted under communism had damaged the legitimacy of the first principle even though the institute system retained substantial scientific value. In 1994, leading Czech scientists associated with Otto Wichterle established the Learned Society of the Czech Republic as a freely constituted community of eminent scholars. This was more than the creation of another professional association. It effectively separated the representative learned-society tradition from the administrative structure of the modern Academy of Sciences. The result is historically instructive. Instead of attempting to make AV ČR simultaneously reproduce every function once performed by the Royal Bohemian Society, the Czech Academy of Sciences and Arts, and ČSAV, the post-communist system allowed different institutions to carry different parts of the historical inheritance. The Czech Academy became principally an organisation of research institutes governed through academic self-government. The Learned Society recovered the elective fellowship tradition, public intellectual representation, prizes, statements, and advocacy for the free cultivation of science. Scientific societies continued to provide disciplinary communities with their own associative structures. Universities maintained the essential connection between research and higher education. Institutional continuity thus became plural again after the centralising experiment of the socialist period. The modern Czech scientific landscape in this respect resembles the differentiated ecology of the pre-1952 period more than the monopoly structure of ČSAV, although its research capacities are unmistakably products of 20th-century institutionalisation. The Learned Society itself explicitly

situates its historical tradition in relation to the Royal Bohemian Society and the loss of freely elected scientific representation in 1952.

This differentiation makes it possible to identify more precisely what the contemporary Czech Academy actually inherited from its predecessors. From the learned societies came the idea that scholarship possesses a collective public existence and requires institutions of communication, recognition, and memory. From the 19th-century Czech Academy came the aspiration to represent the intellectual maturity of Czech society across disciplinary boundaries and to sustain research and publication beyond the university environment. From interwar scientific institutions came greater professionalisation, specialised expertise, and connections between research and national development. From ČSAV came the most substantial organisational inheritance: permanent institutes, research employment, buildings, laboratories, libraries, archives, collections, large projects, administrative capacities, and a national framework for non-university fundamental research. From the reform movements of the 1960s and the resistance to normalisation came an intensified understanding that professional scientific standards cannot flourish indefinitely without intellectual freedom. From 1989 came the decisive redefinition of autonomy as a principle of institutional governance rather than merely an aspiration of individual scholars. From the difficult restructuring of the 1990s came an evaluation culture requiring inherited organisations to justify themselves by the quality of their research. European integration subsequently added new expectations concerning mobility, international competition, collaborative infrastructure, open science, and participation in continental research programmes. None of these inheritances has remained unchanged. Each has been translated into a contemporary institutional language. The modern Academy is therefore better understood as a historical synthesis than as the direct continuation of any one predecessor. Its longevity lies precisely in this capacity to preserve functions while changing structures.

This history also demonstrates that the term *academy* has never carried one stable institutional meaning. In the 18th century it could describe an association of learned individuals whose principal resources were meetings, correspondence, prestige, and publication. In the 19th century it increasingly implied a nationally significant institution capable of representing an entire intellectual culture. By the middle of the 20th century, the Czechoslovak Academy became a vast employer and organiser of research. After 1993, the Czech Academy retained the institute system but placed it within democratic academic self-government and a plural research environment. These differences are not semantic curiosities; they reveal changing assumptions about how knowledge is produced. Early modern scholarship centred heavily upon individual erudition supported by networks. Modern experimental science increasingly depends upon teams, technical infrastructure, institutional continuity, and large financial commitments. Humanities research likewise relies upon archives, libraries, databases, long-term editorial projects, and specialised scholarly communities even when its material infrastructure differs from that of laboratory science. The history of the Academy therefore mirrors the broader transformation of knowledge from a predominantly personal vocation into a highly organised professional practice without eliminating the creative agency of individuals. Organisations do not discover, interpret, or invent by themselves; scientists and scholars do. Yet individuals increasingly require durable institutions if their work is to accumulate, be tested, transmitted, and continued. The Academy's long history is in this respect a history of the institutional conditions that make individual intellectual achievement socially durable.

At the same time, the passage from learned society to research organisation should not be interpreted as a simple story of progress from small and primitive institutions towards larger and superior ones. The 20th-century expansion of research capacity also created new vulnerabilities. A centralised academy could mobilise resources on a scale unimaginable to the Royal Bohemian Society, but it could also become an efficient mechanism for political direction. Permanent employment supported long-term scholarship but could generate organisational inertia. State funding liberated many forms of fundamental research from immediate commercial demands while making institutions dependent upon political decisions concerning public expenditure. Formal evaluation could improve accountability but could also privilege measurable outputs over less easily quantified intellectual contributions. Internationalisation expanded scientific opportunity while creating competitive pressures that smaller research systems had to manage carefully. Institutional history consequently offers no final organisational formula guaranteeing both excellence and freedom. Each period has had to renegotiate the relationship between scholarly autonomy, public resources, organisational stability, and accountability. The Czech case is valuable precisely because these tensions appeared in unusually concentrated historical forms. Monarchical patronage, nationalist institution-building, democratic state support, authoritarian centralisation, post-socialist restructuring, and European research governance all left institutional traces. The contemporary Academy contains lessons from each of these experiences rather than a simple triumph over them. Its historical maturity consists partly in the capacity to recognise that institutional strength must always be balanced by mechanisms protecting scientific judgement from inappropriate political control.

The long trajectory also changes how the concept of national science should be understood. 18th-century learned societies operated within a territorial and multilingual Bohemian environment. 19th-century Czech institutions became instruments of national cultural emancipation. The First Republic transformed science into one of the resources through which a sovereign state represented itself internationally. The communist regime again redefined national scientific capacity, this time within a socialist bloc and a centrally planned model of development. After 1989, Czech science entered an increasingly integrated European research space in which scientific excellence is measured largely through international communities, publications, infrastructures, and collaborations. None of these transitions eliminated the national dimension. The state continued to finance institutions, society continued to expect cultural and practical returns from public research, and research on Czech language, history, environment, biodiversity, territory, society, and heritage retained obvious national significance. What changed was the meaning of national scientific strength. It became progressively less plausible to equate strength with intellectual isolation or institutional self-sufficiency. A strong national research system increasingly means possessing institutions capable of participating successfully in international knowledge production while maintaining the capacity to investigate questions that may not attract sufficient attention elsewhere. The modern Academy embodies this dual function. It is Czech because it is embedded in the public, cultural, historical, and institutional life of the Czech Republic, not because the validity of its science is nationally bounded. In this respect, the old tension between territorial rootedness and universal scholarly standards remains alive in a thoroughly modern form.

The continuity from learned societies to AV ČR is consequently strongest when traced through practices rather than names. Scholars in the 18th century corresponded with foreign colleagues; modern institutes participate in international consortia. Learned societies issued

proceedings; contemporary researchers publish through global disciplinary systems and institutional presses. Early academies awarded prizes and elected members; modern science employs peer review, competitive grants, awards, and evaluation panels. Libraries once preserved printed scholarship; research institutions now maintain digital repositories, datasets, specialised archives, and increasingly complex information infrastructures. Academies once advised rulers or governments informally; contemporary institutes provide expert knowledge on public policy, health, environment, technology, security, language, culture, and society. Learned communities once cultivated successors through personal mentorship; modern institutes participate in doctoral education and cooperation with universities. The organisational technologies have changed, yet each responds to a recurring problem of scientific continuity. Knowledge must be communicated beyond the person who produces it. Methods must be transmitted. Evidence must remain accessible. New generations must be trained. Expertise must be socially recognisable. Institutions are the mechanisms through which these requirements become durable, and the Czech Academy's history can therefore be read as a centuries-long expansion in the institutional capacity to sustain them.

Seen from this perspective, the most important transformation was not any single change of name but the gradual shift from institutions that primarily *represented scholars* to institutions capable of *organising research*. The Royal Bohemian Society represented a learned community and created a framework for scholarly exchange. The Czech Academy of Sciences and Arts extended representational authority across science, literature, and the arts while increasing support for scholarly projects. Interwar and post-war institutions developed more permanent specialised research capacity. ČSAV placed institutes at the centre of the academy model and transformed non-university research into a major sector of public scientific employment. AV ČR retained this organisational achievement but reconstructed the relationship between institute, researcher, Academy leadership, state, and international scientific community. The result was not merely administrative modernisation. It changed where legitimate decisions about science were expected to originate. Under authoritarian centralisation, political structures could claim the right to define research priorities and personnel legitimacy from above. Under democratic academic governance, the state establishes legal and financial frameworks, while scholarly communities exercise substantial responsibility for evaluating scientific quality and shaping research. This redistribution of authority is as important to the meaning of the modern Academy as laboratories or funding. A research organisation becomes genuinely modern not simply when it possesses sophisticated equipment, but when institutional mechanisms recognise the epistemic competence and professional responsibility of researchers. The Czech institutional trajectory demonstrates how difficult—and historically contingent—the achievement of that balance has been.

The contemporary research organisation also embodies a temporal horizon much longer than that of many political or economic institutions. Fundamental research may require years before producing results and decades before its significance becomes fully visible. Linguistic dictionaries, historical editions, longitudinal environmental observations, astronomical datasets, archaeological surveys, materials research, mathematical theories, and biological collections all depend upon forms of continuity that are poorly suited to short political cycles. One of the oldest functions of an academy has therefore survived in modern form: protecting intellectual work whose value cannot be exhausted by immediate utility. This does not mean insulating science from public accountability. On the contrary, the legitimacy of a publicly

financed Academy depends upon explaining why long-term knowledge constitutes a public resource. The historical record strengthens that argument because many capacities considered strategically important at one moment were made possible by research undertaken for reasons that had seemed far less immediately practical decades earlier. Institutional continuity enables societies to preserve options for futures they cannot fully predict. In this sense, the move from learned society to modern research organisation expanded not only the scale of scientific work but also society's capacity to sustain long intellectual time horizons. The Academy became a mechanism through which scientific questions could outlive governments, funding fashions, and individual careers. That capacity may be one of the deepest continuities connecting the 18th-century society with its 21st-century descendants.

The modern Academy's relationship with universities further illustrates both institutional differentiation and historical continuity. Learned societies originally offered scholars a corporate environment beyond university structures. Purkyně explicitly imagined an autonomous non-university research institution because he recognised that not every scientific task fit naturally within institutions organised principally around instruction. ČSAV later carried this principle to an unprecedented scale, although under a political system that sometimes encouraged excessive separation between research institutes and higher education. After 1989, cooperation between Academy institutes and universities became increasingly important in overcoming this inherited division. Researchers teach in doctoral programmes, supervise students, participate in joint projects, and share infrastructures. Universities meanwhile conduct fundamental research that overlaps extensively with Academy fields. The distinction between the two sectors therefore does not correspond to a rigid division between teaching and research. Its value lies instead in institutional complementarity. Universities combine education with broad research missions, whereas Academy institutes can concentrate personnel and infrastructure on selected long-term programmes. A modern national research system benefits when these organisational strengths interact rather than when one sector attempts to absorb the other. This arrangement represents another historical maturation of the learned-society principle of scientific plurality. The Academy no longer needs to claim exclusivity in order to justify its existence; its significance derives from the distinctive capacities it contributes to an interconnected research system.

The same principle applies to the Academy's relationship with society beyond science. Early learned organisations sought patronage, public prestige, and recognition because scholarship required social legitimacy even when its audiences were small. 19th-century Czech institutions became closely connected to cultural emancipation and national self-definition. ČSAV under socialism was formally assigned a broad role in national development, although that mission was mediated by ideological planning. The democratic Academy inherited the expectation that publicly supported expertise should contribute to society, but it has had to reinterpret public mission without surrendering scientific independence. Contemporary public engagement, expert advice, popularisation, education, technology transfer, and cooperation with cultural institutions represent modern forms of an old institutional relationship. Science is neither entirely private intellectual activity nor merely an instrument of government policy. An academy occupies an intermediate public space in which knowledge is generated according to scholarly standards but sustained because society recognises its wider value. This position explains why autonomy and responsibility are not opposites. Autonomy protects

the procedures through which reliable knowledge is produced, while public responsibility justifies the resources and authority entrusted to scientific institutions. The entire historical development from learned societies onwards can be understood as a recurring negotiation between these principles. The specific institutions changed because the social organisation of knowledge changed, but the need for that negotiation remained.

The notion of institutional genealogy must nevertheless be handled with care. Modern organisations often construct long pedigrees because historical depth confers symbolic legitimacy. There is therefore always a risk that anniversary histories transform complicated ruptures into comforting narratives of uninterrupted progress. The Czech case resists such simplification. The Royal Bohemian Society and the Czech Academy of Sciences and Arts were dissolved as independent institutions in 1952. ČSAV was organised under an authoritarian political system and cannot be treated as merely another neutral stage in the same institutional evolution. The purges of the 1950s and normalisation period represented real breaks in careers, intellectual traditions, and organisational trust. The Velvet Revolution produced another genuine rupture by rejecting the political principles according to which the Academy had previously been governed. The dissolution of Czechoslovakia then ended the legal existence of ČSAV itself. To speak of continuity despite these breaks is meaningful only if continuity is understood analytically rather than ceremonially. Laboratories, collections, personnel, methods, archives, publications, buildings, research questions, professional networks, and institutional memories could persist even when constitutions and political regimes changed. Conversely, the survival of a building or institute name did not guarantee continuity in intellectual freedom or scientific orientation. The strongest interpretation of the Czech academic tradition therefore recognises succession without pretending identity.

This distinction also explains why the historical path towards the modern Academy cannot be reduced to the history of its central governing body. Research institutions acquire meaning through the communities inhabiting them. Directors and presidents matter, but so do laboratory technicians, librarians, archivists, editors, engineers, field researchers, junior scientists, administrators, and successive generations of doctoral researchers. Scientific continuity is often carried by practices that appear peripheral in high-level institutional histories. A specimen collection remains usable because someone catalogues and conserves it. An archival series survives because records are transferred, described, and made accessible. A laboratory method persists because experienced researchers teach it to younger colleagues. A dictionary or critical edition advances because generations accept responsibility for a project unlikely to be completed within one career. An institute survives political turbulence partly because ordinary organisational routines continue despite uncertainty at the top. The transformation from learned society to modern research organisation therefore expanded the social population responsible for academic continuity. The earliest academies could be described largely through their members; a modern research institution cannot. Its memory is distributed across people, technologies, documents, spaces, and procedures. This distributed character is precisely what allows scientific institutions to outlive even profound changes of leadership and political regime.

By 2025, the Czech Academy of Sciences could therefore be understood as the product of more than two centuries of institutional experimentation rather than simply thirty-three years of post-Czechoslovak existence. It is legally an institution of the Czech Republic and organisationally a network of public research institutes, but historically it stands at the intersection of several different academy traditions. It carries the associative memory of

learned societies without itself being principally a learned society. It carries the representational ambitions of the Czech Academy of Sciences and Arts without reproducing its 19th-century cultural structure. It carries much of the institute-based capacity built under ČSAV without accepting the political authority model under which ČSAV operated. It participates in European and global science while retaining particular responsibilities towards Czech society, language, territory, culture, and public policy. It relies on public funding while increasingly operating within competitive national and international research environments. It cooperates closely with universities while preserving the rationale for specialised non-university fundamental research. It has become more administratively complex than its predecessors while continuing to depend upon an old principle of scholarly self-regulation. These combinations explain both its resilience and the recurring debates surrounding its role. An institution carrying multiple inheritances will inevitably encounter tensions among them. Yet those tensions are not evidence of historical incoherence; they are the consequence of successfully transmitting scientific capacity through radically different social orders.

Thus, the movement from learned societies to the modern Czech Academy of Sciences should be understood neither as a seamless institutional succession nor as a series of unrelated foundations. It was a cumulative process in which the organisational means of sustaining knowledge became progressively more elaborate while being repeatedly reshaped by political transformation. The Royal Bohemian Society established durable scholarly association, publication, recognition, and intellectual memory. The Czech Academy of Sciences and Arts expanded the national, cultural, and interdisciplinary authority of the academy idea. Interwar and post-war research structures contributed specialised professional capacities that prepared the transition towards institute-based science. ČSAV created the large research organisation that became the principal structural inheritance of the contemporary Academy, even though it placed that organisation within an authoritarian political order. The crises of 1968 and normalisation demonstrated that scientific capacity could survive while academic autonomy was severely damaged. The Velvet Revolution separated the preservation of research infrastructure from the preservation of political structures and thereby made selective institutional continuity possible. The establishment of AV ČR in 1992–1993 transformed that inherited capacity into a democratic public research system based on self-government, evaluation, international openness, and scientific responsibility. The re-establishment of a separate Learned Society further demonstrated that older academy functions could survive through institutional differentiation rather than centralisation. What connects the 18th-century society with the 21st-century Academy is therefore not an unchanged legal personality but an accumulating commitment to making knowledge durable across generations. In the full historical perspective developed throughout this book, the modern Czech Academy appears as both an inheritance and a reconstruction: an institution whose capacity to change has itself become the most important condition of its continuity.

2. Continuity through Political Rupture and Institutional Change

The history of Czech academic science is marked by an unusual density of political ruptures. During little more than a century, scientific institutions in the Czech lands passed through the dissolution of the Habsburg Monarchy, the creation of Czechoslovakia, the destruction of democratic statehood after Munich, Nazi occupation, post-war reconstruction, the communist seizure of power, Stalinist institutional reconstruction, the reform movement of the 1960s, Soviet-led military intervention, normalisation, the Velvet Revolution, the dissolution of the Czechoslovak federation, and the formation of an independent Czech Republic. Each of these transformations altered the political environment within which scientific institutions operated, and several changed their legal structures directly. Yet neither Czech science nor its principal academic organisations began anew after every political break. Laboratories continued to house instruments acquired under previous regimes, archives preserved documents created under institutional arrangements that no longer existed, and scientific communities transmitted techniques and research questions through generations whose political experiences differed radically. Individual careers could be interrupted, redirected, rehabilitated, or resumed, while institutional names and legal personalities could disappear without extinguishing the knowledge accumulated within them. This disparity between political time and scientific time is one of the most important features of the Czech academic experience. Political regimes may change in months, whereas the formation of an experimental school, a dictionary, a geological survey, a biological collection, or an archaeological research tradition may require decades. An adequate history of the Academy must therefore distinguish regime continuity from scientific continuity and institutional continuity from organisational identity. A political rupture may destroy one form of governance while leaving parts of the research system intact, just as formal organisational survival may conceal deep intellectual discontinuity caused by censorship, exclusion, or ideological control. The Czech case demonstrates repeatedly that scientific institutions are neither completely autonomous from politics nor perfectly malleable instruments of political authority. They possess a limited but historically significant capacity to carry knowledge across the boundaries created by states and regimes. That capacity became one of the foundations upon which the modern Czech Academy could eventually be reconstructed (*Franc et al., 2010*; *Mádlová, 2024*).

Continuity in this context should not be treated as a single phenomenon. At least several forms of continuity can be distinguished: legal, organisational, personnel, disciplinary, infrastructural, methodological, intellectual, and symbolic. Legal continuity concerns whether one institution formally succeeds another or inherits its property and responsibilities. Organisational continuity concerns the survival of workplaces, departments, administrative routines, and research structures even when the governing institution changes. Personnel continuity is carried by scientists, technicians, librarians, archivists, and administrators who move from one institutional order into another. Disciplinary continuity persists when a field of research retains its questions, methods, collections, journals, or scholarly networks despite political reorganisation. Infrastructural continuity lies in laboratories, observatories, archives, field stations, libraries, collections, and technical equipment whose usefulness may extend across several political eras. Intellectual continuity is more difficult to measure, because it concerns traditions of reasoning, methodological standards, theoretical preferences, and tacit knowledge transmitted between generations. Symbolic continuity, finally, is created when later institutions claim particular predecessors and incorporate their histories into a narrative of legitimacy. These forms do not necessarily coincide. A legally continuous institution may

experience radical personnel purges, whereas a legally abolished body may transmit its collections, scholars, and research programmes almost intact into a successor organisation. The history of Czech science repeatedly exhibits precisely such combinations. For this reason, the distinction between institutional inheritance and institutional identity is indispensable to understanding how academic life survived political rupture (*Franc et al., 2010*).

The transformation produced by the collapse of the Habsburg Monarchy in 1918 offers an early illustration of this complexity. The creation of Czechoslovakia was a fundamental political rupture, but for Czech scholarly institutions it represented liberation, reorientation, and continuity at the same time. Organisations founded under imperial rule did not automatically lose their scientific value when the monarchy disappeared. The Czech Academy of Emperor Franz Joseph for Sciences, Literature and Arts rapidly removed the dynastic reference from its name and continued as the Czech Academy of Sciences and Arts. The change was symbolically profound because an institution once authorised within an imperial framework became part of the intellectual infrastructure of a republican nation-state. Yet its members, collections, committees, publishing functions, and many of its scholarly practices did not suddenly originate in 1918. The Royal Bohemian Society of Sciences likewise continued its activities under the republic, despite having emerged from a political and linguistic environment very different from that of independent Czechoslovakia. The institutional landscape of the First Republic was therefore built partly by reinterpreting organisations inherited from the monarchy. Their legitimacy no longer rested upon imperial patronage or the politics of Czech cultural emancipation within Austria-Hungary. Instead, they were increasingly expected to represent the scientific maturity of an independent state. This transition illustrates how political rupture can change the meaning of an institution more rapidly than its internal practices. The Academy became republican without needing to erase the scientific capital accumulated during the monarchical period. Such reinterpretation would recur repeatedly in Czech academic history (*Mádlová, 2024*; *Franc et al., 2010*). The Czech Academy's institutional history likewise records the renaming and functional adjustment of the older Academy after the establishment of Czechoslovakia.

The interwar period subsequently demonstrated that continuity after a political rupture can generate institutional expansion rather than mere preservation. Independent Czechoslovakia inherited universities, academies, museums, archives, learned societies, and technical institutions that had developed under the monarchy, but it also established new structures appropriate to the ambitions of the republic. The Masaryk Academy of Labour and the Czechoslovak National Research Council broadened the relationship between science, technical development, and international scholarly representation. State institutions responsible for archaeology, history, oriental studies, Slavic studies, and other areas gradually strengthened professional research outside the universities. Existing academic organisations adapted to a social environment in which the Czech language no longer required the same institutional defence that it had under the monarchy, while questions of Czechoslovak identity and relations between Czech and Slovak science acquired new importance. This was not a simple nationalisation of an inherited system. German-speaking institutions and scholars remained important, especially during the earlier interwar decades, and scientific life continued to be embedded in Central European networks. The First Republic therefore inherited both the strengths and unresolved tensions of the late Habsburg scientific landscape. It also introduced the idea that a democratic state could actively support science without converting scholarship into direct political administration. That principle would later acquire

retrospective importance because Czech scientists could compare the institutional pluralism of the interwar republic with the much more centralised model created after 1948. The memory of pre-communist academic autonomy did not remain equally strong in every discipline or generation, but it never disappeared completely. After 1989, the interwar experience could consequently serve as one historical reference point for rebuilding a plural scientific system. Institutional continuity was thus reinforced not only by physical survival but also by remembered alternative forms of scientific governance (*Franc et al., 2010*; *Mádlová, 2024*).

The crisis of 1938–1939 introduced a fundamentally different form of rupture. Whereas 1918 had expanded the political possibilities of Czech scientific institutions, the destruction of Czechoslovak sovereignty subjected them to occupation, persecution, censorship, and the deliberate weakening of Czech intellectual life. The closure of Czech universities in November 1939 was one of the most dramatic attacks on the institutional reproduction of the national scholarly community. Students were expelled from their educational environment, university teachers lost their normal institutional base, and research programmes were interrupted or transferred into far more precarious settings. Some academics were arrested, imprisoned, executed, or forced into exile. Others withdrew from public activity or sought employment in institutions that remained open. Scientific communication with parts of the international community became severely restricted by war and occupation policy. Libraries and collections survived unevenly, while intellectual work continued wherever political and material conditions permitted it. The attack upon universities demonstrated with brutal clarity how dependent modern science had become upon institutions. Individual scholarship could continue privately, but the reproduction of disciplines required laboratories, seminars, libraries, journals, apprenticeships, and regular communities of discussion. Once these structures were disrupted, continuity depended increasingly upon surviving institutions outside the closed Czech university system. Academies, museums, archives, technical bodies, and other research organisations consequently acquired an importance that cannot be understood solely from their formal wartime activities. They helped retain fragments of the scientific infrastructure from which post-war reconstruction could begin (*Franc et al., 2010*; *Mádlová, 2024*).

Occupation also reveals why the survival of institutions should never be equated automatically with the survival of autonomy. An academy could remain legally or administratively present while being prevented from performing its earlier public role freely. Publications could be censored, research agendas narrowed, contacts restricted, and personnel decisions influenced by occupation authorities. Under such circumstances, organisational continuity might serve primarily as a vessel within which intellectual resources waited for a more favourable political environment. At the same time, the distinction between collaboration, accommodation, survival, and resistance could become morally and historically complicated. Scientists had families, laboratories, collections, and students to protect, and the preservation of an institution sometimes required compromises that later generations could judge differently. The wartime experience therefore left institutional memories that were not simply heroic. It created interrupted careers, unresolved disputes, and questions concerning responsibility under coercive rule. These memories mattered after liberation because post-war reconstruction involved decisions about who should return, who should lead institutions, and which organisational arrangements should be restored or replaced. The Academy tradition consequently emerged from the occupation both damaged and transformed. The desire to rebuild scientific life was accompanied by a stronger recognition that modern research

required robust public institutions capable of surviving national emergencies. Yet the war had also demonstrated that institutional strength without political freedom could be hollow. The problem of how to combine durability with autonomy therefore became increasingly central to the post-war history of Czech science. Similar tensions would reappear under communist rule, although within a very different political and ideological system.

Liberation in 1945 seemed initially to promise institutional restoration, but post-war reconstruction quickly became a period of accelerated transformation. Universities reopened, expelled scholars returned where circumstances allowed, and research institutions attempted to recover from years of disruption. At the same time, the scientific environment of 1945 was not the world of 1938 simply restored. War had changed the scale and strategic meaning of science throughout Europe. Nuclear physics, medicine, industrial chemistry, communications, military technologies, and large-scale technical research demonstrated that scientific capacity was increasingly treated as a central component of state power and economic development. Czechoslovak policymakers and scientists therefore faced pressure not merely to reopen old organisations but to expand permanent research infrastructure. Some specialist bodies associated with the Czech Academy of Sciences and Arts began developing into institutes, while new central research institutions appeared in several fields. The Institute of the Czech Language, for example, emerged in 1946 from a much older lexicographical tradition, while research structures in mathematics, literature, physics, and other disciplines were reorganised or enlarged. The Central Research Council established in 1949 helped prepare a more coordinated institutional model by supporting central scientific institutes. These developments demonstrate that the transition towards a research-institute academy was not caused by a single legislative act in 1952. Organisational change was already occurring through the accumulation and professionalisation of specialised research units. The communist regime would subsequently appropriate and reshape this tendency, but it did not invent the underlying need for permanent non-university research capacity (*Franc et al., 2010*; *Franc & Dvořáčková, 2020*). The Academy's own historical account identifies a range of pre-1952 institutes and research units that were later transferred into the newly created ČSAV.

The communist seizure of power in February 1948 nevertheless constituted one of the sharpest political ruptures in the history of Czech and Czechoslovak science. The new regime did not regard universities, academies, and scholarly societies as autonomous components of civil society whose independence should be protected from political power. Science was to become part of the socialist transformation of state, economy, education, and culture. Marxism-Leninism provided not merely a political ideology but an official framework through which the regime classified acceptable and unacceptable forms of intellectual work. Personnel policy became an instrument of political reconstruction. Scholars could lose positions because of their political background, social origin, religious convictions, wartime record as interpreted by the new authorities, contacts abroad, or refusal to conform to Communist Party expectations. Students and university employees were likewise subjected to political screening. The relationship between scientific competence and political reliability became structurally distorted because advancement increasingly required accommodation to a new ideological order. Yet the regime also intended to expand scientific capacity, particularly in fields associated with industrialisation, technological modernisation, public health, natural resources, and state planning. Consequently, repression and institutional investment developed simultaneously. This duality is essential: the communist transformation weakened intellectual freedom while in some areas enlarging the material base of research. The historical

problem is therefore not whether science existed under the regime, but how scientific communities operated within institutions whose political purposes and professional capacities were often in tension. The establishment of ČSAV would embody that contradiction more fully than any previous Czech academic organisation (*Franc & Dvořáčková, 2020*).

The founding of the Czechoslovak Academy of Sciences in November 1952 gave institutional form to the new order. The Academy combined the functions of a learned corporation with those of a large network of research workplaces, but the balance increasingly favoured the latter. The new structure absorbed or reorganised research bodies connected with the Czech Academy of Sciences and Arts, the Royal Bohemian Society of Sciences, the Masaryk Academy of Labour, the Czechoslovak National Research Council, state institutes, and other organisations. The founding legislation itself described ČSAV as arising through a reconstruction of existing academic institutions, thereby embedding a claim of continuity within an act that simultaneously represented radical institutional rupture (*National Assembly of Czechoslovakia, 1952*). This apparent contradiction captures the essence of the 1952 transformation. Older organisations lost their independent existence, yet their intellectual and material resources were not simply destroyed. Laboratories, collections, libraries, research programmes, employees, buildings, and administrative practices were transferred into the new structure. Some fields gained resources and permanent employment opportunities that had been difficult to secure previously. Others experienced ideological restructuring, political exclusions, or the dissolution of earlier scholarly traditions. The Academy became substantially larger and more administratively integrated than its predecessors. It was also inserted into a hierarchical political system in which Communist Party authority ultimately prevailed over institutional self-government. The new organisation therefore inherited scientific capital while altering the political rules governing its use. This combination made ČSAV both a successor to earlier Czech academic traditions and a distinct institutional creation of state socialism (*Franc & Dvořáčková, 2020*). Official historical documentation similarly describes the transfer of older research structures into ČSAV in 1952.

The transfer of pre-existing institutions into ČSAV is particularly important for understanding why continuity survived beneath the political rupture. A newly renamed institute could contain researchers trained before 1948, collections assembled during the First Republic, methodologies developed in 19th-century scholarship, and younger employees educated entirely within the socialist system. Different historical layers therefore coexisted inside one workplace. In archaeology, historical scholarship, linguistics, astronomy, mathematics, chemistry, biology, and other fields, the practical substance of research often crossed institutional boundaries more easily than official narratives suggested. The state might redefine an institute's mission, but it could not instantly replace all specialised knowledge held by its staff. Nor could ideological language erase every research technique inherited from earlier generations. Tacit knowledge was especially resistant to abrupt political reconstruction because it was embodied in experimental routines, archival habits, field methods, technical skills, and interpersonal mentorship. The continuity of specialised collections created another constraint upon rupture. An archive or biological collection accumulated over decades retained scientific value irrespective of the political regime governing the institution that held it. Such resources gave scientific workplaces a temporal depth that political institutions often lacked. They also created practical reasons for retaining experienced staff, even when those individuals did not perfectly fit new ideological expectations. Consequently, the 1950s

produced not complete replacement but selective destruction, adaptation, and incorporation. ČSAV became a new political institution built partly from old scientific materials.

This does not minimise the seriousness of Stalinist intervention. The early history of ČSAV was characterised by ideological pressure, political vetting, hierarchical administration, and the systematic effort to align scientific activity with socialist state priorities. The humanities and social sciences were particularly exposed because their subjects—history, philosophy, law, economics, sociology, literature, and cultural interpretation—were directly connected with official narratives of social development. Historians had to navigate prescribed interpretations of class conflict and national history, while philosophers confronted the privileged position of Marxism-Leninism. Economic and legal research was expected to operate within the institutional assumptions of the socialist system. Certain intellectual traditions were marginalised because their conceptual foundations were judged politically incompatible. Natural sciences were not immune, even though experimental disciplines often possessed greater protection from direct doctrinal control. International contacts could be politically screened, and resource allocation reflected state priorities. Lysenkoism and similar ideological interventions elsewhere in the Soviet bloc illustrated the dangers that arose when political authority attempted to adjudicate scientific questions. Within Czechoslovakia, however, degrees of pressure varied significantly across disciplines, institutes, and moments. Some researchers were able to preserve high professional standards behind officially acceptable institutional language. Others suffered lasting damage to careers and research programmes. Continuity under Stalinism was therefore frequently continuity under constraint rather than evidence of institutional normality (*Franc & Dvořáčková, 2020*).

At the same time, the existence of strong scientific work within ČSAV created a paradox with long-term consequences for the regime itself. Once the state had established large research institutes, trained specialists, purchased equipment, and supported international scientific ambitions, it created professional communities whose standards could not be derived entirely from political ideology. A chemist, physicist, mathematician, or biologist seeking international recognition had to satisfy criteria established by disciplinary communities that extended beyond Czechoslovak borders. Even humanities scholars, despite stronger political constraints, remained aware of foreign literature, pre-1948 scholarship, archival evidence, and methodological debates that could not always be compressed into official formulas. International scientific prestige consequently became a source of limited professional leverage. Jaroslav Heyrovský's Nobel Prize in Chemistry in 1959 offered the regime valuable symbolic capital, but it also demonstrated that the international authority of science rested upon standards not controlled by the Czechoslovak political leadership. Otto Wichterle's work similarly showed how innovative achievement could emerge from within a system that frequently complicated the careers of its most independent scientists. The regime wanted internationally successful science while simultaneously seeking political control over scientists. These goals were compatible only to a limited extent. The contradiction helped create institutional spaces in which professional judgement gradually recovered influence. Scientific continuity thus became not merely passive survival but a source of pressure for institutional change (*Franc & Dvořáčková, 2020*). The Academy's retrospective history explicitly recognises this coexistence of ideological pressure and continuing world-class achievement.

The 1960s made these contradictions increasingly visible. The gradual political thaw in Czechoslovakia coincided with generational change, expanding international contacts, and a growing confidence among professional researchers. Within ČSAV, the centre of gravity

increasingly shifted from the ceremonial body of Academy members towards research workplaces and their scientific communities. This change was organisationally significant because institutes possessed practical expertise that central administrative authorities could not easily substitute. Research teams became stronger participants in decisions concerning scientific priorities. Cooperation with leading Western centres expanded in several fields, while the Academy's international relationships became more diverse than during the most restrictive Stalinist years. Financial limitations remained serious, and researchers were increasingly aware of the technological gap separating parts of the Czechoslovak research system from richer Western institutions. Yet professional openness itself encouraged critical reflection on the domestic organisation of science. Scientists asked whether excessive administrative control hindered innovation and whether rigid planning could accommodate the unpredictability of fundamental research. Universities were also rebuilding their research capacity and increasingly challenged the privileged status of the Academy. By 1968, even ČSAV leadership acknowledged that the institution should not claim hierarchical superiority over other scientific organisations. Reform therefore concerned not only political liberalisation but the redistribution of authority within science itself. The 1960s revealed that institutional modernisation had generated communities capable of questioning the political and bureaucratic framework within which that modernisation had occurred (*Franc & Dvořáčková, 2025*). Recent institutional historiography stresses both the expansion of international cooperation and the Academy's increasingly ambivalent position within the reforming scientific system.

The Prague Spring of 1968 represented the moment when these tendencies intersected with a broader national attempt to reform socialism. Researchers from Academy institutes participated actively in discussions about economic reform, law, political institutions, historical interpretation, sociology, culture, and the future of Czechoslovak society. The Academy's social-science institutes acquired particular public importance because they possessed concentrations of expertise that had developed within the state-socialist research system but could now be redirected towards critical analysis of that system. This was a remarkable institutional reversal. Research bodies created or expanded by the communist state became sites from which aspects of communist governance were examined and challenged. The phenomenon demonstrates again why scientific institutions cannot be regarded as passive instruments of their founders. Once professional communities accumulate knowledge, they may deploy it in ways that political authorities did not anticipate. Reformist scholarship also drew upon intellectual traditions suppressed or marginalised after 1948, thereby reconnecting contemporary debate with older Czech and European thought. Historians revisited previously restricted questions, sociologists analysed social structures with greater empirical freedom, economists debated alternative models of socialist management, and legal scholars reconsidered relations between law and political power. International exchange widened the conceptual resources available for these discussions. The Academy consequently became involved in a broader effort to reconcile socialism with intellectual freedom, legality, expertise, and public debate. That effort was short-lived, but its memory would become an important component of post-1989 institutional identity (*Franc & Dvořáčková, 2025*).

The invasion of Czechoslovakia by Warsaw Pact forces in August 1968 initiated another abrupt collision between political and scientific time. Military intervention ended the possibility of continuing reform on the terms imagined during the Prague Spring, but its consequences for

the Academy unfolded over several years. The political leadership that consolidated power under normalisation regarded parts of ČSAV with particular suspicion because Academy researchers had contributed visibly to reformist discourse. Political reviews, leadership changes, organisational restructuring, publication restrictions, and personnel actions gradually reimposed control. The resulting rupture differed from 1948 in several ways. The institutions affected were now more mature, their professional communities larger, and their international networks more developed. Many researchers who were removed or marginalised had already established substantial scientific reputations. The damage therefore involved not simply preventing future careers but breaking existing schools, teams, and lines of inquiry. Some scholars emigrated, increasing the Czech and Slovak scientific diaspora. Others were transferred to less influential positions, excluded from publication, deprived of normal promotion, or forced entirely outside their disciplines. Younger scientists learned that professional advancement could depend once again on political accommodation. The restoration of ideological conformity was consequently also a transformation of institutional memory, because certain events, personalities, and research traditions had to disappear from official narratives. Yet the very effort required to suppress them demonstrated how deeply the reform period had affected academic communities.

Normalisation created one of the clearest examples of the difference between organisational continuity and intellectual continuity. Many institutes continued to exist throughout the 1970s and 1980s. Their buildings remained open, budgets continued to be allocated, journals were published, experiments were conducted, and research programmes proceeded. If continuity were measured only by organisational survival, the period might appear relatively stable. Yet personnel purges and ideological restrictions produced severe discontinuities in particular disciplines and workplaces. Social sciences and humanities suffered especially where research questions intersected directly with political legitimacy. A department could retain its name while losing leading scholars and abandoning the most intellectually productive directions developed during the 1960s. Conversely, a research group could preserve methodological competence even after its formal institutional position deteriorated. Some scientific traditions survived in reduced or unofficial forms through personal mentorship, private seminars, correspondence, or carefully framed projects. Others were maintained by scholars in exile who continued Czech or Czechoslovak intellectual traditions abroad. Scientific continuity therefore became geographically dispersed. The Academy within Czechoslovakia was only one carrier of national scientific memory, although it remained the largest institutional one. This pluralisation of continuity would become highly significant after 1989, when exiled scholars, formerly excluded researchers, and institutional insiders encountered one another again within a reconstructed scientific environment.

The severity of normalisation should also be assessed in relation to the institutional capacity that survived it. ČSAV retained major laboratories, observatories, field stations, libraries, archives, collections, and specialised technical services. Research in many areas of natural science and mathematics continued to produce results of international significance, although access to equipment, literature, travel, and foreign collaboration could be constrained. The Academy also continued developing fields that the socialist state considered strategically relevant. Even within law and other politically sensitive areas, institutes sometimes pursued technically innovative projects alongside ideologically acceptable scholarship. For example, research in legal informatics and automated legal information developed during a period when legal science remained formally subordinate to the socialist constitutional framework. Such

cases illustrate why retrospective judgements must distinguish the political character of an institution from the scientific quality of every activity conducted within it. Researchers could produce useful knowledge within institutions whose governance they did not control. Some participated willingly in the official system, some accommodated it pragmatically, some attempted to protect professional spaces, and others resisted more openly. Institutional life was therefore morally and intellectually heterogeneous. This heterogeneity helped explain why post-1989 reform could not be achieved by treating all employees or institutes as equally compromised. The transformation required evaluation at the level of people, teams, programmes, and research quality rather than a blanket rejection of the entire inherited organisation. The long normalisation period thus accumulated both burdens that had to be confronted and resources that would later prove indispensable (*Institute of State and Law of the CAS, n.d.*). The history of the Institute of State and Law, for example, records both ideological control and the development of new legal-research fields during the 1970s and 1980s.

The 1970s and 1980s also reveal the importance of tacit institutional memory. Official reports and political resolutions capture only part of what an institute knows. Much scientific competence exists in practices that are rarely recorded fully: how to calibrate an instrument, interpret a difficult archival source, maintain a long-term observation series, conduct a specialised field survey, classify a collection, or recognise anomalies in experimental results. Such skills are transmitted through daily cooperation rather than political declarations. They can therefore persist beneath changing ideological vocabularies. Senior researchers who had experienced the 1960s could pass professional standards to younger colleagues even when political discussion remained constrained. Laboratories developed internal reputations concerning which groups maintained international-quality work and which relied more heavily on political protection. Informal hierarchies of scientific credibility could differ sharply from formal administrative hierarchies. These distinctions were crucial after 1989 because reformers could draw upon professional judgements already present within the scientific community. The democratic transformation did not invent standards of excellence from nothing. It liberated, formalised, and internationalised criteria that many scientists had continued to recognise privately. Institutional continuity therefore depended not only on the persistence of structures but on the preservation of communities capable of distinguishing scientific authority from political authority. This invisible continuity was among the most valuable inheritances carried through the final decades of state socialism.

By the late 1980s, however, the weaknesses of the existing scientific system were becoming increasingly difficult to conceal. Restrictions on international mobility, shortages of advanced equipment, bureaucratic planning, insufficient access to rapidly developing research technologies, and political limitations on intellectual debate placed Czech and Slovak science at a disadvantage in many fields. The international scientific system itself was changing rapidly, particularly through advances in computing, molecular biology, materials science, telecommunications, and increasingly globalised research networks. Institutions designed around central planning faced difficulty adapting to environments in which flexible collaboration and competitive funding were becoming more important. Younger researchers could compare domestic conditions with opportunities abroad more readily than earlier generations had done. The gap between formal proclamations about socialist scientific progress and the practical frustrations of research became increasingly visible. Nevertheless, the existence of a substantial institute network meant that Czechoslovakia still possessed

important scientific capacities when political change finally arrived. This point is fundamental to understanding the 1990s. The country did not need to construct an entire research system after communism; it needed to transform one. That distinction affected every subsequent debate about the Academy. Reformers faced the difficult task of opening institutions internationally and politically while preserving the best of their accumulated scientific capital. The success or failure of post-socialist transformation would depend largely upon whether this distinction could be maintained.

The Velvet Revolution of November 1989 created the most important political rupture in the Academy's modern history because it simultaneously removed the ideological framework of the existing system and opened the possibility of preserving much of its scientific infrastructure. Unlike 1952, when institutional centralisation accompanied a new authoritarian order, the transformation after 1989 sought to dismantle political control while retaining viable research capacity. Researchers began electing scientific councils and participating more directly in the governance of their workplaces. Previously restricted topics could be investigated openly, and scholars removed during normalisation could be rehabilitated or reconnected with academic life. International collaboration expanded rapidly as travel restrictions disappeared and institutes renewed relationships with Western European and North American partners. The political significance of this opening was inseparable from its scientific consequences. Researchers could once again choose collaborators on professional rather than geopolitical grounds. Access to foreign laboratories, conferences, publications, and grant systems altered expectations about research quality. Humanities and social sciences could confront themes suppressed under communist rule, including political repression, recent history, property transformation, democratic institutions, religion, social inequality, and the legal foundations of the new order. The revolution therefore transformed not only governance but the research agenda itself. Yet freedom also exposed weaknesses that had previously been concealed by administrative stability. Institutes now had to demonstrate that their research could withstand open professional comparison. The democratic rupture consequently generated a demand for evaluation as well as liberation.

Otto Wichterle's election as the final president of ČSAV gave this transformation a powerful symbolic dimension. Wichterle represented internationally recognised science, personal independence, and a career repeatedly complicated by the political structures of the previous regime. His leadership from 1990 to 1992 therefore communicated that scientific legitimacy was to be grounded in professional achievement rather than political reliability. Yet symbolism alone could not reform an organisation of ČSAV's scale. Scientific councils, new leadership structures, personnel reviews, programme revisions, and discussions about the appropriate future of individual institutes were necessary. The Academy also had to reconsider its relationship with universities, which were themselves experiencing democratic renewal and rapid expansion. Some critics argued that non-university research institutes represented a Soviet organisational model that should be dismantled or transferred into universities. Defenders of the Academy responded that institute-based fundamental research had deeper Czech and European roots and that many workplaces possessed specialised capacities that universities could not absorb without severe disruption. The debate therefore concerned not merely institutional survival but the interpretation of historical inheritance. Was ČSAV primarily a political relic or a politically compromised container of valuable research capital? The transformation ultimately moved towards the second interpretation, but only on the condition that inherited structures submit to substantial reform. The Academy's own historical account

identifies Wichterle's presidency as the period in which purposeful organisational reconstruction began.

The introduction of systematic evaluation became one of the principal mechanisms for separating scientific continuity from organisational inertia. During 1990–1992, the work of institutes was reassessed, and the process continued with greater formalisation after the establishment of AV ČR. Evaluation made continuity conditional rather than automatic. An institute could appeal to an established tradition, but historical longevity was no longer sufficient justification for continued public financing. Research quality, future potential, international standing, disciplinary necessity, and organisational viability increasingly shaped decisions. This represented a profound change in the moral economy of the Academy. Under the previous system, political or administrative status could help preserve a workplace regardless of competitive scientific assessment. Under the emerging model, institutions had to demonstrate their value to professional evaluators. The shift inevitably generated conflict because evaluation affected jobs, budgets, and organisational survival. The early 1990s were also characterised by severe fiscal pressure, making restructuring more painful than a purely intellectual reform would have been. Some workplaces were abolished or merged, while staff numbers were reduced considerably across the Academy. Individual institutes could experience reductions of a third or more, and the system as a whole contracted sharply. Yet the purpose of reduction was not merely financial austerity; it was also to create an Academy whose continued existence could be defended in a new political environment. Institute histories from the period consistently describe the simultaneous arrival of scientific freedom, international opening, funding difficulties, and staff reduction.

The scale of restructuring in 1993 demonstrates how misleading it would be to describe the creation of AV ČR as a simple administrative renaming. Contemporary Academy documents explicitly referred to a *transformation project* and linked institutional autonomy with responsibility for research quality. The Academic Assembly required further evaluation of researchers, the creation of independent evaluation bodies, budgetary reform, and continuing reduction and restructuring of workplaces. The process also included revision of statutes, new internal governance mechanisms, development of cooperation with universities, changes in international relations, and efforts to improve public communication. These measures reveal that the post-socialist Academy was consciously attempting to redesign the institutional contract between researcher, institute, Academy leadership, and state. Autonomy was no longer to mean insulation from judgement. It was instead to be combined with systematic professional accountability. At the same time, accountability was intended to operate through academic evaluation rather than direct ideological command. This distinction marked the deepest institutional break with the previous system. The Academy preserved public funding and a national institute network but changed the principles by which scientific legitimacy was to be determined. The transformation therefore offers a clear case of radical governance change occurring within substantial organisational continuity. It also explains why the survival of Academy institutes after 1993 should not be interpreted as failure to reform. The surviving system had passed through an unusually intense period of evaluation, reduction, and constitutional reconstruction (*Academic Assembly of the Academy of Sciences of the Czech Republic, 1993*). Contemporary resolutions of the Academic Assembly document both the reduction of workplaces and the creation of independent mechanisms for continuing research evaluation.

The dissolution of Czechoslovakia added a second rupture to a transformation that was already underway. The political revolution of 1989 had ended communist rule, but it had not initially required the disappearance of the federal scientific institution itself. The termination of the Czech and Slovak Federal Republic at the end of 1992 made that outcome unavoidable. ČSAV ceased to exist, and scientific institutions had to be incorporated into the new constitutional arrangements of the Czech and Slovak successor states. In the Czech lands, Act No. 283/1992 established the Academy of Sciences of the Czech Republic and provided the legal foundation for its activity. The law affirmed that the Academy conducts research through its workplaces and maintained public financing through the Czech state budget (*Czech National Council, 1992*). It also created the basis for a self-governing institutional structure whose legitimacy derived from the scientific community operating within a democratic state. The end of ČSAV was therefore a genuine legal rupture. Yet the laboratories, researchers, archives, scientific programmes, and institutes situated in the Czech lands did not cease functioning on 31 December 1992 and reappear as historically new entities the following morning. Much of their institutional substance continued within a different constitutional framework. This is perhaps the clearest example in the entire history of Czech academic science of legal discontinuity combined with operational continuity. The transition demonstrates why institutional history cannot be written solely from founding dates and statutes (*Czech National Council, 1992*). The legal continuity of publicly supported institute-based research under the new Czech Academy is explicit in the 1992 Act.

The division of the federation also required a reinterpretation of the relationship between Czech and Slovak academic science. During the ČSAV period, the institutional architecture of Czechoslovak science had already possessed important territorial asymmetries because the Slovak Academy of Sciences maintained its own organisational structure, while the majority of ČSAV workplaces were located in the Czech lands. The creation of independent Czech and Slovak republics transformed these arrangements into relations between two national scientific systems. Institutional separation did not require intellectual separation, however. Czech and Slovak researchers retained linguistic proximity, personal relationships, disciplinary networks, and collaborative traditions developed over decades. Scientific contacts could therefore continue across the new state boundary under international rather than federal institutional conditions. This transformation again illustrates how scientific communities frequently possess social continuity that outlasts state structures. The dissolution of a federation can change budgets, legal competencies, property arrangements, and administrative responsibility without erasing collegial networks. Indeed, post-1993 cooperation demonstrated that the end of a common state did not imply the end of a shared scientific history. For AV ČR, the challenge was to construct a specifically Czech institutional identity without rewriting ČSAV as though it had always been exclusively Czech. The modern Academy inherited a Czechoslovak institutional past as well as earlier Czech traditions. A mature historical interpretation must therefore preserve the multinational and federal dimensions of that inheritance rather than assimilating them retrospectively into the narrative of the independent Czech Republic. Continuity here required remembering the structures that political change had made obsolete.

The transformation under Rudolf Zahradník, the first president of AV ČR, further consolidated the new institutional order. The early Academy had to defend its existence during a period when the appropriate structure of post-socialist science remained politically contested. Some policymakers questioned whether a relatively small state required a large non-university

research organisation, particularly under severe budgetary constraints. The Academy responded by emphasising scientific evaluation, international comparison, and the distinctive functions of long-term fundamental research. Regular assessment of institutes became increasingly embedded in institutional governance. Funding decisions were progressively linked to research quality, while institutes were encouraged to improve international publication, collaboration, and competitive grant performance. The transformation project of the 1990s defined the Academy as a national scientific centre expected to conduct research at a strong international level while using public resources effectively. Importantly, this model rejected both central planning and an entirely laissez-faire conception of science. Institutes retained institutional support because some research requires long-term organisational stability. At the same time, that support was conditioned by evaluation and strategic responsibility. The resulting institutional model resembled neither the classical learned academy nor the socialist ČSAV in its political logic, although it inherited elements from both. Retrospective accounts by participants in the transformation emphasise the scale of staff and institute reduction as well as the introduction of regular international assessment.

Political rupture after 1989 also transformed disciplinary continuity in ways that organisational charts alone cannot capture. In the humanities and social sciences, the removal of ideological restrictions made it possible to reconstruct fields that had been distorted, fragmented, or politically marginalised. Previously excluded literature could be integrated into research, archival questions could be reopened, and scholars could engage freely with methodological traditions from Western Europe and North America. Sociology, political science, contemporary history, philosophy, economics, and legal studies experienced especially significant reorientation. In some cases, institutional continuity therefore required intellectual discontinuity: an institute could survive precisely because it abandoned interpretive frameworks imposed under the previous regime. Natural sciences experienced a different but equally consequential transition. Their core methods often required less ideological reconstruction, yet research programmes had to adapt to new international standards, technologies, publication environments, and funding mechanisms. Applied research previously tied to state industrial planning sometimes declined or was reorganised, while fundamental research acquired renewed emphasis in several institutes. International cooperation ceased to be structured primarily by bloc politics. Researchers entered open competition for grants, collaborations, and positions. The same political transformation therefore produced different forms of continuity across disciplines. There was no single post-socialist path. Institutional reform had to accommodate the fact that political control had affected fields unequally and that their scientific inheritances required different kinds of reconstruction.

Personnel continuity was similarly selective and morally complex. The post-1989 scientific community contained researchers who had resisted the regime, those who had been excluded or marginalised, those who had emigrated, those who had remained professionally active without political prominence, and those whose careers had benefited from cooperation with the communist establishment. No institutional transformation could eliminate this complexity without causing further injustice and scientific loss. Lustration, personnel review, elections, professional evaluation, and the restoration of previously excluded scholars operated through different mechanisms and did not produce a single comprehensive settlement. Generational change also influenced the process. Younger researchers who had entered science during the 1980s could not reasonably be treated as responsible for the institutional order into which they

had been recruited, yet they had been professionally socialised within its limitations. Older researchers might possess invaluable expertise while also carrying politically complicated biographies. The Academy therefore had to reconstruct trust at the same time as it reconstructed governance. Scientific reputation increasingly became the preferred criterion through which professional legitimacy could be restored, but reputational evaluation itself depended upon access to international standards and transparent procedures. This is one reason why external and international assessment became so important. It helped reduce reliance on institutional hierarchies inherited from the previous regime. Personnel continuity after political rupture thus became acceptable only when combined with new mechanisms of accountability.

Infrastructure represented perhaps the least ideologically ambiguous component of the inherited system, although even here priorities required reassessment. Laboratories, observatories, field stations, collections, libraries, and archives embodied decades of public investment. Some equipment was obsolete by Western standards, but the expertise associated with it could remain valuable. Other facilities supported research programmes that had no easy institutional substitute in the university sector. The early post-socialist funding crisis made maintenance difficult, and institutes often had to modernise incrementally through grants and international cooperation. Yet preserving core infrastructure prevented the loss of capabilities that would have been extraordinarily expensive to rebuild later. This was particularly important in areas requiring long observation series or unique collections. An astronomical record, archaeological archive, biological collection, linguistic corpus, or long-term environmental dataset cannot simply be recreated once institutional continuity has been broken. Such resources accumulate historical value as well as immediate scientific usefulness. Their preservation therefore complicates market-based calculations of institutional efficiency. A workplace may appear costly in a single budget year while maintaining knowledge assets generated over generations. The Academy's survival through the 1990s preserved precisely these forms of temporal capital. Continuity under political change was thus not only about protecting scientists; it was also about protecting the material conditions under which future scientists could ask new questions of inherited evidence.

The Czech experience further demonstrates that institutional continuity depends upon the ability to reinterpret legitimacy. The Royal Bohemian Society had justified itself through learned prestige and territorial scholarship. The Czech Academy of Sciences and Arts combined scholarly authority with national cultural representation. ČSAV legitimised itself officially through socialist state planning, scientific progress, and the claim to represent the highest scientific authority of the republic. AV ČR could not simply reuse any of these legitimising formulas. In a democratic and plural scientific environment, it had to justify public funding through research quality, social usefulness, international competitiveness, cultural responsibility, and scientific autonomy. The post-1993 Academy therefore required a new public narrative about why a state-funded non-university research organisation remained necessary. This narrative gradually emphasised long-term fundamental research, unique infrastructures, interdisciplinary capacity, cooperation with universities, international scientific participation, and expert contributions to Czech society. Such arguments were not invented independently of history. Each drew upon functions that earlier institutions had performed in different forms. What changed was the political language through which those functions were justified. The ability to translate old institutional capacities into new forms of legitimacy proved crucial to survival. Institutions that cannot reinterpret their purpose after

political rupture often become historical relics; those capable of doing so can transform inherited capital into contemporary relevance.

This process also reveals that successful institutional change rarely consists of choosing either continuity or rupture. Too much continuity after an authoritarian regime can preserve compromised hierarchies, obsolete research structures, and habits of political dependence. Too much rupture can destroy expertise, long-term projects, collections, and professional communities that took generations to build. The central problem of post-1989 Czech science was therefore one of selective inheritance. Some elements had to be rejected decisively: ideological supervision, party control over careers, restrictions on international contact, and political determination of acceptable research questions. Others required radical reform rather than abolition, including institute governance, funding mechanisms, personnel structures, and relations with universities. Still others were worth preserving precisely because they represented genuine scientific achievements: laboratories, archives, research schools, specialist collections, technical expertise, and international reputations. The transformation of AV ČR succeeded to the extent that it differentiated among these categories rather than treating the communist institutional legacy as indivisible. This analytical distinction also changes the historiographical interpretation of ČSAV. To acknowledge scientific continuity from ČSAV does not legitimise the political system under which it operated. Conversely, condemning political repression does not require denying the scientific achievements produced by researchers working within its institutions. Historical maturity lies in holding both propositions simultaneously.

The repeated Czech experience of rupture also helps explain the particular importance attached to academic self-government after 1989. Self-government was not merely an administrative preference borrowed from Western models. It was a response to historical experience in which political authority had repeatedly attempted to determine the internal life of science. The Academic Assembly, Academic Council, Scientific Council, institute scientific boards, and procedures for selecting directors created multiple centres of professional deliberation. These bodies were intended to ensure that decisions affecting research would involve researchers themselves rather than being transmitted exclusively through a state bureaucracy. The model does not eliminate political influence because the Academy depends upon legislation, public budgets, and national research policy. Nor does self-government automatically guarantee wise decisions. Academic communities can produce their own hierarchies, conflicts, conservatism, and institutional interests. Nevertheless, the post-1989 structure changed the direction from which scientific legitimacy was expected to flow. Political institutions could determine public priorities and resources, but they were not supposed to define scholarly truth or individual professional worth. This distinction emerged from the historical memory of periods when those boundaries had been violated. Institutional continuity therefore included a negative inheritance: knowledge of what forms of governance should not be restored. The modern Academy's constitutional culture was shaped as much by remembered political failures as by inherited scientific achievements.

By the early 21st century, the succession of ruptures had produced an Academy capable of regarding change itself as a normal part of institutional existence. Research institutes continued to be evaluated, reorganised, renamed, merged, or redirected where scientific circumstances required. New interdisciplinary programmes could be created without treating every alteration of organisational structure as a threat to historical identity. This capacity distinguishes living institutional continuity from antiquarian preservation. A research

organisation survives not because every department and programme remains unchanged but because it can preserve accumulated knowledge while allowing scientific structures to evolve. The principle is particularly important in contemporary science, where disciplinary boundaries shift rapidly and new technologies transform established methods. Czech academic history provides unusually strong evidence that institutional rigidity is not the same as stability. Several of the deepest continuities survived precisely because organisational forms changed. The Czech-language lexicographical tradition, archaeological research, physical sciences, biological research, and historical scholarship all passed through multiple administrative structures while retaining identifiable lines of development. Conversely, organisations that appeared stable on paper could undergo profound intellectual disruption during periods of political intervention. The meaningful unit of continuity is therefore often the research tradition rather than the administrative box surrounding it. This insight links the political history of the Academy directly with its disciplinary history.

The succession of 1918, 1939, 1945, 1948, 1952, 1968, 1989, and 1993 also reveals a broader characteristic of Central European scientific institutions. They have frequently operated in states whose borders, constitutions, ideological foundations, and international alignments changed more rapidly than the scientific communities inhabiting them. Scholars trained under one regime often completed their most important work under another. Institutes founded for one political purpose could acquire entirely different functions after a change of government. International networks broken by war or dictatorship could be reconstructed decades later. Names disappeared and returned, while institutional memories were selectively suppressed and recovered. Such environments make simplistic concepts of institutional tradition especially inadequate. Tradition in Central Europe is rarely uninterrupted inheritance; it is more often a process of loss, preservation, rediscovery, and reinterpretation. Czech academic science exemplifies this pattern with unusual clarity. Its continuity does not demonstrate insulation from politics but resilience within political history. The Academy repeatedly absorbed shocks generated outside science while attempting to preserve the longer temporal rhythms necessary for research. This historical experience is one reason the contemporary institution places such value on long-term research capacity and autonomy. Both were repeatedly shown to be vulnerable when political change became too intrusive.

For the modern Czech Academy, the significance of this history extends beyond institutional commemoration. Political ruptures leave behind practical lessons about the conditions under which knowledge can survive. Archives require custodians even when governments change. Laboratories require professional communities whose competence cannot be rebuilt instantly after dispersal. International networks must be cultivated continuously because isolation can cause damage that persists long after borders reopen. Intellectual freedom must be protected before it is threatened, because once careers and schools are broken their reconstruction may take generations. Evaluation must distinguish genuine scientific weakness from research whose value is long-term or difficult to quantify. Institutional memory must include uncomfortable episodes rather than merely celebrating anniversaries. The history of ČSAV is therefore valuable not because it provides an uncomplicated predecessor to AV ČR but because it demonstrates both the productive capacities and dangers of a powerful central research organisation. The history of the post-1989 transformation similarly shows that democratisation does not automatically solve problems of funding, institutional design, or research quality. Scientific freedom creates responsibility rather than removing it. Continuity

becomes sustainable only when institutions are capable of learning from the conditions under which earlier continuities were damaged.

Thus, continuity through political rupture and institutional change constitutes one of the defining characteristics of Czech academic history. The continuity was never absolute, because wars, dictatorship, occupation, purges, ideological control, state dissolution, and economic transformation repeatedly interrupted careers, institutions, and research programmes. Nor was rupture ever complete, because scientific knowledge remained embedded in people, laboratories, archives, collections, methods, disciplinary cultures, and professional networks that could survive beyond the political systems under which they had developed. The establishment of Czechoslovakia in 1918 reinterpreted imperial-era institutions within a democratic national state without erasing their accumulated scholarly capital. Nazi occupation demonstrated the vulnerability of scientific institutions while simultaneously revealing the importance of preserving non-university structures during the destruction of normal academic life. Communist rule after 1948 transformed scientific governance profoundly, and the creation of ČSAV in 1952 concentrated research within a politically controlled institute system, yet that system also incorporated older research traditions and generated new scientific capacities. The Prague Spring showed how professional communities created within the socialist Academy could demand greater intellectual and institutional autonomy, while normalisation demonstrated how deeply political intervention could damage personnel and disciplines without entirely eliminating research continuity. The Velvet Revolution reversed the relationship between political power and scientific authority but did not discard the whole institutional inheritance of ČSAV. Instead, evaluation, democratisation, internationalisation, personnel change, and organisational reduction were used to distinguish viable scientific capital from structures that had lost legitimacy or purpose. The dissolution of Czechoslovakia produced legal discontinuity once again, yet AV ČR inherited a substantial part of the Czech-based institute system and reconstituted it within the democratic state created in 1993. Across these transitions, the most durable element was neither a particular name nor an immutable organisational form, but the capacity of scientific communities to transmit knowledge through changing political environments. The modern Czech Academy is consequently a product of both rupture and continuity: it exists because Czech science repeatedly changed its institutions without allowing political change to erase the entirety of what earlier generations had learned, built, collected, and discovered.

3. The Academy as a Carrier of Scientific Memory

The Czech Academy of Sciences is not only an organisation in which knowledge is produced; it is also one of the principal institutions through which Czech science remembers itself. This function is less immediately visible than laboratories, publications, research grants, or international projects, yet it is indispensable to the continuity of a mature scientific system. Scientific memory consists of far more than retrospective narratives about famous discoveries or celebrated scholars. It includes archival records, laboratory notebooks, correspondence, institutional files, research data, collections, libraries, instruments, photographs, unpublished manuscripts, methodological habits, professional networks, and the recollections of those who participated in scientific life. It also includes less tangible forms of inheritance: ideas about what counts as a worthwhile problem, expectations concerning scholarly quality,

traditions of cooperation, ethical standards, and collective memories of political pressure or institutional reform. Much of this material cannot be reconstructed once it has been lost. An experimental result may be repeated, but the institutional history that made the experiment possible may disappear if the relevant records, correspondence, and personal papers are destroyed. A research institute can be reorganised, yet without preserved documentation later generations may be unable to understand why particular scientific directions were chosen or abandoned. Scientific communities consequently depend upon mechanisms that preserve not merely finished knowledge but evidence of the processes through which knowledge was produced. The long institutional genealogy reconstructed in *From Learned Societies to the Modern Research Organisation* and *Continuity through Political Rupture and Institutional Change* therefore has a material counterpart in repositories, collections, and practices of remembrance. The Academy has gradually become one of the places where those successive historical layers are physically and intellectually brought together. In this sense, scientific memory is not an ornament added to research after the fact; it is part of the infrastructure through which science remains capable of understanding its own development (*Franc et al., 2010*; *Mádlová, 2024*).

Scientific memory should nevertheless be distinguished from institutional nostalgia. An organisation remembers usefully only when it is capable of preserving evidence without forcing that evidence into a predetermined story of uninterrupted progress. The history of Czech academic science contains achievements that institutions are understandably inclined to commemorate, but it also contains exclusion, ideological conformity, forced emigration, compromised leadership, failed research programmes, organisational mistakes, and periods of intellectual isolation. A genuine carrier of memory must preserve traces of all these experiences. Scientific memory therefore has at least three interconnected dimensions. The first is documentary memory, embodied in records, publications, collections, research data, and physical artefacts. The second is social memory, carried by generations of researchers through mentoring, personal testimony, professional traditions, and informal stories about institutes and disciplines. The third is reflexive memory, created when historians, archivists, librarians, sociologists of science, and researchers themselves critically reconstruct the development of institutions and scientific communities. These three dimensions constantly interact. An archive without scholarly interpretation may remain inaccessible as historical experience, while personal recollection without documentary evidence can become selective or mythologised. A historical monograph becomes more reliable when it can confront institutional records with correspondence, published science, oral testimony, and material evidence. The modern Czech Academy is unusual in that these functions coexist within the same wider institutional environment. It conducts research, preserves the records of earlier research, studies the history of its own predecessors, and increasingly digitises the documentary traces of its scientific production. This combination gives the Academy a degree of institutional self-reflexivity that distinguishes scientific memory from simple commemoration (*Franc & Dvořáčková, 2020*; *Franc & Dvořáčková, 2024*).

The archival dimension of this memory is particularly significant because the present Academy possesses institutional access to records extending far beyond its own legal existence after 1993. The Archives of the Czechoslovak Academy of Sciences began work on 1 January 1953, only shortly after the creation of ČSAV, and from the outset collected materials not merely from the new socialist Academy but from its older institutional predecessors. Among the earliest archival holdings were the records of the Royal Bohemian Society of Sciences, the Czech

Academy of Sciences and Arts, the Masaryk Academy of Labour, and the Czechoslovak National Research Council. The later archive therefore became, paradoxically, a major mechanism through which institutions formally dissolved during the creation of ČSAV continued to possess documentary existence. In 1966 it became the Central Archives of ČSAV, and over subsequent decades its functions expanded to include systematic care for institutional records, personal estates, the study of manuscripts, and research into the history of scientific institutions. After the dissolution of Czechoslovakia, it continued from 1993 as the Archives of the Academy of Sciences of the Czech Republic. A purpose-designed archival building was later opened in Prague in 2005, while the archive acquired the status of a specialised accredited archive. Since the institutional integration completed during the 2000s, these functions have formed part of the Masaryk Institute and Archives of the Czech Academy of Sciences. The resulting continuity is remarkable because one archival institution now preserves documentation produced under monarchical, republican, authoritarian, federal, and independent Czech political orders. Its holdings connect organisations that never coexisted within the same constitutional framework but belong to a common history of non-university science. The archive therefore transforms political rupture into historical comparability by placing documentary traces from successive regimes within a coherent research environment. It is one of the clearest institutional embodiments of the proposition that scientific history can remain continuous even when scientific organisations themselves are repeatedly reconstituted (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*).

The preservation of the older scientific societies is especially important because it prevents the institutional history of Czech science from beginning artificially in 1952 or 1993. Archival fonds associated with non-university scientific organisations reach back to the late 18th century and include documentation of academies, research bodies, professional societies, and scholarly associations. The fonds of the Czech Academy of Sciences and Arts, for example, preserve records extending from its establishment at the end of the 19th century through the final years surrounding its incorporation into the new Academy system. Materials from the Royal Bohemian Society of Sciences make it possible to reconstruct an even earlier culture of scholarly association, election, correspondence, publication, and learned prestige. Records of the Masaryk Academy of Labour preserve another institutional conception of science, one that linked research more directly with technology, expertise, and economic modernisation. The documentary survival of these organisations makes it possible to compare successive models of scientific authority instead of treating each reform as a self-contained beginning. It also reveals institutional practices that formal statutes alone cannot capture: conflicts between members, failed proposals, funding difficulties, publication negotiations, correspondence with foreign scholars, discussions of appointments, and everyday administrative decisions. Such material demonstrates how science operated behind its official public image. It allows historians to identify gradual institutional transformation where later commemorative narratives might prefer decisive founding moments. It also preserves the voices of figures who never became celebrated enough to receive biographies but nevertheless contributed to the functioning of scientific organisations. Through archival continuity, institutional history becomes a history of communities rather than only presidents, academicians, and eminent scientists. The archive therefore protects Czech science against a recurrent danger of historical simplification: the belief that only successful outcomes deserve to be remembered (*Franc et al., 2010*; *Mádlová, 2024*). The present archival catalogue explicitly

organises older scientific institutions and the fonds of ČSAV and AV ČR within a continuous documentary structure.

Personal archival fonds add another layer because scientific institutions are ultimately inhabited by individuals whose intellectual lives do not fit neatly within organisational boundaries. The Masaryk Institute and Archives has accumulated personal papers of scientists from many disciplines, including such internationally significant figures as Jaroslav Heyrovský and Otto Wichterle. These collections typically include correspondence, manuscripts, personal documents, materials relating to public activity, photographs, research notes, and other records capable of illuminating the relationship between individual careers and institutional structures. They may reveal how discoveries developed before they appeared in polished publications. Correspondence can show the existence of international networks that institutional reports mentioned only superficially or did not record at all. Private papers can preserve evidence of political conflict, exclusion, frustration, or professional disagreement that official documents sought to minimise. They may also document the emotional and practical dimensions of scientific work: attempts to find funding, disputes over equipment, responses to criticism, mentoring relationships, friendships, rivalries, and efforts to maintain cooperation across political borders. Personal archives are particularly important in a history marked by repeated regime change because scientists often occupied institutional positions before, during, and after political ruptures. Their papers can therefore connect organisational worlds that official state documentation treats separately. A scholar dismissed after 1948 or 1968 may appear in one institutional archive mainly as the object of an administrative decision, whereas a personal fonds may preserve the continuation of his or her intellectual work beyond formal exclusion. In this way, individual papers restore agency to people who disappeared from official institutional narratives. The archive thus safeguards not simply biographies but alternative perspectives from which the history of scientific institutions can be reconstructed (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). The archive reports hundreds of personal fonds and specifically identifies the papers of major scientists among its most significant holdings.

Institutional records perform a different but equally necessary function because they preserve the memory of governance. Minutes of meetings, budgets, evaluation reports, organisational statutes, correspondence between institutes and Academy leadership, appointment documents, grant materials, and records of scientific councils make it possible to reconstruct how decisions were actually made. This is particularly significant for the history of ČSAV, where the formal language of institutional self-government frequently coexisted with Communist Party supervision and broader mechanisms of political control. Without archival records, later historians might find it difficult to distinguish between official constitutional structures and informal or external centres of authority. The same applies in a different way to the transition after 1989. Records of evaluations, institute reorganisations, personnel changes, budgetary debates, and Academic Assembly decisions show how the principles of democratic academic governance were translated into institutional practice. They also demonstrate that post-socialist transformation was not a single political event but a prolonged sequence of administrative decisions affecting real research communities. Governance memory matters because institutions routinely confront problems that earlier generations have already encountered in different forms. Debates over centralisation, institute autonomy, relations with universities, funding stability, international evaluation, or the social mission of research have long histories within Czech science. Awareness of earlier solutions and failures can prevent

current policy discussions from being presented falsely as entirely unprecedented. Historical knowledge does not determine contemporary decisions, but it expands the repertoire of institutional experience available to decision-makers. An Academy able to examine its own past governance possesses a form of organisational intelligence unavailable to institutions that repeatedly forget the reasons behind earlier reforms. Scientific memory therefore includes the preservation of decisions as well as discoveries.

Libraries constitute another fundamental layer of academic memory because scientific continuity depends upon continued access to what earlier generations read, wrote, and published. The Library of the Czech Academy of Sciences traces its direct institutional history to the Basic Library of ČSAV, which began operating on 1 January 1953, although its collections and functions contain materials of considerably greater age. Over time it developed from a central library serving the socialist Academy into the specialised research library of the democratic Czech Academy. Its holdings encompass scientific and professional literature across disciplines together with manuscripts, early printed books, rare works, and other historically significant materials. The library thereby occupies an intermediate position between current scientific information and documentary heritage. Researchers require access to the newest international literature, but they also need older publications whose significance may increase when new questions are asked of them. A forgotten 19th-century description of a locality may become important to environmental history. An older linguistic dictionary can become evidence for changes in language. Scientific periodicals preserve not merely successful discoveries but discontinued hypotheses, methodological fashions, and disciplinary debates. Libraries therefore make the past available not as a fixed canon but as a reservoir from which new research can repeatedly emerge. The continuity of a scientific library is especially important for disciplines whose cumulative development cannot be captured adequately through recent citation windows. By preserving the published record of Czech and international scholarship, the Academy's library links current researchers with intellectual communities extending far beyond the lifespan of any institute or political regime (*Library of the Czech Academy of Sciences, n.d.*). The Library identifies long-term preservation, digitisation, and access to scientific information as central parts of its present mission.

The relationship between memory and preservation became even more visible with the expansion of digitisation. Physical books and periodicals are vulnerable to deterioration, accidental destruction, environmental damage, and the simple problem of limited geographical accessibility. The establishment of the Library's Digitisation Centre in 2004 was partly stimulated by the experience of the destructive floods of 2002, which demonstrated how quickly documentary heritage could become endangered. Digitisation therefore emerged not only as a convenience for readers but as a strategy of institutional resilience. The Digital Library of the Czech Academy of Sciences now contains digitised periodicals and monographs produced by Academy institutes and their predecessors, together with works that originated directly in electronic form. This gives the idea of academic continuity a new technological expression. A journal printed decades ago by an institute that has since been renamed, reorganised, or abolished can remain accessible within the same digital environment as contemporary Academy publications. Digitisation also changes the scale at which historical scientific material can be searched and compared. Researchers no longer need always to encounter older scientific literature volume by volume in a physical reading room; full-text retrieval and digital metadata can reveal connections that were previously difficult to identify. At the same time, digitisation creates new responsibilities because a digital copy is not

automatically permanent. File formats, metadata, storage systems, software, and access infrastructures themselves require continuous maintenance. Scientific memory has therefore entered a phase in which preservation increasingly means preserving both content and the technological conditions necessary to interpret that content. The Digital Library consequently represents a transition from the classical library as a physical repository towards an active system of long-term digital memory (*Library of the Czech Academy of Sciences, n.d.*).

The same transformation can be observed in the systematic recording of the Academy's research outputs after 1993. The ASEP system provides bibliographic records of scientific results produced by institutes of the Czech Academy of Sciences throughout the entire post-Czechoslovak period. In historical terms, this gives the modern Academy something that earlier research systems possessed only in fragmented form: a searchable institutional memory of its published output. Since 2012, full texts have been capable of being attached to bibliographic records, while research data have been incorporated since 2018. The significance extends beyond administrative reporting. A bibliographic system constructed over decades becomes a map of disciplinary development, collaboration patterns, institutional change, and shifts in research priorities. It allows later researchers to reconstruct what particular institutes produced, who collaborated with whom, and how fields expanded or declined. Bibliometric analysis may be controversial when used simplistically as a proxy for scientific quality, but bibliographic preservation is invaluable as historical evidence. The database also links the contemporary emphasis on evaluation with the older scholarly requirement that knowledge should remain identifiable and retrievable. What once depended heavily upon printed bibliographies and institutional annual reports can increasingly be reconstructed through structured metadata. ASEP therefore transforms the everyday bureaucratic act of registering a publication into part of the Academy's long-term documentary inheritance. Future historians of Czech science may use such systems in ways that their original designers could not fully anticipate. The Academy's scientific memory is consequently being generated continuously rather than assembled only after historical distance has emerged (*Library of the Czech Academy of Sciences, n.d.*).

Scientific memory is not confined to written documents because many disciplines depend upon material objects whose informational content cannot be reduced completely to text. Biological specimens, geological samples, archaeological finds, astronomical observations, photographic plates, maps, technical models, experimental apparatus, art-historical documentation, manuscript collections, and language corpora can all become repositories of knowledge across generations. Their scientific value often changes over time. A specimen collected for 19th-century taxonomy may later be analysed using molecular techniques unavailable to the original collector. Archaeological documentation generated before digital technologies can be reinterpreted through geographic information systems or new dating techniques. Historical astronomical observations can contribute to studies of long-term variability. Photographs of landscapes, buildings, or artworks can become evidence for environmental or cultural change. The value of such collections therefore lies partly in the fact that future scientific questions cannot be predicted at the moment of preservation. Destroying apparently obsolete material may eliminate evidence for investigations that become possible only decades later. The Academy's institute-based structure has historically been well suited to maintaining such resources because permanent research organisations can sustain specialised collections beyond the duration of individual projects. This is particularly important when commercial or short-term funding models provide little incentive to maintain

materials whose next major scientific use may be remote. Scientific memory consequently possesses a material temporality distinct from normal project cycles. The collection is an implicit contract between generations: one generation preserves evidence without knowing precisely how another will eventually interpret it.

The humanities make this cumulative function especially visible. Institutes concerned with history, archaeology, language, literature, philosophy, art history, ethnology, and related fields often work directly with cultural memory while simultaneously generating scientific memory of their own. An archaeological institute preserves records of excavations that may document sites no longer accessible because later construction altered or destroyed them. A linguistic institute accumulates lexical material, corpora, dictionaries, and documentation that allow language change to be studied across long periods. Historical institutes preserve and publish source editions whose preparation may extend beyond a single researcher's career. Art historians assemble photographic and documentary archives that can become invaluable when monuments are restored, transformed, damaged, or lost. Literary scholarship preserves bibliographic and textual knowledge whose importance may change with shifting interpretations of the canon. Such institutions therefore mediate between national cultural heritage and the history of scholarly practices used to interpret that heritage. Their continuity is not passive because every generation revises classification, metadata, editorial standards, and interpretive frameworks. An archive inherited from an earlier research school may contain assumptions that later scholars reject while still preserving evidence they require. In this way, institutional memory permits critical succession rather than simple reproduction. The Academy can inherit a collection without inheriting every interpretation once attached to it. This distinction was especially important after 1989, when humanities institutes could retain archives and long-term projects while reassessing ideological frameworks imposed during the socialist period.

Natural and technical sciences display a comparable pattern even though their objects of memory differ. Laboratory research often appears oriented towards novelty because experimental sciences define progress partly through the replacement of earlier methods and theories. Yet innovation itself depends upon accumulated procedural knowledge, calibration histories, instrument records, experimental protocols, and awareness of previous unsuccessful approaches. A laboratory that has worked on a particular class of materials for decades possesses knowledge not fully represented in publications. Researchers know which procedures are unreliable, which measurements require unusual caution, how specific instruments behave under particular conditions, and which apparent anomalies have historical precedents. Long-standing institutes in chemistry, physics, materials science, biology, geophysics, and other fields therefore possess forms of memory embedded in practice. Some of this information can be codified in laboratory notebooks, databases, standard operating procedures, or technical reports. Much of it remains tacit, transmitted through cooperation between experienced and younger researchers. The disappearance of a whole research group can consequently destroy knowledge even if all its publications remain available. Rebuilding a laboratory tradition is not equivalent to repurchasing equipment. Instruments acquire scientific meaning within communities that know how to use and interpret them. The persistence of research teams across institutional reorganisations has therefore been one of the mechanisms through which Czech scientific capacity survived political and economic transitions. Scientific memory in experimental disciplines is carried as much by hands, habits, and judgement as by archives.

This tacit dimension makes intergenerational transmission central to the Academy's role as a carrier of memory. Every scientific generation enters institutions that already possess established languages, routines, reputations, and narratives about their own past. Young researchers learn these cultures partly through formal education and partly through everyday participation. They hear why a laboratory developed a particular speciality, which earlier scientists transformed the field, how an institute survived normalisation, which international collaboration proved decisive, or why an apparently attractive research direction was abandoned after years of unsuccessful work. Such stories can become mythologised, but they also transmit forms of practical orientation unavailable in official organisational documents. Mentoring links scientific memory to scientific reproduction because the supervisor communicates not only technical information but standards concerning evidence, argument, criticism, and professional conduct. The importance of this process became particularly evident during periods of political constraint. Researchers who retained professional standards through the 1970s and 1980s could transmit them to younger colleagues even when official ideological language remained restrictive. After 1989, those younger researchers entered a transformed international environment carrying both competences and memories shaped under socialism. The modern Academy thus inherited not one coherent generational experience but overlapping cohorts whose understandings of scientific freedom, institutional security, international mobility, and political responsibility differed markedly. Intergenerational dialogue converted these differences into a resource for institutional learning rather than an unavoidable source of division. Memory became productive when it could be questioned by those who had not personally experienced the events being remembered.

Political rupture, however, also produces deliberate forgetting. Authoritarian systems often reorganise institutional memory by determining which people, events, and intellectual traditions may be commemorated publicly. After 1948, scholars associated with politically unacceptable schools could disappear from curricula, institutional histories, bibliographies, and official commemorations. The same process occurred after 1968, when reformist scientists and intellectuals were removed from positions of authority and sometimes erased from official representations of institute history. Publications could become difficult to access, names could disappear from institutional narratives, and younger researchers could encounter distorted accounts of the development of their own disciplines. Such forgetting is more than a symbolic injustice because it interrupts the transmission of knowledge. A research school depends upon awareness of earlier questions, methodologies, failures, and debates. When political authority makes parts of that inheritance inaccessible, the discipline may be forced to repeat intellectual work or reconnect belatedly with traditions already known elsewhere. Scientific exile intensified this fragmentation. Researchers who left Czechoslovakia continued their careers in foreign universities and institutes, carrying Czech and Czechoslovak scientific traditions into international settings while becoming progressively detached from domestic institutional memory. The national scientific community therefore developed memories inside and outside the state that did not always remain mutually accessible. Reconstructing scientific memory after 1989 required bringing these separated histories back into conversation.

The process of rehabilitation after the Velvet Revolution was consequently also an act of institutional remembrance. Restoring researchers excluded under communist rule was important not merely because individuals deserved moral recognition but because the scientific community needed to repair its own historical record. Scholars who had been

dismissed, marginalised, or forced into exile represented interrupted intellectual connections. Their return to professional discussion, even when they were too old to resume normal institutional careers, could restore knowledge about research schools and disciplinary alternatives suppressed during normalisation. Publications formerly inaccessible could be republished or re-evaluated. Institute histories could include figures who had been omitted from anniversary narratives. Archives previously closed or politically sensitive became available for scholarly investigation. The post-1989 Academy thus acquired an opportunity to replace selective institutional memory with a more plural history of Czech science. This process was inevitably incomplete. Not every injustice could be corrected, personal conflicts remained, and the documentary record of some experiences had already been lost. Yet rehabilitation altered the normative meaning of academic memory. Remembering repression became part of defending academic freedom in the present. The Academy's historical legitimacy after 1993 could not rest only on celebrating scientific achievement; it also depended upon acknowledging periods when the institution had failed to protect researchers from political power. Memory thereby acquired an ethical function.

The restoration of the Masaryk Institute offers an especially revealing example of this relationship between memory, suppression, and institutional recovery. Tomáš Garrigue Masaryk had established the original institute in 1932 to preserve and develop access to his archival and library heritage and to support research related to his work. During the Nazi occupation, its materials had to be protected under conditions of political danger, while after the communist takeover Masaryk's political and intellectual legacy became increasingly incompatible with the official ideological order. The institute was dissolved in 1954 during the campaign against Masaryk, and an attempt at revival during the political opening of 1968 failed to achieve durable institutional restoration. After the Velvet Revolution, President Václav Havel supported its re-establishment in January 1990. A Masaryk Institute within the Academy was created in 1995, taking responsibility for archives and library holdings and reopening systematic Masaryk research within a broader historical framework. It subsequently became part of the present Masaryk Institute and Archives of the Czech Academy of Sciences. The history of this institution is almost a miniature version of 20th-century Czech political memory: democratic inheritance, authoritarian suppression, attempted recovery, renewed suppression, and post-1989 restoration. Its return demonstrates that institutional memory can remain latent even after an organisation has been abolished for decades. Documents, books, intellectual interest, and cultural significance can preserve the possibility of institutional reconstruction. The Academy became the environment in which this recovered memory could again be transformed into active scholarship (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*).

The existence of a specialised research programme devoted to the history of the Academy itself further distinguishes the institution as an active rather than passive carrier of memory. The Department for the History of the Academy of Sciences within the Masaryk Institute and Archives investigates scientific institutions and personalities, changing science policies, relations between university and non-university research, international networks, social representations of science, and technology transfer. It also coordinates a long-term programme on the history of the Czechoslovak Academy of Sciences from 1952 to 1992. The substantial multi-volume histories of ČSAV produced by teams led by Martin Franc and Věra Dvořáčková represent one of the clearest outcomes of this reflexive institutional scholarship. The first published volume reconstructs the period 1952–1962, while the second examines the

years 1963–1970 in broad political, social, institutional, and international contexts (*Franc & Dvořáčková, 2020*; *Franc & Dvořáčková, 2024*). Such work is important because the Academy does not leave its own historical interpretation solely to ceremonial publications prepared for anniversaries. Instead, its history is treated as a legitimate field of scholarly investigation subject to archival criticism and professional historical method. This creates the possibility that institutional history may produce uncomfortable conclusions about the Academy's own past. Political compromises, leadership failures, ideological interventions, and internal conflicts can become research subjects alongside discoveries and successful reforms. An institution willing to finance critical investigation of itself demonstrates a more mature form of memory than one seeking only reputational benefit from history. Institutional self-knowledge becomes part of scholarly accountability. The Department's current remit explicitly includes the history of the Academy, its predecessors, social perceptions of science, and international scientific networks.

Oral history extends this self-reflexive memory into areas where written documentation is incomplete. Scientific institutions generate enormous quantities of records, but official files rarely capture the full experience of working within them. They may record that a scientist was transferred, dismissed, promoted, or sent abroad without explaining how the event was experienced by colleagues. They may document the formal creation of a research programme while revealing little about who actually conceived it or why a team believed it mattered. Interviews with scientists can recover laboratory culture, interpersonal networks, informal negotiations, political pressures, and the practical circumstances surrounding research. The Masaryk Institute and Archives explicitly incorporates oral history into its research on 20th-century science and continues to acquire interview material as part of its personal and historical collections. This is particularly valuable for studying the socialist and post-socialist periods because many participants remain capable of reflecting upon events that archival documentation records only partially. Oral testimony must, of course, be treated critically. Memory is selective, later experiences reshape earlier interpretations, and narrators may consciously or unconsciously protect reputations. Yet precisely these characteristics make interviews valuable for the history of scientific culture. They reveal not only what happened but how actors later understood what had happened. When compared with archival and published evidence, oral history allows institutional memory to include perception, emotion, and retrospective judgement as historical phenomena (*Masaryk Institute and Archives of the Czech Academy of Sciences, n.d.*). The Institute's research groups explicitly employ oral-history methods and maintain the acquisition of witness interviews as an ongoing archival task.

The preservation of scientific memory is also inseparable from the history of objects and symbols. Medals, photographs, portraits, ceremonial documents, architectural spaces, laboratory instruments, and visual representations of scientists communicate institutional identity in ways that written records alone cannot. The archival collections of the Academy include, for example, medals associated with Czech and Czechoslovak science, including pieces connected with the Royal Bohemian Society of Sciences and later academic institutions. The oldest such objects reach back into the 18th-century history of organised scholarship in the Czech lands. Their value is not principally numismatic. They reveal how scientific communities represented prestige, authority, achievement, and membership at different historical moments. Photographs likewise preserve visual evidence of laboratories, institutes, expeditions, conferences, scientific equipment, and changing cultures of academic life. Architecture can perform a similar function because institutes often retain physical traces

of earlier scientific regimes. A building constructed for a socialist research programme may later house an internationally integrated democratic research institute, turning the material environment itself into evidence of institutional transformation. Scientific memory therefore possesses a visual and spatial dimension. Researchers work among objects and buildings that silently connect them with predecessors whom they may never have known. When such materials are catalogued and interpreted rather than treated as decorative relics, they become sources for understanding the sociology and culture of science. The collections managed by the Academy's archival institutions demonstrate the unusually wide material range through which this scientific past can be reconstructed.

Commemoration inevitably forms part of this process, although it requires careful handling. Anniversaries of institutes, discoveries, major scientists, or the Academy itself provide opportunities to communicate institutional history to employees and the wider public. They can strengthen a sense that present research belongs to a longer intellectual community and that scientific achievement is cumulative rather than episodic. Memorial conferences, exhibitions, books, plaques, documentary films, and anniversary publications also bring archival materials into public circulation. Yet commemorative culture can easily privilege successful individuals and suppress institutional ambiguity. Nobel laureates are easier to celebrate than scientists whose careers involved political compromise, and landmark discoveries lend themselves more readily to public narratives than decades of routine collective research. Institutional anniversaries may therefore reproduce a heroic model of science in which a sequence of eminent personalities stands in for the more complicated history of research communities. The Academy's role as a carrier of memory is strongest when commemoration remains connected with critical scholarship. The publication of substantial archival histories of the Czech Academy of Sciences and Arts and ČSAV demonstrates one way of achieving this balance. These works recognise institutional achievement while embedding it within changing political and social environments (*Mádlová, 2024*; *Franc & Dvořáčková, 2020*; *Franc & Dvořáčková, 2024*). Commemoration then becomes an entry into historical inquiry rather than a substitute for it. Scientific institutions need pride in their achievements, but their memory becomes intellectually useful only when pride remains compatible with evidence.

The Academy's scientific memory also contributes to the broader cultural memory of the Czech Republic. Scientists have participated in national history not only through discoveries but as public intellectuals, university teachers, reformers, dissidents, administrators, inventors, emigrants, advisers, and participants in political crises. The personal papers of scientists therefore frequently contain material valuable far beyond the history of individual disciplines. Correspondence may illuminate cultural networks, political attitudes, international relations, exile communities, or the operation of state institutions. The archive's personal fonds include figures whose careers intersected science, culture, and public life, making the boundary between scientific and national memory inherently porous. Institutional records similarly reveal how governments understood science, which disciplines they prioritised, and how expertise interacted with political authority. The history of science therefore offers evidence about the changing Czech state itself. Under the monarchy, learned institutions illuminate national cultural mobilisation. Under the First Republic, they reveal the relationship between scholarship and democratic state-building. Under communism, Academy records document both state investment in research and mechanisms of ideological control. After 1989, institutional materials reveal the practical reconstruction of autonomous scientific governance. The Academy preserves sources through which future historians will therefore

study not merely science but Czech political, social, economic, and cultural development. Its memory function is national in scope precisely because modern science has always been entangled with society.

This broader role becomes particularly evident when scientific memory concerns failure, uncertainty, and unfinished work. Publications naturally select results that authors consider sufficiently reliable or important to communicate, but scientific progress also depends upon experiments that failed, hypotheses that were abandoned, technologies that proved impractical, and research programmes that lost relevance. Much of this negative knowledge is easily forgotten because scientific reward systems privilege successful outcomes. Yet institutions remember more than published literature if laboratory notes, technical reports, internal discussions, and experienced researchers survive. Knowing that a particular approach was attempted unsuccessfully can prevent later teams from repeating expensive mistakes without understanding their predecessors' experience. Historical studies of abandoned research can also reveal why scientific priorities changed. A project may have failed because its hypothesis was wrong, but it may instead have been terminated because political authorities intervened, equipment was unavailable, funding disappeared, or a leading scientist emigrated. The distinction matters enormously when reconstructing scientific development. An institute acting as a durable organisational home can preserve such context in ways that temporary project structures rarely do. Scientific memory therefore includes what science decided not to continue. This negative archive can be as intellectually valuable as the record of achievement.

Institutional memory is also necessary for understanding the evolution of scientific evaluation. Contemporary researchers operate within elaborate systems of peer review, bibliometric indicators, grant competitions, institutional assessments, and international benchmarking. These procedures can appear to be permanent features of modern research, yet their current forms have specific histories. Earlier academies used membership elections, prizes, publication committees, and reputation networks to judge scholarly value. ČSAV combined professional evaluation with political and administrative mechanisms that varied across periods and disciplines. After 1989, the Czech Academy deliberately strengthened independent and increasingly international evaluation as part of its effort to establish legitimacy within democratic and European science. Preserving the records of these processes allows researchers to study how definitions of excellence themselves change. Publications once regarded as central may later lose importance, while fields considered peripheral can become strategically significant. Quantitative evaluation may expand and subsequently be moderated by renewed attention to qualitative judgement. Historical memory therefore protects contemporary science from assuming that its current metrics are epistemically neutral or historically inevitable. Evaluation is an institutional technology, and like every technology it possesses advantages, biases, and unintended effects. An Academy capable of remembering how its own systems of judgement evolved is better positioned to reform them responsibly.

Memory likewise informs the relationship between the Academy and international science. Czech scientific communities have repeatedly moved between periods of openness and enforced restriction. The Royal Bohemian Society and the Czech Academy of Sciences and Arts participated in European scholarly networks under the monarchy. The First Republic expanded international scientific diplomacy, while Nazi occupation violently disrupted normal contacts. The socialist period created intensive connections within the Soviet bloc but imposed varying

constraints on cooperation with Western institutions, even though those constraints eased substantially during the 1960s. Normalisation again restricted mobility and contributed to scientific emigration. The Velvet Revolution transformed international collaboration almost overnight into a central mechanism of scientific renewal. Institutional archives preserve correspondence, travel reports, agreements, conference materials, fellowship records, and evidence of joint research through which these changing geographies of knowledge can be reconstructed (*Franc & Dvořáčková, 2020*; *Franc & Dvořáčková, 2024*). Such records demonstrate that internationalisation after 1989 did not introduce Czech science to the outside world for the first time. It restored and radically expanded a relationship with European and global scholarship that had much older historical foundations. Scientific memory therefore complicates simplistic contrasts between an isolated national past and an international present. Czech science was always internationally connected, although the direction, intensity, and political conditions of those connections changed profoundly.

The memory of political constraint has acquired particular contemporary importance because it helps define the Academy's understanding of scientific autonomy. Institutional independence may appear abstract to generations who have spent their careers in democratic conditions, but archival and biographical evidence shows what happens when political authorities acquire the power to determine legitimate research, careers, or international contacts. The purges after 1948 and 1968 provide especially clear historical examples. Their significance extends beyond moral condemnation of earlier regimes. They demonstrate the long-term scientific costs created when experienced researchers are excluded, schools fragmented, and younger scientists taught to associate professional security with political conformity. The effects of such intervention can persist long after formal repression ends. Restoring a discipline requires personnel, literature, international contacts, and trust, all of which accumulate slowly. Institutional memory therefore provides empirical evidence for the proposition that scientific autonomy is not merely a privilege demanded by researchers. It is a functional condition for the production and reproduction of reliable knowledge. By preserving the records of moments when this condition was violated, the Academy transforms historical experience into part of its contemporary institutional rationale. Remembering political dependence becomes one mechanism for defending against its recurrence.

At the same time, memory must not become an argument against change. Long-established scientific institutions can develop attachment to organisational arrangements simply because those arrangements have existed for many years. Researchers may invoke tradition to defend institutes, disciplinary boundaries, procedures, or hierarchies whose original rationale has disappeared. A carrier of scientific memory therefore needs the capacity to distinguish preservation from institutional conservatism. Historical knowledge should reveal that the Academy itself survived precisely because its forms repeatedly changed. Learned societies gave way to increasingly specialised institutions, the 19th-century academy expanded into an institute-based research system, ČSAV was transformed into AV ČR, and physical libraries developed digital infrastructures. Memory in this sense should weaken rather than strengthen the illusion that present organisational structures are permanent. It shows that continuity has always depended upon adaptation. A research institution can preserve its intellectual inheritance while changing its administrative form, just as a digital repository can preserve a publication without preserving the physical conditions under which it was first read. The most productive scientific memory is therefore dynamic. It identifies what must be retained because

future knowledge depends upon it while allowing organisational practices to evolve. Historical consciousness becomes a resource for innovation rather than an obstacle to it.

The digital era makes this distinction increasingly urgent because contemporary science produces forms of evidence whose preservation is both easier and more difficult than in the paper age. Electronic correspondence, datasets, software, digital images, simulations, websites, laboratory databases, version-controlled code, online publications, and collaborative platforms can contain extraordinarily detailed records of scientific activity. Yet they are also vulnerable to rapid technological obsolescence, account closure, server failure, proprietary formats, cybersecurity problems, and the assumption that information stored digitally will somehow preserve itself. The Library of the Czech Academy of Sciences has therefore extended preservation beyond digitised printed material to include born-digital scientific publications and a web archive designed to preserve the online presence of Academy workplaces. Such activities recognise that a future historian of science will need websites and electronic documents just as historians today require letters and printed proceedings. The problem is not merely technological because digital preservation also raises questions of selection. The volume of electronic scientific communication is vastly greater than the volume of traditional archival correspondence, making comprehensive preservation unrealistic. Institutions must determine what possesses lasting scientific or historical value. Metadata becomes crucial because a digital file without contextual information may survive physically while becoming intellectually unintelligible. Digital scientific memory consequently requires archivists, librarians, researchers, and information specialists to cooperate much earlier in the lifecycle of scientific records. The boundaries between producing knowledge and preserving its evidence are becoming increasingly porous (*Library of the Czech Academy of Sciences, n.d.*). The Academy's Digital Library and web-archiving activities explicitly seek the long-term preservation of publications and web content created by its institutes.

Research data intensify the same challenge. Earlier scientific traditions often preserved final publications while the underlying measurements, field observations, coding decisions, or intermediate analytical materials remained scattered or disappeared with individual researchers. Contemporary open-science principles increasingly treat data preservation as part of responsible research practice. The ASEP repository can store research data together with metadata and links to related publications, while persistent identifiers and standardised descriptive practices increase the possibility that research outputs will remain findable and interpretable beyond the life of a project. This changes the institutional meaning of scientific memory. The archive is no longer only a destination to which historically significant material is transferred after a career ends. Preservation begins during research itself through decisions about formats, metadata, licensing, documentation, and repository deposit. Reproducibility and memory thereby become interconnected. A dataset preserved well enough for another scientist to inspect or reuse is simultaneously evidence for a future history of research. Open science therefore adds an epistemic dimension to preservation: knowledge becomes more robust when the evidence supporting it can remain accessible. The Academy's contemporary information infrastructure extends its memory function from publications towards the underlying architecture of scientific claims. This represents a significant evolution from the archival model inherited from earlier centuries (*Library of the Czech Academy of Sciences, 2025*). The ASEP repository explicitly supports bibliographic records, full texts, datasets, metadata, persistent identifiers, and long-term archiving.

The growing scale of digital preservation also changes relations between institutional and national memory infrastructures. The Digital Library of the Czech Academy of Sciences participates in broader Czech systems for aggregating and providing access to digitised cultural and scientific material, while its contents can become visible through European digital environments. This means that the Academy's documentary heritage is no longer confined to a single institutional repository. Its scientific memory can be integrated with libraries, museums, archives, and other memory institutions across the Czech Republic and Europe. Such interoperability has intellectual consequences. Scientific publications produced by Academy institutes can be studied alongside newspapers, manuscripts, artworks, maps, governmental documents, and other forms of historical evidence. The old distinction between scientific archive and cultural archive becomes less rigid. This is particularly appropriate to the Czech experience because academies historically occupied the boundary between scientific research and national cultural institutions. The Czech Academy of Sciences and Arts explicitly incorporated literature and art alongside scholarship, while modern AV ČR includes humanities disciplines deeply concerned with cultural heritage. Digital infrastructures therefore revive in technological form an older idea that scientific and cultural memory belong to interconnected systems of knowledge. They also internationalise access to Czech scientific heritage. A historical publication once available only in a Prague library can potentially become part of a transnational research environment. Scientific memory, although institutionally preserved, increasingly functions as an open public resource.

The Academy's memory function has another strategic dimension because societies confronting crises frequently depend upon knowledge created long before the crisis became visible. Environmental change can be assessed only when current measurements can be compared with historical data. Epidemics are better understood when biological, epidemiological, and social-science research has been sustained outside emergency periods. Economic or demographic disruption requires long-term statistical and analytical capacity. Cultural conflicts and disinformation can be interpreted more effectively when historians, linguists, psychologists, and sociologists possess deep knowledge of earlier developments. Security questions likewise benefit from preserved expertise in languages, regions, technologies, materials, and political systems. Scientific memory therefore contributes directly to resilience. A society that continually dismantles research teams once immediate demand declines may discover during the next crisis that expertise cannot be recreated quickly. The Academy's institute structure provides one mechanism for maintaining such dormant or slowly developing capacities. This point connects the memory function discussed here with the public responsibility examined in *The Academy in Times of Crisis*. Long-term expertise is itself a form of institutional memory. It preserves not only information but the ability to interpret information when circumstances change.

The relationship between scientific memory and innovation may initially appear paradoxical. Innovation is usually associated with novelty, while memory appears oriented towards preservation. In practice, however, the two are mutually dependent. New research becomes possible because earlier evidence, methods, instruments, theories, and failures remain available for reinterpretation. Major advances often emerge when established knowledge is combined across fields or examined with techniques unavailable to earlier generations. A digitised archival collection can generate computational humanities research that its original creators could never have imagined. Historical biological specimens can become sources for genomic analysis. Old astronomical data can acquire new relevance when compared with

observations from modern instruments. Earlier mathematical theories may gain applications decades after their formulation. Scientific memory therefore increases the number of possible futures available to research. Preservation keeps intellectual options open. The Academy's dual role as a repository of inherited scientific capital and a producer of new knowledge should thus not be regarded as contradictory. The institution can innovate precisely because it possesses a long temporal depth from which new combinations and interpretations can emerge.

This relationship also helps explain why memory cannot be delegated entirely to external national archives or libraries. Czech national memory institutions perform indispensable roles, but scientific material often requires specialised knowledge for appropriate selection, description, preservation, and interpretation. An archivist dealing with laboratory documentation must understand enough about scientific practice to identify which records may have lasting value. Research datasets require disciplinary metadata and technical preservation methods. Instruments may need contextual documentation to remain historically intelligible. Personal papers of scientists can contain specialised terminology, unpublished calculations, or correspondence whose significance is difficult to recognise without knowledge of the field. By maintaining archival, library, and research-history capacities within the Academy's own institutional environment, Czech science preserves expertise about the production of scientific evidence itself. This does not isolate academic memory from the national archival system; rather, it complements it. The Academy's specialised archive belongs within the Czech archival framework while concentrating on the particular documentary ecology of science. Such institutional proximity allows preservation strategies to respond more closely to changing research practices. The carrier of scientific memory must understand science from within as well as preserve it from outside.

By 2025, the Academy's memory therefore existed simultaneously on several temporal scales. One scale reaches back to 18th-century learned societies through archival fonds, medals, correspondence, and publications. Another encompasses the 19th-century development of Czech national scientific institutions and their contribution to the formation of modern intellectual culture. A third contains the institutional expansion, political compromises, achievements, and ruptures of ČSAV between 1952 and 1992. A fourth records the democratic transformation of AV ČR and its adaptation to internationalised European science after 1993. A fifth is being created now through repositories, research data, websites, digital publications, and born-digital institutional records whose historical value may become clear only decades later. These layers coexist rather than replacing one another. A researcher working with a 21st-century dataset may belong to an institute whose disciplinary roots reach into the 19th century and whose building was constructed under socialism. The institutional present is therefore historically stratified even when daily research is oriented towards problems at the frontier of knowledge. Recognising these layers gives the Academy a richer understanding of its own identity. It is not simply an organisation with a history; it is an organisation partly constituted by the survival and reinterpretation of that history.

The deepest significance of this memory lies in its ability to convert succession into responsibility. Each generation of scientists receives resources it did not create: collections, reputations, laboratories, intellectual traditions, archives, infrastructures, international relationships, and public trust accumulated by predecessors. It is free to criticise these inheritances and often must transform them radically. Yet it also assumes responsibility for deciding what should be transmitted further. Scientific institutions therefore stand between

past and future rather than merely inhabiting the present. The Academy's long history demonstrates the consequences when political regimes attempt to sever this transmission by suppressing people or ideas, just as it demonstrates the value of preserving research capacity through periods of uncertainty. Memory provides no automatic solution to future scientific problems. What it provides is a larger field of evidence and institutional experience from which solutions can be developed. In this sense, the Academy's ability to remember is itself a scientific capacity. An institution that knows how earlier knowledge was created, constrained, preserved, and transformed is better equipped to evaluate what kind of continuity the future will require.

Thus, the Czech Academy of Sciences acts as a carrier of scientific memory not because it preserves a single uninterrupted tradition but because it brings together multiple and sometimes conflicting layers of the Czech scientific past. Its archives maintain records of learned societies, academies, ČSAV, AV ČR, scientific associations, research institutes, and individual scholars whose activities extend across radically different political orders. Its libraries preserve the published intellectual record, while digitisation increasingly protects and opens materials that once depended entirely upon physical access. Personal fonds restore the voices and professional experiences of scientists whose careers cannot be reconstructed adequately through institutional files alone. Collections, datasets, instruments, photographs, manuscripts, and long-term observations preserve evidence capable of acquiring new scientific meanings long after its creation. Intergenerational mentoring carries tacit knowledge that no archive can capture completely, while oral history records dimensions of scientific experience that formal documentation routinely omits. The post-1989 recovery of suppressed figures and traditions demonstrated that scientific memory also has an ethical dimension, because remembering exclusion is part of defending future academic freedom. The Academy's own research into the history of science has transformed institutional self-knowledge from ceremonial remembrance into a field of critical scholarship. Digital repositories and open-science infrastructures have extended memory further, making preservation increasingly inseparable from the process of research itself. None of these functions implies that inherited knowledge should remain unchanged, for the history of Czech science repeatedly shows that meaningful continuity depends upon reinterpretation. Memory becomes scientifically productive when it allows evidence, methods, and experience from one period to be questioned by another. The modern Academy is therefore both a producer of future knowledge and a custodian of the conditions that made such production possible. Across the institutional trajectory from 18th-century learned societies to AV ČR in 2025, this capacity to preserve, recover, criticise, and transmit scientific experience has become one of the strongest foundations of Czech academic continuity.

The Meaning of the 1993–2025 Period

1. Transformation from a Post-Socialist Institution to a European Research Actor

The period from 1993 to 2025 occupies a distinctive place in the history of Czech academic science because it was during these three decades that the Academy ceased to be primarily understood through the institutional inheritance of state socialism and became an established participant in the European research system. The change did not occur at a single moment, and it cannot be reduced to the replacement of ČSAV by the Academy of Sciences of the Czech Republic at the beginning of 1993. Legal succession was only the starting point of a much longer transformation involving governance, financing, research evaluation, personnel structures, international mobility, scientific infrastructure, relations with universities, and the public legitimacy of fundamental research. In 1993, the new Academy inherited laboratories, institutes, collections, research schools, buildings, administrative practices, and professional communities whose institutional histories had largely developed within the Czechoslovak Academy of Sciences. It also inherited serious structural problems created by decades of centralised management, politically conditioned personnel policy, unequal international access, and the economic crisis accompanying the transition from state socialism. By 2025, the same institutional system operated in a fundamentally different environment shaped by competitive research funding, international peer review, European Union research programmes, cross-border mobility, open science, multinational infrastructures, and scientific collaboration extending far beyond the Czech Republic. This was therefore not merely a process of institutional survival. It was a transition between two different conceptions of what a national academy of sciences should be. Under the former model, scientific organisation had been closely connected with state planning and a hierarchical conception of academic authority. Under the new model, the Academy increasingly had to demonstrate research quality within international disciplinary communities while defending the value of long-term publicly financed science within a democratic society. The institutional path between these models was neither smooth nor predetermined. At several moments the Academy faced financial pressure, political criticism, uncertainty about its legal status, and questions concerning whether a small post-socialist state required a large non-university research sector at all. Its eventual consolidation should consequently be interpreted as one of the major institutional achievements of Czech science after 1989 rather than as the automatic survival of an inherited organisation (*Czech National Council, 1992*; *Czech Academy of Sciences, 1993*).

The starting conditions were exceptionally difficult because the new Academy had to reform itself while simultaneously defending the legitimacy of its own continued existence. The disappearance of Czechoslovakia removed the federal institutional framework within which ČSAV had operated, but it did not resolve the arguments that had emerged after the Velvet Revolution about the appropriate structure of Czech research. Some reformers regarded the concentration of fundamental research in academy institutes as a characteristic product of the Soviet model and assumed that a more Western system would transfer a substantial proportion of this work to universities. Others argued that the institute-based model had deeper European and Czech roots and that dismantling it would destroy specialised teams and infrastructures that universities could not absorb without considerable scientific loss. The debate therefore concerned much more than administrative efficiency. It forced Czech society to decide which parts of the socialist research system represented political distortion and which represented genuine scientific capital worth preserving. The Academy entered this debate from a weakened position because severe reductions in public expenditure coincided with demands for rapid organisational reform. In 1993, the Academic Assembly itself acknowledged that some reduction of institutes and staff was necessary for the creation of a

modern system of autonomous scientific workplaces, while simultaneously warning that the speed and scale of reductions driven by the sharp contraction of the budget could cause irreversible damage. The transformation consequently combined intellectual reform with economic emergency. Decisions concerning the future of institutes could not be postponed until a stable funding system had been constructed. Research teams had to adapt while the legal, financial, and political rules surrounding them were still changing. The Academy survived this early period because reform was increasingly framed not as defence of every inherited workplace but as defence of the principle that high-quality non-university research remained necessary to the Czech scientific system. That distinction became decisive for the institution's later Europeanisation (*Czech Academy of Sciences, 1993*). The Assembly's 1993 and 1994 resolutions explicitly record both the reduction of workplaces and staff and the effort to build a new system of autonomous, evaluated research institutes.

Rudolf Zahradník's presidency became closely associated with this first phase of institutional reconstruction. His authority rested not merely upon administrative office but upon an international scientific reputation that provided the Academy with a different model of legitimacy from that inherited from the previous political order. Under his leadership, the central question was increasingly formulated in terms of scientific quality rather than institutional entitlement. This was particularly important because simple defence of the existing institute structure would have been politically vulnerable in the early 1990s. Zahradník and his colleagues instead accepted that institutes and researchers had to undergo evaluation and that some workplaces would not survive the transition. The result was a dramatic contraction of the inherited structure, accompanied by personnel reductions that affected a very large proportion of the Academy's workforce. Contemporary recollections by participants in the transformation describe the number of employees as being approximately halved in 1993 and twenty institutes as abolished during the initial restructuring. Those figures convey the severity of the transformation more clearly than the language of administrative reform alone. Entire professional communities had to confront the possibility that disciplines or research teams cultivated for decades might disappear. At the same time, the transformation created a new expectation that remaining institutes would be judged against professional and increasingly international standards rather than protected because of their place within a central plan. The Academy therefore began the post-socialist period through a paradoxical combination of destruction and institutional strengthening. Its material scale contracted sharply, but the scientific criterion by which its existence was justified became clearer. The legitimacy of the future Academy would depend less upon its formal status as the highest scientific institution and more upon the demonstrable quality of the research undertaken within its institutes (*Czech Academy of Sciences, 1993*). Later testimony concerning Zahradník's leadership stresses both the severe reduction and the introduction of regular scientific assessment as defining features of the transformation.

Evaluation was consequently not a secondary managerial innovation but one of the constitutional principles of the post-socialist Academy. The Academic Assembly in October 1993 required research employees to undergo assessment and instructed the Academy Council and Scientific Council to prepare an independent system for evaluating scientific activity. Independent evaluation panels were to begin operating during 1994, and institutional financing was gradually connected more closely with judgements about research performance. This represented a profound departure from a system in which political and administrative considerations could determine the survival or status of research units. It also

brought the Academy closer to practices increasingly common in Western European public research organisations, where institutional autonomy was balanced by external peer judgement. Evaluation did not eliminate internal politics or disciplinary disagreement, nor could any assessment method reduce all forms of research quality to a single scale. Humanities institutes, experimental laboratories, infrastructure institutions, and theoretical research groups necessarily produced different kinds of outputs. The important change lay in the principle that research organisations should expose themselves to professional scrutiny beyond their own internal hierarchies. International experts gradually acquired a larger role because Czech science could no longer evaluate itself primarily against domestic or former socialist-bloc standards. This outward reference point altered institutional behaviour. Institutes increasingly needed credible publication strategies, international networks, research programmes that could be explained to external experts, and leadership capable of responding to independent criticism. Over subsequent decades the evaluation methodology became much more sophisticated, but its basic institutional logic was established during the first years of AV ČR. The continuity of evaluation from 1993 onwards later allowed the Academy to present itself as one of the Czech research organisations with the longest experience of systematic institutional assessment (*Czech Academy of Sciences, 1993*; *Czech Academy of Sciences, 2024*). In 2024, when joining broader European reforms of research assessment, the Academy explicitly traced its regular internal evaluation practice back to 1993.

Democratic self-government formed the second foundation of the emerging model. The 1992 Act created the Academy as an organisational body of the Czech Republic but gave its scientific community substantial responsibility through the Academic Assembly, Academy Council, Scientific Council, and the self-governing bodies of individual institutes. This arrangement deliberately separated public ownership and financing from direct political management of research content. The state remained indispensable because it provided the legislative and budgetary framework within which fundamental research could exist on a substantial scale. Yet ministers and party structures were no longer supposed to determine which historical interpretation was acceptable, which scientific hypothesis should be pursued, or whether an individual researcher was professionally trustworthy because of political allegiance. This redistribution of authority constituted one of the deepest breaks with ČSAV even though much of the institute structure survived. Autonomy was institutional rather than merely personal. Directors, scientific boards, research teams, and elected Academy bodies acquired responsibilities that had previously been constrained by the political hierarchy surrounding the Academy. Such autonomy inevitably brought new obligations because self-government could no longer attribute poor strategic decisions to external ideological command. Decisions concerning institute profiles, personnel, budgets, and research priorities had to be defended within the academic community itself. Institutional freedom therefore demanded new capacities for management as well as new ethical expectations of leadership. Over time, this culture of self-government became sufficiently normal that its revolutionary origins after 1989 could easily be forgotten. Historically, however, it was one of the principal mechanisms through which a post-socialist research organisation became compatible with democratic European science (*Czech National Council, 1992*; *Czech Academy of Sciences, 2006*). The legal framework continues to define the Academy as a publicly financed Czech state body conducting research through institutes while formally recognising international cooperation and institute self-government.

The 1990s were also the period in which the Academy had to renegotiate its position within the wider Czech research system. Under ČSAV, the Academy had occupied an unusually dominant place in fundamental research, while universities combined research with extensive educational responsibilities and had themselves been weakened by political intervention. After 1989, universities recovered autonomy, expanded doctoral education, renewed international contacts, and increasingly strengthened their research ambitions. It would therefore have been institutionally unsustainable for AV ČR to retain the former conception of itself as the unquestioned apex of national science. The emerging relationship became more plural. Academy institutes retained particular advantages in long-term research concentration, specialised infrastructure, archival and collection-based scholarship, and fields where the absence of undergraduate teaching allowed researchers to devote a greater proportion of their time to investigation. Universities possessed the indispensable capacity to combine research with the education of successive generations of students and to sustain broad disciplinary environments. Cooperation gradually replaced hierarchical claims as the preferred model. Academy researchers increasingly supervised doctoral candidates, taught at universities, participated in joint programmes, and developed shared research centres. Universities in turn gained access to specialised Academy laboratories, collections, and research teams. This relationship was not free from competition for funding, personnel, and prestige, but competitive tension could coexist with deep institutional interdependence. The post-socialist transformation therefore changed AV ČR from an organisation that had inherited a claim to central scientific authority into one component—albeit a particularly powerful one—of a plural national research system. This was itself an important step towards the European model, where organisational diversity rather than institutional monopoly is a characteristic feature of mature research systems (*Czech National Council, 1992*; *Czech Academy of Sciences, 2006*).

Internationalisation during the 1990s initially meant recovering opportunities that had been restricted under the communist regime. Scientists could travel without political screening, establish collaborations according to professional interest, spend extended periods at foreign laboratories, and invite international colleagues to Czech institutes with far fewer administrative or ideological barriers. For younger researchers, foreign postdoctoral experience increasingly became a normal component of career development rather than an exceptional privilege. Senior researchers reactivated connections that had been interrupted by normalisation or developed new relationships through conferences and joint projects. Exiled Czech and Slovak scientists also became important bridges between domestic research and institutions in Western Europe and North America. Access to international journals and databases improved rapidly as economic and technological conditions changed. The Academy's scientific standards consequently became more directly exposed to international comparison. This produced both opportunity and discomfort. Research groups that had remained strong despite isolation could rapidly re-enter international networks, whereas others discovered that decades of restricted contact had left substantial methodological or technological gaps. English increasingly became the principal language of international publication in many disciplines, altering the communication practices of institutes accustomed to Czech, Slovak, Russian, German, or other scholarly languages. Internationalisation therefore affected careers, publication strategies, research agendas, and institutional culture simultaneously. The Academy was no longer merely exchanging delegations with foreign scientific organisations; it was beginning to operate within a genuinely transnational research environment in which reputation was created across borders.

This international opening also altered the meaning of Europe for Czech science. During the socialist period, "international cooperation" had often been structured through geopolitical blocs, with strong institutional ties to the Soviet Union and other socialist states accompanied by variable access to Western research centres. After 1989, European cooperation increasingly became associated with participation in common research programmes, competitive projects, mobility schemes, scientific networks, and shared standards. Czech researchers did not enter this environment without experience, because many disciplines already possessed longstanding connections with European colleagues. What changed was the density and normality of those relationships. Western Europe ceased to function principally as an external reference point against which Czech science compared itself and gradually became an institutional space in which Czech institutes operated directly. This shift preceded formal accession to the European Union. Czech participation in European research initiatives during the accession period enabled institutes to learn the administrative language of multinational projects, consortium formation, proposal preparation, reporting, and international research management. These competencies were organisationally significant because success in European science required more than strong individual researchers. Institutes needed grant offices, project administrators, financial management procedures, legal expertise, and support for mobility. Europeanisation therefore transformed the administrative infrastructure of research alongside its intellectual orientation. The research institute of the early 2000s increasingly differed from its 1993 predecessor not only in whom its researchers collaborated with but in the institutional machinery necessary to sustain those collaborations.

The Czech Republic's accession to the European Union on 1 May 2004 represented a watershed within this longer process. For the Academy, accession did not create European cooperation from nothing, but it changed its constitutional and strategic environment. Czech research organisations now operated within the European Union's common policy space and could participate as organisations of a Member State in the developing European Research Area. The Academy's Annual Report for 2004 explicitly reflected the need to adapt research and development strategy to the new conditions created by EU membership. It also documented an organisation already engaged in European scientific activity, including Prague's hosting of events connected with the European Union's Descartes Prize. Membership broadened the relevance of European funding instruments and increased the importance of aligning domestic research management with Community rules concerning competition, public support, procurement, mobility, and research organisation. The change also altered expectations. European integration meant that Czech science could no longer measure progress primarily against its own post-1989 starting point. Academy institutes were increasingly compared with institutions in Germany, Austria, France, the Netherlands, Scandinavia, the United Kingdom, and other established European research systems. Such comparison could expose weaknesses in salaries, infrastructure, administrative support, and international recruitment. At the same time, European membership opened access to resources and networks that could accelerate modernisation much more rapidly than reliance upon domestic budgets alone. The Academy's movement from post-socialist reconstruction towards European competition therefore became increasingly irreversible after 2004 (*Academy of Sciences of the Czech Republic, 2004*). The Academy's 2004 Annual Report records both its adaptation to EU membership and its growing participation in European scientific activity.

EU accession changed not only access to money but the conceptual environment in which Czech research policy operated. The European Research Area was built around the ambition

of creating a more integrated space for researchers, knowledge, technology, investment, and scientific collaboration across national borders. For the Czech Academy, this framework was highly compatible with the post-1989 effort to replace political isolation with international scientific evaluation. Excellence increasingly had to be demonstrated through participation in research communities whose standards were not nationally determined. Mobility meant that Czech institutes competed both to retain domestic researchers and to attract scientists from abroad. European research infrastructures required decisions about which capabilities should remain national and which should be constructed collaboratively. Framework programmes encouraged institutes to address questions that could be pursued effectively through multinational teams. European partnerships created opportunities for smaller scientific systems to participate in projects whose financial or technical scale exceeded the capacity of individual states. The same integration also produced competitive pressures because highly mobile researchers could relocate towards institutions offering better salaries, equipment, and career conditions. Europeanisation was therefore not a protective environment into which Czech science simply entered; it was an arena of competition as well as cooperation. The Academy's transformation depended on learning to function within both aspects simultaneously. By the 2020s, Czechia was committed to the full range of European Research Area actions, while the Academy and higher-education institutions were identified as key research performers within the national system (*European Commission, 2024*). The ERA country assessment likewise describes the Academy as one of Czechia's key research-performing sectors within an increasingly Europeanised national research environment.

A particularly important institutional reform followed shortly after accession through the legislation on public research institutions adopted in 2005. Act No. 341/2005 created the legal category of the *veřejná výzkumná instituce*, or public research institution, and defined research organisations whose principal purpose was research supported substantially from public resources. The legislation responded to a problem that had persisted throughout the first post-socialist decade: Academy institutes required a legal form better suited to autonomous research activity than the structures inherited from the state administrative system. The law regulated the establishment, governance, property relations, economic activity, and institutional bodies of public research organisations. It explicitly recognised the Academy of Sciences as one of the bodies capable of establishing such institutions on behalf of the Czech Republic. The Academy's own statutes were consequently revised, with the new framework taking full institutional effect from January 2007. From that point, Academy institutes operated as public research institutions with their own legally defined governance structures, including directors, institute boards, and supervisory boards. The change expanded organisational responsibility while keeping the institutes within the publicly financed Academy system. It also brought Czech research law into closer relationship with European rules governing public support and research organisations. The reform thus addressed a problem that had been visible since 1993: how to combine state responsibility for fundamental research with sufficient institutional autonomy for modern scientific management. Unlike the emergency restructuring of the early 1990s, the 2005–2007 reform represented consolidation. The Academy had moved far enough beyond the immediate post-socialist crisis to redesign its legal infrastructure for long-term operation (*Parliament of the Czech Republic, 2005*; *Academy of Sciences of the Czech Republic, 2005*). The legislation converted the relevant state research organisations into public research institutions from 1 January 2007, while the revised Academy statutes entered into force on the same date.

The public research institution model altered the practical meaning of autonomy at institute level. Institutes required the ability to enter contracts, manage projects, administer property, employ researchers competitively, organise cooperation, and respond to international funding opportunities. Such flexibility was essential in an environment where scientific work increasingly crossed institutional and national boundaries. At the same time, public status meant that the institutes could not behave simply as private corporations whose strategies were defined by short-term revenue. Their primary purpose remained research conducted in the public interest, and the Academy retained founder responsibilities. This balance was particularly important for fundamental science because research programmes may need to be sustained for years before producing easily measurable economic returns. The legal framework therefore protected an institutional space between direct state bureaucracy and market dependence. It also strengthened internal governance by giving institute boards and supervisory bodies clearer responsibilities. Directors became managers of increasingly complex organisations as well as scientific leaders. Financial control, human-resource policy, intellectual property, grant administration, international recruitment, infrastructure management, and legal compliance became more demanding components of institute leadership. The post-socialist research institute was consequently evolving into a professional European research organisation in administrative as well as scientific terms. This transformation sometimes produced tensions because additional administrative capacity could be experienced by researchers as bureaucratisation. Yet participation in European research required reliable institutional procedures, and scientific autonomy without administrative competence could not sustain large international projects. The legal reform of the mid-2000s therefore supplied an organisational foundation for the Academy's later expansion within European research networks.

Scientific infrastructure became another major vehicle of Europeanisation. During the 1990s, many Academy institutes operated with equipment and buildings that reflected the constrained investment of the late socialist period and the severe financial difficulties of the early transition. Modern experimental science, however, was becoming increasingly dependent upon costly instrumentation, advanced computing, specialised laboratories, and research environments capable of meeting international technical standards. European structural and investment funds, national research programmes, and multinational infrastructure initiatives created possibilities for modernisation that would previously have been difficult for the Czech state to finance alone. Academy institutes became partners in new research centres and major infrastructures linking universities and non-university institutions. Facilities associated with high-energy physics, lasers, molecular biology, materials research, environmental science, and other fields helped integrate Czech research more closely into European scientific networks. The significance of these projects was not simply that newer equipment replaced older equipment. Large infrastructures change the geography of science by attracting international users, researchers, students, and collaborators to the host country. A Czech institute participating in such infrastructure no longer functions only as a national laboratory seeking access abroad; it can become a destination within European science. Infrastructure development therefore altered the symbolic position of Czech research. The transition from scientific periphery towards networked participation depended partly upon the capacity to host research rather than only send researchers elsewhere. This process remained uneven across disciplines, but it substantially widened the Academy's European scientific reach.

The European Research Council provided an even more demanding measure of this transition because ERC grants are allocated principally according to the perceived excellence and ambition of investigator-driven research. Success in ERC competition therefore carries a significance different from participation in a broadly distributed cooperation programme. It tests whether researchers based in Czech institutions can compete for some of Europe's most prestigious frontier-research funding against applicants from universities and institutes throughout the continent. Academy researchers increasingly became successful in Starting, Consolidator, Advanced, and Synergy Grant competitions. Such awards brought substantial financial resources, but their institutional importance went further. They helped create research teams capable of recruiting internationally, strengthened the attractiveness of Czech institutes as host organisations, and provided visible evidence that world-class research could be conducted within the Czech Academy. ERC participation also placed pressure on institutes to develop better grant support and career conditions because a brilliant scientific proposal alone may not be enough if the host institution cannot demonstrate the capacity to sustain the project. By the middle of the 2020s, ERC and Horizon Europe support had become sufficiently central to Academy strategy that responsibility for excellence programmes and European grant participation formed an explicit part of Academy Council portfolios. The Academy also developed institutional support mechanisms for researchers considering ERC applications. These developments reveal how far the organisation had moved from the conditions of 1993. International excellence was no longer only something to be demonstrated through publications after research had been completed; it shaped institutional strategy at the stage of recruiting researchers and designing future projects. The Academy's contemporary administrative structure explicitly includes support for ERC, Horizon Europe, and participation in the European Research Area.

The transformation of research evaluation during the 2000s and 2010s paralleled this movement towards international competition. Early post-socialist evaluation had been designed partly to decide which inherited institutes should survive. Once the institutional system stabilised, evaluation increasingly became a mechanism for strategic development rather than emergency selection. Successive cycles covering 2005–2009, 2010–2014, and 2015–2019 introduced increasingly elaborate combinations of bibliometric information, expert judgement, institute-level analysis, and team-level assessment. The evaluation for 2010–2014 marked an especially important step because more than 1,400 external experts from approximately fifty countries participated in reviewing the Academy's research teams. Foreign experts assessed results in relation to the current international level of the relevant fields rather than through a purely domestic ranking. This mattered epistemically and institutionally. International review placed Czech teams within the same professional frame as competitors elsewhere, while also making it more difficult for internal institutional prestige alone to determine assessment. The process deliberately emphasised informed peer review as a counterweight to mechanical quantitative systems that had become controversial in Czech research policy. Different disciplines could therefore be assessed with greater sensitivity to their own scholarly cultures. Evaluation results fed into strategic management and institutional support, connecting international judgement with domestic resource allocation. By the 2010s, systematic international assessment had consequently become one of the mechanisms through which the Academy maintained its European orientation (*Czech Academy of Sciences, 2016*). The 2010–2014 assessment involved 54 institutes, more than 1,400 experts from fifty countries, and explicit comparison of Czech scientific teams with international disciplinary standards.

The evolution of evaluation also demonstrates that Europeanisation was not equivalent to adopting a fixed Western model once and for all. European research systems themselves changed during the period. Bibliometric indicators gained influence, but criticism of simplistic quantitative assessment also intensified. Open science, reproducibility, research culture, societal impact, interdisciplinary work, and responsible assessment became increasingly prominent issues. The Academy adapted its methods in response. In 2022, it joined the Agreement on Reforming Research Assessment and the Coalition for Advancing Research Assessment, linking its internal evaluation system with a broader European movement seeking to reduce inappropriate reliance on proxy metrics. Its 2024 Action Plan presented this not as a rejection of the Academy's existing evaluation tradition but as another stage in a process of refinement that had begun in 1993. This continuity is historically significant because it shows a post-socialist institution becoming a participant in debates over how European research itself should evolve. The Academy was no longer merely importing evaluation norms from more established systems. It was operating within the same transnational discussion about the strengths and limitations of those norms. The distinction marks an important stage in the transition from adaptation to participation. Europeanisation becomes mature when institutions cease treating Europe as a finished model to imitate and begin contributing to the arguments through which European scientific practice is collectively reshaped. In this respect, the Academy's development from early external assessment to participation in CoARA mirrors its broader passage from institutional pupil to research actor (*Czech Academy of Sciences, 2024*).

Leadership across the period also reflected the gradual change from transformation to consolidation and strategic development. Rudolf Zahradník's presidencies were dominated by institutional survival, reduction, scientific evaluation, and the defence of non-university fundamental research. Helena Illnerová inherited an organisation that had survived the most severe post-socialist restructuring but still required stronger integration into the Czech and international research environment. Václav Pačes presided over the period in which EU membership and the new public-research-institution legislation changed the Academy's external and internal conditions. Jiří Drahoš led during years when international evaluation, European funding, public visibility, and debates over the national financing of science became particularly prominent. Eva Zažímalová's presidency coincided with further internationalisation, open-science development, major societal crises, and greater emphasis on the relationship between scientific excellence and public responsibility. In March 2025, Radomír Pánek assumed the presidency, bringing the institution into a new leadership cycle focused on excellence, European funding, career development, infrastructure, research security, digital transformation, and cooperation across public and private sectors. These presidencies should not be interpreted as isolated personal programmes because Academy governance is collective and major initiatives depend upon councils, assemblies, institute directors, and research communities. Nevertheless, leadership priorities reveal the changing problems the institution considered most urgent. The sequence moves visibly from survival and transformation towards international competitiveness, societal engagement, and strategic positioning within European science. That movement provides another indication that the meaning of the post-1993 period cannot be reduced to institutional continuity alone. The leadership transition of 2025 took place within an organisation whose strategic agenda already explicitly incorporated the European Research Area, Horizon Europe, excellence support, and international cooperation.

The financial history of the period complicates any triumphalist interpretation of Europeanisation. Access to European resources did not eliminate dependence upon the Czech state budget, nor did international success remove domestic struggles over the value of fundamental research. Academy institutes require institutional financing because laboratories, collections, libraries, long-term datasets, permanent staff, and research infrastructure cannot be maintained reliably through short competitive projects alone. This principle repeatedly came under pressure when Czech research policy sought stronger links between financing and measurable output or when fiscal constraints generated calls for reductions. The Academy therefore had to defend a model in which competitive grants supplement rather than replace stable institutional support. The debate became especially intense during periods of proposed research-budget restructuring in the late 2000s and early 2010s. Scientists and Academy leadership argued that short-term calculations of economic utility could not provide an adequate basis for judging fundamental research whose applications may emerge unpredictably and over long periods. At the same time, the Academy could not simply demand stability without accountability. Its increasingly sophisticated evaluation system became part of the political argument for institutional funding because it allowed the organisation to claim that stability was being combined with external scrutiny. European grants similarly strengthened legitimacy by demonstrating that Czech teams could succeed in international competition. The resulting funding model remained hybrid: national institutional resources provided continuity, competitive Czech grants supported investigator-led projects, European programmes enabled multinational research, and infrastructure funding supported capacities beyond normal institute budgets. This diversified environment is characteristic of the Academy's transition from a state-planned institution towards a modern European public research organisation.

The relationship between basic and applied research also changed substantially. State-socialist research policy had often presented the connection between science and economic planning as an administrative obligation, even when the actual flow from research to industry was inefficient or politically distorted. Post-1989 reform initially encouraged a strong rhetorical distinction between autonomous basic research and the applied functions associated with the former planned economy. Over time, however, this division became less useful. European research policy increasingly emphasised innovation, technology transfer, collaborative research, societal challenges, and the movement of knowledge between public institutions and economic actors. Academy institutes developed partnerships with companies, patenting and licensing activities, spin-off initiatives, contractual research, and technology-transfer mechanisms while continuing to defend investigator-driven fundamental science. The contemporary legal framework itself identifies both the advancement of knowledge and the application of research results among institute functions. The important change was that application was no longer supposed to be determined through command planning from above. Cooperation could arise from scientific opportunity, industrial demand, public policy need, or strategic programmes negotiated among institutions. This allowed the Academy to retain a strong fundamental-research identity while becoming more porous to practical collaboration. Such permeability strengthened its position as a European research actor because European programmes increasingly reward the ability to connect disciplinary excellence with wider societal and technological networks. The modern Academy therefore moved beyond the false choice between pure scholarship and economic usefulness. Its emerging model treated fundamental knowledge as the base from which multiple forms of application could develop (*Czech Academy of Sciences, 2006*). The present statutes explicitly combine international-

level research with education, application, cooperation, infrastructure, and contributions to Czech culture and competitiveness.

Strategy AV21, introduced for 2015, marked one of the clearest attempts to translate this broader mission into an Academy-wide research concept. Its central idea was that the Academy should organise interdisciplinary programmes around significant societal questions while preserving the freedom and disciplinary depth necessary for fundamental research. The initiative did not abolish institute-based organisation or replace investigator-driven work with a central plan. Instead, it sought to create thematic connections across institutes and with universities, public administration, industry, and other partners. Research problems involving energy, health, climate, social transformation, cultural memory, technological change, or environmental sustainability rarely fit within a single discipline. Strategy AV21 therefore provided a mechanism for mobilising the Academy's unusually broad disciplinary structure around complex problems. In historical perspective, the programme represented an important departure from socialist central planning even though both systems used the language of coordinated scientific priorities. The crucial distinction lay in governance. Strategy AV21 relied upon scientific collaboration and programme formation within a self-governing research environment rather than ideological direction through a political hierarchy. It also reflected European trends towards challenge-oriented and interdisciplinary research while maintaining a strong commitment to fundamental knowledge. Jiří Drahoš presented the initiative at the end of 2014 as a strategy for the Academy's development in the 21st century, and it entered 2015 with fourteen research programmes. The programme subsequently became a durable element of the Academy's institutional identity rather than a short-lived anniversary initiative (*Drahoš, 2015*). Contemporary Academy materials identify Strategy AV21 as beginning in 2015 and emphasise its continuing role in connecting institutes with universities, public bodies, and other partners.

Strategy AV21 also indicated that Europeanisation and national responsibility were not mutually exclusive. One of the recurring anxieties surrounding internationalisation is that scientists who orient their work towards international journals, European grants, and global networks may become less responsive to the society financing their institutions. The Czech Academy's development after 1993 demonstrates a more complex relationship. International excellence increased the credibility of expertise available to Czech society, while nationally specific research could also produce internationally significant knowledge. Research on Czech language, historical sources, archaeological heritage, biodiversity, water systems, social transformation, demographic change, or Central European political development can serve national needs while contributing to broader disciplinary debates. Conversely, participation in global fields such as molecular biology, plasma physics, chemistry, mathematics, climate science, or artificial intelligence expands Czech capacity to respond to domestic challenges. Strategy AV21 made this interdependence more explicit by framing scientific excellence around problems whose relevance could be explained outside specialist communities. The Academy increasingly sought to demonstrate that internationalisation did not mean withdrawal from Czech public life. Rather, international networks expanded the resources through which national problems could be understood. This principle became particularly visible during crises, when globally connected research teams could translate international knowledge rapidly into domestic expertise. The Academy's European transformation therefore strengthened rather than necessarily weakened its function as a national institution.

The public mission of the Academy grew accordingly. During the early 1990s, much of the institution's public communication necessarily centred on defending its own existence and explaining why institute-based fundamental research should survive. By the early 21st century, the challenge had shifted towards explaining science itself more systematically to society. Popularisation programmes, public lectures, open days, exhibitions, media activities, school initiatives, publications, and science festivals expanded the visibility of Academy research. The 2004 Annual Report already described efforts to present scientific activity and major societal questions in forms understandable to non-specialists and to stimulate interest among young people (*Academy of Sciences of the Czech Republic, 2004*). Over subsequent decades, communication became increasingly professionalised through dedicated institutional structures and digital media. Public visibility mattered for more than reputation. A democratically financed research organisation depends upon a public capable of understanding why knowledge without immediate commercial application may nevertheless possess long-term value. Communication also became part of the Academy's defence of expertise during periods when scientific claims entered politically contentious debates. This development further distinguished the modern Academy from ČSAV, whose formal public role had operated within a politically controlled communication system. A democratic Academy could no longer rely on institutional status alone to secure authority. It had to earn public trust through openness, competence, and the intelligibility of its contribution. The resulting public orientation was one of the dimensions through which the Academy became comparable with other European public research organisations.

Human mobility transformed the Academy internally as much as international projects transformed it externally. In 1993, the principal internationalisation challenge was to reconnect Czech researchers with scientific communities from which political restrictions and economic weakness had partly separated them. By the 2010s and 2020s, the challenge increasingly involved making Czech institutes attractive destinations for foreign researchers as well. This required English-language administrative support, assistance with relocation, internationally visible vacancies, transparent competitions, modern laboratory conditions, and career structures capable of competing with those offered elsewhere in Europe. Mobility schemes and organisations such as EURAXESS helped normalise the idea that scientific labour moves across borders. Academy teams consequently became more internationally mixed in many fields. Foreign researchers brought different disciplinary traditions and professional expectations, while Czech scientists returning from long periods abroad imported organisational cultures encountered elsewhere. This circulation gradually reduced the distinction between "Czech science" and "foreign experience" that had been pronounced during the first post-communist decade. Europeanisation became embodied in the composition and daily practices of research teams. It also created new pressures because international recruitment exposed salary disparities and administrative burdens more clearly. Institutes competing successfully for world-class researchers needed not only scientific reputation but an environment in which researchers and their families could build lives. The Academy's internationalisation therefore expanded from scientific exchange into a broader problem of institutional culture.

Career development became increasingly connected with excellence policy for similar reasons. The post-socialist system inherited personnel structures in which long-term employment had sometimes been weakly connected with transparent international competition. The early transformation introduced attestations and fixed-term employment for

many research positions, but later decades confronted a different challenge: how to combine competitive expectations with sufficiently stable pathways for talented researchers. Early-career scientists needed opportunities to establish independent teams, obtain grants, gain foreign experience, and return without losing professional momentum. Institutes needed to avoid both excessive institutional permanence and a precarious project economy that could drive promising researchers abroad. European funding programmes intensified this problem because researchers could compare opportunities across a genuinely mobile labour market. ERC Starting and Consolidator Grants rewarded institutions capable of supporting independence at relatively early career stages. Marie Skłodowska-Curie actions and other mobility programmes similarly encouraged international circulation. The Academy increasingly developed internal programmes to support promising scientists and strengthen conditions for competitive European proposals. Such initiatives indicate that becoming a European research actor required transformation of personnel policy, not simply success in foreign grants. Scientific institutions compete through people before they compete through buildings or rankings. The Academy's later strategic emphasis on excellence support, career development, and ERC participation therefore represents a logical culmination of institutional changes begun with the personnel reforms of the 1990s.

Open science introduced another layer of European institutional convergence. During the 1990s, internationalisation had largely meant physical mobility, foreign publication, conference participation, and collaborative projects. By the 2020s, the circulation of knowledge itself had become a central object of research policy. Open-access publication, repositories, research-data management, persistent identifiers, digital infrastructures, and reproducibility increasingly shaped European expectations concerning publicly funded science. The Academy's libraries and information systems had already developed substantial digital capacities, but open science transformed these activities from support services into elements of research governance. The Academy adopted explicit Open Science Principles, linking broad access to scientific results with integrity, cooperation, and the social benefits of research. Such policies reflect a European environment in which the openness of knowledge is increasingly treated as part of institutional responsibility rather than an optional publishing choice. They also expose unresolved tensions. Open access can impose costs, sensitive research data cannot always be freely released, commercialisation may require temporary restrictions, and security concerns increasingly complicate assumptions about unrestricted scientific exchange. The modern Academy therefore had to navigate openness rather than simply proclaim it. That requirement itself demonstrates how much the research environment had changed since 1993. The questions facing the institution were no longer principally how to escape international isolation but how to participate responsibly in an exceptionally interconnected global knowledge system (*Czech Academy of Sciences, 2024*). The Academy's Open Science Principles explicitly frame knowledge sharing and collaboration as important conditions for contemporary science and public benefit.

Europeanisation also gave the Academy a voice in collective scientific organisations rather than merely access to European grants. Membership and participation in networks of academies allow scientific institutions to contribute expertise to discussions concerning climate, energy, health, research integrity, scientific advice, and European research policy. The Czech Academy's participation in the European Academies Science Advisory Council provides one example of this role. Through such structures, Czech scientists contribute to assessments that are not framed primarily as national projects but as shared European scientific advice.

Academy representatives also participate in international expert bodies, research-policy discussions, and networks concerned with integrity and the governance of science. This marks a significant change in institutional status. A post-socialist institution initially concerned with gaining recognition from established Western partners gradually acquired the capacity to help formulate positions together with those partners. The distinction between integration and agency is crucial. Integration means being admitted to networks and programmes whose rules others have largely established. Agency means possessing sufficient credibility to influence the intellectual and policy discussions taking place within those networks. By the 2020s, AV ČR increasingly displayed both. Its continuing participation in European academy structures placed Czech expertise within a wider system of science advice and research representation. The Czech Academy is listed among the member academies of EASAC, alongside institutions such as Leopoldina, the Royal Society, the Académie des sciences, and other European academies.

The Academy's European identity did not, however, displace its global relationships. Scientific internationalisation after 1989 rapidly extended towards the United States, Japan, Israel, China, and many other research systems, while historical cooperation with Central and Eastern European institutions was reformulated outside the former socialist framework. Bilateral agreements remained useful in fields where mobility and joint workshops could seed larger collaborations. European Union membership created one institutional layer within a scientific world that remained global. Researchers often participated simultaneously in EU-funded projects, bilateral programmes, global scientific unions, major international facilities, and informal disciplinary networks. The Academy's position therefore cannot be understood as a simple movement from an eastern to a western scientific bloc. The deeper transformation involved movement away from bloc-defined internationalism towards multilayered networked science. European integration was central because it provided the most dense and institutionally consequential framework surrounding Czech research, but it did not create exclusive scientific boundaries. This distinction became increasingly important as research security, geopolitical tension, technological competition, and international sanctions re-entered European debates during the 2020s. The experience of the Cold War had demonstrated the costs of rigid scientific division, while contemporary security concerns demonstrated that complete openness could not always be assumed. By 2025, the Academy therefore operated in a more internationally connected but also strategically complicated environment than the one imagined during the optimistic Europeanisation of the 1990s.

The crises of the early 2020s provided an important test of how far the transformation had progressed. The COVID-19 pandemic required rapid mobilisation of biomedical, mathematical, social-scientific, psychological, economic, and other expertise. Climate-related events increased public demand for research capable of explaining long-term environmental change and its local consequences. Russia's full-scale invasion of Ukraine in 2022 created new responsibilities involving support for displaced researchers, scientific solidarity, security, energy, geopolitics, and public communication. These events are discussed more fully in *The Academy in Times of Crisis*, but their institutional significance for the 1993–2025 transformation deserves emphasis. A research organisation focused mainly on internal post-socialist restructuring would have been poorly positioned to respond to such multidimensional challenges. The modern Academy, by contrast, could draw upon European networks, international disciplinary communities, interdisciplinary programmes, public-communication channels, and mature institutional structures. Its ability to respond therefore

depended on capacities accumulated during the preceding three decades. Internationalisation was revealed not as an abstract marker of prestige but as a practical resource during uncertainty. Knowledge could move rapidly across borders because researchers were already embedded in networks through which data, methods, and expert assessments circulated. The crisis years thus demonstrated that becoming a European research actor had increased the Academy's capacity to act nationally.

By 2024–2025, the institutional scale of the Academy showed both continuity with its institute-based inheritance and substantial transformation of its operating principles. The Academy described itself as a complex of 54 public research institutions employing more than 8,000 people, with more than half of its employees being university-educated researchers. These institutes covered natural sciences, technical sciences, social sciences, and humanities, giving the organisation a breadth uncommon among specialised research bodies. Their statutory mission included international-level research, training researchers, cooperation with universities, applications of research results, expert recommendations, international cooperation, and provision of research infrastructure. The Academy had therefore retained the central organisational insight inherited from ČSAV—that permanent non-university institutes can sustain substantial fundamental research—while removing the political conception of a centralised state academy that had accompanied that structure under socialism. The resulting organisation was simultaneously national and European. It remained financed substantially through the Czech public system and retained responsibilities towards Czech society and culture. Yet many criteria defining scientific success were produced in international disciplinary communities, European funding programmes, and multinational infrastructures. Institutes increasingly recruited internationally and underwent evaluation involving foreign experts. Research policies addressed open science, responsible assessment, mobility, research security, and cross-border cooperation. The Academy's official contemporary mission describes precisely this combination of international scientific advancement and attention to the specific needs of Czech society and national culture (*Czech Academy of Sciences, 2025*).

The 2024 Annual Report provides a useful snapshot of how different the institution had become from that of the early transition. Contemporary Academy research ranged from highly specialised fundamental investigation to work directly informing climate adaptation, environmental management, public policy, health, technology, and cultural understanding. Research results were increasingly framed through both international scientific significance and societal relevance. The report also reflected an organisation whose institutes operate within a dense environment of European regulations, grants, partnerships, and research infrastructures. A climate-data platform such as ClimRisk, for example, could simultaneously emerge from long-term scientific expertise and support organisations required to assess climate risks within an EU regulatory context. Such examples illustrate how European integration had entered the practical substance of research rather than remaining an external funding mechanism. The Academy's scientists were producing knowledge within regulatory, environmental, technological, and collaborative systems that crossed national boundaries. Yet the resulting tools could be directly useful to Czech public administration, firms, and communities. This interaction between European framework and national application is one of the clearest characteristics of the mature post-1993 Academy. The institution no longer needed to choose between being Czech and being European because its national research function increasingly operated through European knowledge networks. That synthesis had

been much harder to imagine during the political and financial uncertainty of 1993 (*Czech Academy of Sciences, 2025*). The 2024 Annual Report illustrates this interaction through research on climate adaptation, biodiversity, and other fields whose outputs connect Czech needs with wider European scientific and regulatory environments.

At the same time, the Academy's achievements should not obscure persistent weaknesses in the Czech research environment. European integration did not automatically erase disparities between Czech institutes and the best-funded Western European institutions. Salary competition, recruitment of excellent researchers, administrative burden, infrastructure renewal, career conditions for young scientists, and the long-term predictability of institutional financing remained major concerns. Czechia continued to be classified as a moderate innovator within European comparative frameworks, even though its position had improved and the gap with the EU average had narrowed in important indicators. European assessments also identified weaknesses in science-business linkages, shortages of highly skilled workers, venture capital, certain measures of research excellence, and participation in some transnational programmes. These national limitations inevitably affected the Academy because no research institution operates independently of the system surrounding it. Internationally competitive institutes can lose researchers if national salary structures remain weak. Successful laboratories may struggle when administrative or procurement systems are cumbersome. European funding can modernise infrastructure while creating sustainability challenges once project financing ends. The transformation from post-socialist institution to European actor should therefore not be interpreted as arrival at a final institutional destination. It describes a change of position and capacity, not the elimination of structural vulnerability. The Academy's maturity by 2025 is demonstrated partly by the fact that it could identify these problems within the same policy language used across the European Research Area rather than treating them as uniquely post-communist deficiencies (*European Commission, 2024*). European assessment places Czechia close to several EU averages in parts of the ERA while continuing to identify structural barriers that affect its research and innovation performance.

The meaning of the period becomes especially clear when 1993 and 2025 are placed beside one another. In 1993, the Academy was reducing institutes and staff under extraordinary financial pressure while debating whether the non-university research model itself possessed a legitimate future. Its international opening was rapid but still carried the psychology of recovery after political isolation. Evaluation was being constructed as a mechanism for distinguishing viable science from inherited organisational inertia. The legal status of institutes remained unsettled, European Union membership was more than a decade away, and the European Research Area did not yet exist as the policy framework it later became. By 2025, debate centred not on whether the Academy should participate in European science but on how effectively it should compete for ERC and Horizon Europe funding, contribute to European research policy, attract international talent, manage open science, secure research infrastructure, and reform evaluation. The centre of institutional anxiety had shifted. Survival within a post-socialist state had given way to competitiveness within an integrated and increasingly demanding research environment. This did not mean that political and budgetary questions disappeared, but their context changed fundamentally. The Academy had become capable of judging itself against European peers rather than primarily against its own socialist past. Such a change in reference point is one of the strongest signs of successful institutional transformation.

The transition also changed the temporal orientation of Academy strategy. During the early 1990s, planning was necessarily dominated by immediate questions: which institutes would survive, how many employees could be financed, how quickly political and administrative structures could be reformed, and whether public authorities would preserve the Academy at all. Stabilisation allowed progressively longer horizons. Institutes could formulate multi-year strategies, participate in infrastructures whose lifecycles extended across decades, and construct international teams around research programmes that required sustained investment. Strategy AV21 added another long-term layer by organising interdisciplinary capacity around major societal challenges. European programmes themselves encouraged multi-year planning and consortium building. Research-data policies required consideration of preservation beyond the life of individual projects. Career strategies increasingly had to consider how a researcher might develop from doctoral training through postdoctoral mobility to independent scientific leadership. The Academy was therefore no longer simply protecting inherited scientific capital. It was deliberately creating institutional conditions for scientific capital that would mature in the future. This shift from preservation to strategic reproduction is perhaps the most important indicator that the post-socialist transition had truly ended. A post-socialist institution defines itself substantially through the problems inherited from socialism. A mature European research organisation defines itself increasingly through the scientific problems and institutional choices lying ahead.

The final year of the period, 2025, consequently functioned more as a transition to a new strategic cycle than as an endpoint. Radomír Pánek's accession to the presidency after Eva Zažímalová placed a new leadership at the head of an Academy whose institutional survival was no longer seriously comparable to the precarious situation of the early 1990s. The strategic agenda surrounding the new term included research excellence, European funding, international cooperation, knowledge and technology transfer, career development, cooperation with universities, digital transformation, sustainability, research security, communication, and Strategy AV21. Each of these priorities presupposed capacities that had been built during the previous three decades. Research security presupposed international openness significant enough to require protection. ERC support presupposed a research community capable of entering frontier-science competitions. Knowledge transfer presupposed sufficiently mature research outputs and external partnerships. Digital transformation presupposed complex information infrastructures. Strategic European engagement presupposed membership in a research system whose policies the Academy now sought to influence rather than merely understand. The agenda of 2025 therefore provides a compressed image of the transformation itself. The institutional questions had become those of a contemporary European research organisation, even though Czech historical experience continued to shape how autonomy and public responsibility were understood. The new leadership formally assigned responsibility for European Research Area participation, Horizon Europe, excellence programmes, and strategic international cooperation within the Academy Council.

Thus, the transformation of the Czech Academy of Sciences between 1993 and 2025 should be understood as a passage from selective post-socialist reconstruction to active participation in European research rather than as a simple process of organisational modernisation. The Academy began the period by defending the very principle of a national non-university research sector while reducing institutes, dismissing or reassessing personnel, introducing independent evaluation, and constructing democratic academic self-government. It survived

because reformers distinguished the scientific capital inherited from ČSAV from the political and administrative structures that could no longer be legitimate after 1989. During the 1990s, international reopening replaced ideological restriction with professional mobility and increasingly direct comparison with foreign research communities. European Union accession in 2004 transformed that opening into membership of an integrated research-policy environment, while the public-research-institution reform of 2005–2007 supplied Academy institutes with a more appropriate legal and organisational framework. European programmes, multinational infrastructures, ERC competition, and extensive mobility subsequently changed the scale and expectations of Academy research. Regular international evaluation embedded external professional judgement within institutional governance, and later participation in CoARA demonstrated that the Academy had moved from importing European standards towards participating in their reform. Strategy AV21 connected research excellence with societal challenges without returning to the command structures of central planning. Open science, digital infrastructures, international recruitment, and European scientific networks further transformed the everyday culture of research. At the same time, public funding, national cultural responsibilities, cooperation with Czech universities, and service to Czech society ensured that Europeanisation did not dissolve the Academy's national institutional identity. By 2025, AV ČR was no longer chiefly a post-socialist organisation struggling to justify the survival of inherited institutes. It had become a self-governing network of public research institutions operating through international standards, European programmes, multinational partnerships, and competitive scientific environments while remaining deeply embedded in the Czech state and society. The historical significance of 1993–2025 therefore lies in the successful conversion of inherited scientific capacity into a new institutional form: one capable not merely of joining European science but increasingly of contributing to its research, infrastructures, debates, standards, and collective intellectual responsibilities.

2. Modernisation, Evaluation, Internationalisation, and Public Mission

The modernisation of the Czech Academy of Sciences after 1993 cannot be adequately described as a sequence of technical reforms imposed upon an institution inherited from state socialism. It was a deeper reconstruction of the relationship between scientific quality, institutional autonomy, public resources, international competition, and social responsibility. During the first years of AV ČR, modernisation necessarily meant removing organisational arrangements that had become incompatible with democratic governance and a plural research system. Over time, however, the meaning of modernisation expanded. It came to include systematic research evaluation, strategic management, competitive and institutional funding, professional research administration, digital infrastructure, international recruitment, European projects, open science, knowledge transfer, career development, and increasingly sophisticated communication with society. These developments were not independent lines of reform. Evaluation shaped decisions concerning funding and institute development; internationalisation changed the standards against which research was judged; modern infrastructure made international collaboration possible; and public visibility strengthened the political legitimacy required to maintain long-term public investment. The Academy therefore moved from a model in which legitimacy had been largely conferred by its formal position within the state to one in which legitimacy had to be continuously demonstrated through several audiences. Researchers had to persuade international disciplinary communities that their work was scientifically significant, Czech policymakers that institutional research funding

was justified, students that scientific careers were worth pursuing, partners that collaboration with Academy institutes could generate value, and the wider public that fundamental research belonged among the legitimate functions of a democratic state. This diversification of accountability is one of the most important characteristics of the period from 1993 to 2025. It transformed modernisation from an administrative programme into an enduring institutional condition. The Academy that emerged by the mid-2020s was consequently defined not by the completion of modernisation but by its capacity to modernise continuously without surrendering the long-term stability necessary for fundamental research (*Czech Academy of Sciences, 2025*; *European Commission, 2024*).

One of the first requirements of this transformation was to establish a concept of autonomy that did not reproduce the administrative isolation sometimes associated with the socialist research system. Academic freedom after 1989 could easily have been understood as freedom from state interference alone, but a publicly funded research organisation could not remain credible if autonomy meant exemption from external scrutiny. The Academy therefore gradually developed a model in which self-government and evaluation operated as complementary principles. Scientific communities were given extensive responsibility for electing institutional bodies, selecting directors, defining research programmes, and participating in strategic decisions, while the quality of those decisions became increasingly subject to independent assessment. This balance represented a significant institutional innovation in Czech conditions. Under the previous regime, scientific organisations had experienced strong political accountability without genuine autonomy; the post-1993 system attempted to construct autonomy accompanied by professional accountability. The distinction between the two forms of accountability was fundamental. Political accountability asks whether an institution fulfils legal, budgetary, and public obligations, whereas scientific accountability asks whether its research possesses originality, rigour, international relevance, and credible future potential. A mature academy must respond to both without permitting either to destroy the other. Government cannot determine scientific truth, but scientific institutions cannot determine their public financing without explanation or assessment. The governance model created after 1993 therefore sought an institutional middle ground between bureaucratic command and corporative self-protection. This equilibrium remained imperfect and periodically contested, but it provided the basic constitutional environment within which later reforms could develop. Modernisation in this sense began with governance because laboratories and international projects could not produce a genuinely modern institution if the mechanisms governing scientific authority remained politically dependent or professionally opaque (*Czech National Council, 1992*; *Czech Academy of Sciences, 2006*).

Research evaluation became the most visible practical expression of this new institutional philosophy. The Academy has conducted regular evaluations from the beginning of its post-1993 existence, and successive cycles increasingly refined the relationship between internal strategic management and external professional judgement. Evaluation initially carried a particularly severe meaning because the early transformation involved decisions about which institutes, teams, and research programmes should survive the transition from ČSAV. Once that emergency period passed, evaluation developed into a recurrent mechanism intended not merely to eliminate weak units but to identify strengths, weaknesses, emerging opportunities, and institutional risks. This change from punitive selection towards formative assessment was important for the stabilisation of research culture. Scientists are more likely to regard evaluation as legitimate when it contributes to institutional improvement rather than

functioning simply as a mechanism for retrospective ranking. The Academy increasingly sought to distinguish evaluation of scientific quality from automatic allocation of money, even though assessment inevitably influenced strategic and financial decisions. This separation recognised that a research institute is more complicated than the aggregate score of its recent publications. It may maintain unique infrastructure, long-term datasets, collections, public services, or specialist expertise whose future significance cannot be captured by short-term output indicators. Different disciplines also require different evidentiary standards. The publication patterns of mathematics, molecular biology, archaeology, history, or linguistics cannot responsibly be assessed through identical quantitative formulas. The maturation of Academy evaluation therefore consisted partly in learning to compare excellence without pretending that scientific diversity could be eliminated. By the 2020s, this principle had become explicitly connected with European debates over responsible research assessment (*Czech Academy of Sciences, 2016*; *Czech Academy of Sciences, 2024*).

The evaluation of research and professional activities for 2010–2014 marked an especially important stage in this development. It represented the most extensive assessment yet conducted within the Academy and was unusual in the Czech research environment for the scale of its international participation. More than 1,400 experts from approximately fifty countries took part, with particularly strong representation from Germany, the United States, and France. The basic evaluation unit was increasingly the research team rather than only the institute as an administrative whole, allowing assessment to distinguish different levels of quality within large and intellectually diverse organisations. During the first phase, thousands of selected research outputs were considered, while subsequent assessment examined teams and institutes in broader scientific and strategic contexts. The methodology relied upon informed peer review and disciplinary panels rather than simple bibliometric ordering. International experts were asked to judge research against the contemporary level of the relevant field, which fundamentally changed the frame of comparison. A team could no longer be regarded as excellent merely because it was one of the strongest within a domestic institutional hierarchy; it had to be situated within a wider professional environment. This approach strengthened the internationalisation of Academy governance even when the researchers being assessed were working on nationally specific subjects. A Czech historian, linguist, chemist, or physicist was increasingly evaluated through standards articulated by disciplinary communities that crossed national borders. The assessment also generated information for institute directors and Academy leadership, giving evaluation a strategic function rather than reducing it to a ceremonial audit. In that respect, the 2010–2014 cycle represented a point at which internationalisation entered the internal machinery of the Academy itself. Foreign participation was no longer confined to joint projects and conferences; it had become part of the institution's judgement about its own scientific quality (*Czech Academy of Sciences, 2016*).

The later evaluation cycles continued this movement while making disciplinary sensitivity more explicit. Assessment for 2015–2019 again combined examination of research outputs with broader consideration of scientific teams, their research directions, and their professional activities. Bibliometric information was used as evidence rather than as an autonomous decision-making mechanism, and the methodology sought to recognise differences among research cultures. This was especially significant for the humanities and social sciences, where books, critical editions, databases, archaeological reports, dictionaries, policy studies, and nationally oriented scholarship may have intellectual importance that is poorly

represented by journal-based metrics. The Academy's broad disciplinary profile forced it to confront evaluation problems that specialised research organisations could sometimes avoid. It could not adopt a method designed principally for experimental sciences without distorting humanities scholarship, nor could it judge laboratory-intensive research through standards developed for monographic disciplines. Evaluation therefore became a field of institutional learning in its own right. Panels had to understand the purpose of a team, the international position of its field, the relevance of different outputs, and the credibility of future research plans. Such assessment is more labour-intensive than mechanical bibliometrics, but it better corresponds to the epistemic diversity represented inside the Academy. The emphasis upon informed peer review also protected the institution from some of the distortions created when publication counts become targets rather than indicators. By the end of the 2010s, evaluation had therefore evolved from a post-socialist reform instrument into a mature component of institutional governance. Its significance lay not only in judging research but in defining what kind of organisation the Academy believed itself to be (*Czech Academy of Sciences, 2020*).

The decision to sign the Agreement on Reforming Research Assessment in 2022 and participate in the Coalition for Advancing Research Assessment placed this institutional tradition within a broader European movement. The significance of CoARA for the Czech Academy lies partly in the fact that it did not require the institution to abandon peer review in favour of an entirely foreign model. Rather, many of the principles promoted through European reform—recognition of diverse research contributions, emphasis on qualitative judgement, caution regarding inappropriate publication metrics, and resistance to crude institutional rankings—were compatible with directions that the Academy had already been developing. The 2024 Action Plan consequently framed reform as an extension and refinement of a longer evaluation history. It sought to improve transparency, recognise interdisciplinary work, strengthen the formative use of evaluation, and take seriously the diversity of research contributions. This development illustrates an important shift in the Academy's relationship with European science. During the 1990s, Czech institutions often looked towards Western Europe for models that could help replace compromised socialist practices. By the 2020s, AV ČR was participating in European processes through which evaluation standards themselves were being reconsidered. The Academy had become part of the conversation rather than simply the recipient of norms formulated elsewhere. This is a subtle but important measure of institutional maturity. European integration is deepest when a national institution possesses enough confidence and experience to contribute to collective reform rather than merely demonstrate compliance. Responsible assessment also connected evaluation with questions of research culture, integrity, open science, and career development. The object of evaluation was increasingly understood not only as a body of publications but as the broader environment through which knowledge is produced. Modernisation therefore moved beyond measuring science towards assessing the conditions that make good science sustainable (*Czech Academy of Sciences, 2024*).

Modernisation also required an extensive transformation of scientific infrastructure. The early Academy inherited buildings, equipment, technical systems, libraries, and laboratories constructed under very different economic and technological conditions. Many of these resources remained scientifically valuable in the 1990s, but some equipment had become obsolete and institutes frequently faced shortages in maintenance and capital investment. Modern experimental research increasingly depended upon instrumentation whose costs exceeded the capacity of individual teams or even individual institutes. Computing became

indispensable across fields, while digital communication transformed access to publications, data, and international collaboration. Over the following decades, national programmes, European structural resources, competitive grants, and collaborative investments enabled substantial renewal. Modernisation did not mean replacing every inherited building or instrument; it meant integrating existing institutional capacity into an environment shaped by new technologies and increasingly shared infrastructures. Laboratories became more dependent upon advanced imaging, high-performance computing, specialised databases, precision measurement, and complex technical support. Humanities institutes likewise experienced infrastructural transformation through digitisation, corpus building, databases, geographic information systems, digital archives, and computational methods. The boundary between scientific infrastructure and information infrastructure consequently became less distinct. A modern Academy institute increasingly required reliable digital services, data stewardship, cybersecurity, licensing, research repositories, and technical staff alongside traditional disciplinary expertise. These changes expanded the professional population supporting scientific work. Researchers remained at the centre, but modern science depended increasingly upon engineers, data specialists, project administrators, librarians, IT professionals, and infrastructure managers. Institutional modernisation therefore changed the sociology of research as well as its equipment.

European research infrastructures accelerated this development by encouraging Czech institutes to participate in capacities whose scale exceeded national boundaries. The logic of contemporary large infrastructure differs significantly from the older ideal of scientific self-sufficiency. A small or medium-sized state cannot realistically construct every advanced facility required by modern physics, biology, materials science, astronomy, environmental research, or digital humanities. Participation in European networks allows specialised capabilities to be distributed geographically while remaining accessible to researchers from multiple countries. For Academy institutes, such arrangements created two complementary possibilities. Czech scientists could gain access to facilities located elsewhere, and Czech institutions could host components valuable to international communities. The second possibility was especially important for institutional prestige because it changed Czechia from a country primarily seeking scientific access abroad into one capable of supplying infrastructure to European research. International users visiting Czech facilities bring collaborations, methods, students, and reputational networks with them. The host institute acquires incentives to maintain technical and organisational standards that satisfy external communities. Infrastructure therefore becomes an instrument of internationalisation even when the underlying equipment is physically located inside the Czech Republic. It also creates long-term obligations because major research infrastructures cannot be supported responsibly through short political cycles. Decisions about participation require strategic assessment of national scientific strengths and European complementarities. The Academy's expanding role in such infrastructures thus linked domestic research policy to transnational scientific planning. Modernisation became inseparable from interdependence.

Digital transformation produced a parallel change in scholarly communication. During the early 1990s, access to international scientific literature remained affected by subscription costs, limited electronic connectivity, and the institutional legacy of Cold War information systems. By the 2000s and 2010s, electronic journals, databases, repositories, and online collaboration had become normal components of academic work. The Academy Library and institute libraries increasingly functioned not merely as repositories of printed material but as

gateways to distributed global information systems. Bibliographic registration through ASEP created an increasingly systematic record of Academy outputs, while repositories made it possible to attach full texts and later research data. Digitisation projects preserved older publications and collections while widening access beyond physical reading rooms. The significance of these changes was both practical and epistemic. Researchers could search vast corpora more quickly, collaborate with distant colleagues in real time, and analyse sources at scales that traditional methods made difficult. At the same time, digital abundance created new problems concerning data quality, licensing, preservation, cybersecurity, and reproducibility. Information became easier to circulate but also more dependent upon infrastructures whose failure or obsolescence could threaten access. The modern Academy therefore required policies governing not only the production of knowledge but its digital lifecycle. This development anticipated the emergence of open science as one of the defining institutional questions of the 2020s. Modernisation had moved from acquiring access to information towards determining how publicly financed knowledge should itself be made accessible.

The Open Science Principles approved by the Academy Council in November 2024 formalised this evolution. The document emphasised openness, transparency, FAIR data principles, sustainable repositories, open access, and the responsible availability of publications, data, software, and supporting materials where legal, ethical, security, or intellectual-property considerations permit. It adopted the increasingly standard formulation that research should be "as open as possible, as closed as necessary", recognising that openness is a norm requiring judgement rather than an absolute rule. The principles also linked open-science practices to future evaluation, thereby connecting information policy with institutional incentives. Central support was assigned to the Library of the Czech Academy of Sciences, whose specialised Open Science Department had been created in 2022. This organisational arrangement is historically revealing. Functions that had once been regarded primarily as library support became central components of research governance. Data-management plans, repositories, persistent identifiers, metadata standards, licences, and FAIR practices now affect eligibility for European grants, reproducibility, collaborative efficiency, and public access. Open science also changes the social contract surrounding public research because taxpayers and policymakers increasingly expect publicly supported results to be accessible where legitimate restrictions do not apply. Yet the Academy's formulation preserved a necessary balance with intellectual property, sensitive data, and other constraints. The institutionalisation of open science therefore demonstrated a mature understanding of modernisation: openness had to be supported by technical systems, professional expertise, ethical rules, and sustainable financing rather than proclaimed rhetorically (*Czech Academy of Sciences, 2024*).

Personnel policy underwent comparable transformation because modern scientific institutions compete through the ability to attract and retain people. The Academy inherited strong research schools but also career structures shaped by the relative immobility of the socialist labour system. After 1989, Czech researchers suddenly entered an international labour market in which talented scientists could pursue doctoral, postdoctoral, and permanent positions across Europe and beyond. Mobility generated enormous intellectual benefits but also created a danger of one-directional brain drain. Modernisation therefore required institutes to become places to which researchers might return or migrate, not merely institutions from which Czech scientists departed for stronger foreign centres. This demanded

transparent recruitment, competitive working conditions, support for early-career independence, international grant assistance, and organisational cultures accessible to researchers who did not speak Czech. Institutes increasingly advertised positions internationally and hosted researchers whose careers had developed in other scientific systems. Czech scientists returning from foreign institutions imported not only techniques and contacts but expectations concerning management, mentorship, authorship, laboratory organisation, and research integrity. Personnel internationalisation consequently changed institutional culture from within. Competition also exposed structural disadvantages such as salary levels, housing costs in major research centres, administrative complexity, and uneven career security. Modernisation in human resources could therefore not be solved through institutional declarations alone. It depended upon the wider economic and regulatory environment of Czech science.

The growing emphasis on early-career support reflected recognition that institutional continuity cannot depend simply upon retaining established scientific elites. A research organisation oriented towards the future must provide credible pathways through which younger researchers can become independent investigators. European Research Council Starting and Consolidator Grants intensified this expectation because they reward ambitious researchers at stages when institutional support can have a decisive effect on career development. Institutes capable of hosting such researchers need laboratories, project administration, mentoring, recruitment flexibility, and sufficient independence for new teams to pursue intellectually risky work. The Academy consequently expanded forms of support intended to strengthen excellence and improve competitiveness for prestigious international funding. By 2025, the Academy Council's strategic portfolio explicitly included scientific careers, excellence programmes, ERC support, and related initiatives. This marks an important historical change from the personnel logic of the early transformation. During the 1990s, management was frequently concerned with reducing inherited staffing and evaluating whether existing positions could be justified. By the 2020s, a major strategic question was how to attract the next generation of internationally competitive researchers and prevent career structures from becoming either excessively rigid or excessively precarious. The problem had shifted from contraction to reproduction. That shift itself indicates the institutional normalisation of the post-socialist Academy (*Czech Academy of Sciences, 2025*).

Gender equality and broader questions of institutional culture became increasingly visible within the same process. The earlier academy tradition, like much of European science, had developed within professional structures in which women faced unequal access to scientific careers, leadership, recognition, and the uninterrupted career trajectories often required for senior positions. Post-1993 democratisation did not automatically eliminate these inequalities because formal legal equality and institutional practice are not identical. European research policy progressively made gender equality, work-life balance, transparent recruitment, and organisational culture more explicit components of institutional modernisation. The Czech Academy responded through dedicated analysis, policy measures, and strategic planning, culminating by the end of the period in the Gender Equality Plan for 2025–2027. Such measures should not be interpreted as external social policy added to scientific activity. Recruitment and retention directly affect the research capacity of an institution. A system that systematically loses talented researchers because career structures are incompatible with parental responsibilities or because leadership pathways contain informal barriers wastes scientific capital. Gender equality therefore intersects with excellence, mobility, career sustainability,

and institutional legitimacy. It also demonstrates how the meaning of a "modern European research organisation" expanded between 1993 and 2025. Modernisation initially concentrated on autonomy, governance, evaluation, and financing; later it increasingly incorporated the quality of the research environment itself (*Czech Academy of Sciences, 2025*).

Competitive funding transformed research behaviour alongside institutional evaluation. The Academy retained institutional financing because long-term research cannot be sustained entirely through temporary grants, but project funding became increasingly important after 1989. Researchers competed through Czech grant agencies, ministries, European programmes, foundations, and international schemes. Competitive funding encouraged teams to formulate explicit research questions, timelines, collaborations, and deliverables assessed by external reviewers. It also increased the mobility of resources because successful investigators could attract substantial funding beyond the baseline provided to their institutes. Such competition can strengthen scientific dynamism, but it also creates institutional risks. Excessive dependence on short projects may reward fashionable topics, increase administrative burden, encourage precarious employment, and make long-term infrastructure difficult to sustain. The Academy therefore developed within a mixed funding system in which institutional and competitive sources perform different functions. Stable funding protects continuity, specialised capacities, and the ability to pursue questions whose outcomes cannot be predicted in advance. Competitive grants create external challenge, support new directions, and connect Czech researchers with national and international peer-review systems. The balance between these mechanisms remained politically contested because different models of research policy assign different weights to stability and competition. The Academy's experience suggests that the two should be treated as complementary rather than mutually exclusive. Modernisation did not mean replacing institutional support with a research market; it meant embedding long-term institutions within increasingly competitive scientific environments (*Czech Academy of Sciences, 2025*).

Internationalisation operated through several layers simultaneously. At the most immediate level, researchers travelled, published internationally, attended conferences, and established direct collaborations. At the institutional level, Academy institutes entered multinational projects and bilateral agreements. At the Academy-wide level, AV ČR participated in organisations representing academies and research communities across Europe and the world. These layers became mutually reinforcing. Individual collaborations could grow into institutional partnerships, while membership in international organisations created opportunities for researchers to join expert panels and scientific-policy networks. By the 2020s, the Academy maintained structured mobility and Mobility Plus programmes with partners in Europe, Asia, Africa, and elsewhere, illustrating that European integration did not produce geographical closure. Calls active around 2024–2025 involved partners such as the German Academic Exchange Service, the Slovak Academy of Sciences, the National Science Foundation of China, Japan Society for the Promotion of Science, India's Council of Scientific and Industrial Research, Italy's National Research Council, and other institutions. Such programmes may appear modest beside major Horizon projects, but they perform a distinctive function. They allow exploratory cooperation, researcher exchange, and relationship-building that can later support larger projects. Internationalisation is rarely produced only by large grants; it is also constructed through repeated interpersonal contact. The Academy's global

network therefore rested upon many different institutional mechanisms rather than a single European programme (*Czech Academy of Sciences, 2025*).

Participation in organisations such as ALLEA and the European Academies Science Advisory Council added a political and epistemic dimension to this internationalisation. ALLEA brings together academies of sciences and humanities across Europe and addresses issues ranging from research conditions and integrity to cultural heritage and scientific policy. EASAC creates collective scientific advice for European policymakers by drawing upon expertise nominated through national academies. For AV ČR, participation in these organisations provided more than international prestige. It allowed Czech researchers to contribute to European scientific assessments on matters whose consequences cross national borders, including environment, energy, health, technology, and research governance. This form of participation differs from grant-funded collaboration because its product is often advice, consensus building, or strategic analysis rather than a conventional research output. It places the Academy within a European public sphere in which scientific organisations collectively address political institutions while maintaining claims to professional independence. The Academy's membership therefore broadened its public mission beyond the Czech Republic. Czech expertise could influence European discussions, while European assessments could be translated back into national debate. This circulation of expertise demonstrates how internationalisation and public responsibility became increasingly difficult to separate. A modern academy is not merely a national organisation whose researchers happen to work abroad; it can function as a national node within systems of transnational scientific advice (*Czech Academy of Sciences, 2025*).

Relations with universities provided another essential dimension of modernisation. The post-socialist separation between Academy research and university education gradually gave way to extensive institutional interdependence. Academy researchers participate in doctoral programmes, teach specialist courses, supervise dissertations, and work in joint scientific teams. Universities provide the educational environment from which many future Academy researchers emerge, while Academy institutes offer specialised laboratories, collections, archives, and full-time research settings that can significantly strengthen doctoral training. Joint appointments and shared projects make the boundary between the two sectors increasingly porous. This cooperation also helps prevent a national research system from dividing into isolated institutional cultures. Young researchers who move between university and Academy environments carry methods and networks across organisational boundaries. The relationship can still produce competition over public funding, prestigious researchers, or ownership of research infrastructure, but such competition occurs within a much denser framework of collaboration than existed during the strongest period of ČSAV centralisation. European programmes have further encouraged cross-sector partnerships because major consortia frequently combine universities, academies, hospitals, companies, and public agencies. The modernisation of AV ČR consequently involved abandoning any residual aspiration to monopolise fundamental research. Its strength increasingly derived from complementarity rather than hierarchy. This shift was both scientifically productive and politically important because the Academy's legitimacy became easier to defend when its institutes were visibly integrated into the wider Czech educational and research system (*Czech Academy of Sciences, 2025*).

Strategy AV21 was perhaps the clearest institutional attempt to connect modernisation, interdisciplinarity, external cooperation, and public mission within a single programme.

Introduced in the middle of the 2010s under the motto "Top research in the public interest", the strategy encouraged institutes to organise cooperation around broad societal challenges rather than remain confined within established disciplinary and administrative boundaries. Its programmes addressed subjects such as energy, environment, health, food, social change, cultural identity, space, emerging technologies, and later artificial intelligence. The strategy did not transform the Academy into a mission-driven organisation at the expense of curiosity-based research. Instead, it created an additional layer through which fundamental expertise could be mobilised around questions whose solution required several disciplines. This was particularly important because many contemporary challenges cannot be divided neatly into technical and social components. Climate adaptation involves physical science, ecology, economics, law, behaviour, and public policy; artificial intelligence raises mathematical, technological, ethical, linguistic, economic, and legal questions; demographic change combines biology, sociology, economics, psychology, and policy. Strategy AV21 gave the Academy a framework capable of exploiting its unusually broad disciplinary composition. It also encouraged cooperation with universities, state bodies, businesses, and other external partners. By 2025, after a decade of operation, fifteen programmes were active, and new themes included artificial intelligence, sustainable food production, assisted reproduction, and relationships between technology and society. The durability of the programme suggests that public-oriented interdisciplinarity became an institutional feature rather than a temporary communication campaign (*Czech Academy of Sciences, 2025*).

The creation of Strategy AV21 also reflected an important lesson about political legitimacy. In retrospective discussion, Academy leadership connected the strategy partly with the experience of budgetary pressures and the recognition that the institution had not always communicated the social relevance of its research effectively. This reveals a broader transformation in how an academy in a democracy must understand public support. Scientific excellence may be necessary for institutional legitimacy, but it is not always sufficient if citizens and policymakers cannot see how the institution relates to issues affecting society. The answer cannot simply be to promise immediate economic returns from every research project, because that would misrepresent the nature of fundamental inquiry. A more sustainable approach is to demonstrate how deep disciplinary expertise creates capacities that can be mobilised when new problems emerge. Strategy AV21 helped make this relationship visible by showing that research motivated by basic scientific questions could interact with public policy, technology, health, environmental management, or cultural understanding. The phrase "public interest" therefore did not imply that every project should have a direct client. It referred more broadly to the idea that a national research organisation should maintain knowledge capacities whose value extends beyond the immediate interests of individual researchers. This conception linked the Academy's modern public mission with the older historical role of academies as institutions responsible for durable knowledge. The difference lay in the democratic requirement that this mission be explained and demonstrated publicly rather than asserted by institutional status alone (*Czech Academy of Sciences, 2024*).

Science communication expanded substantially as part of this new public orientation. The Academy developed a broad portfolio including festivals, lectures, open days, exhibitions, magazines, podcasts, videos, school activities, student internships, and public discussions. The Week of the Czech Academy of Sciences emerged from the earlier Week of Science and Technology and became the largest nationwide festival through which institutes opened laboratories, libraries, and research environments to visitors. The Science Fair developed into

another major platform, bringing Academy institutes together with universities, science centres, educational organisations, and innovative companies. These activities changed the relationship between researcher and public in a subtle but significant way. Traditional popularisation often imagined a one-directional process in which experts simplified established knowledge for passive audiences. Contemporary outreach increasingly includes dialogue, demonstrations, questions, citizen participation, and opportunities to see how research is actually conducted. Visitors encounter not only finished results but instruments, laboratories, field methods, and researchers themselves. This visibility is important because public trust depends partly upon understanding the procedures through which scientific claims are produced. The Academy explicitly describes interaction between researchers and the public as an important purpose of its outreach programmes. Popularisation consequently became part of institutional culture rather than a peripheral activity reserved for unusually communicative scientists (*Czech Academy of Sciences, 2025*).

The scale of the Science Fair illustrates the extent to which this public mission had grown by the end of the period. The 2024 edition attracted a record 58,000 visitors over three days, with forty-seven Academy institutes participating alongside universities, science centres, innovative companies, and other organisations. Interactive exhibits and temporary laboratories allowed visitors to experiment rather than simply observe. Panel discussions connected cutting-edge research with contemporary public questions, while popular science formats made complex subjects accessible to people outside specialist communities. Such attendance would have been difficult to imagine during the uncertain institutional climate of the early 1990s, when the Academy was still explaining why it should survive as a research organisation. By the 2020s, tens of thousands of people were voluntarily entering a public event organised around science. Attendance figures cannot by themselves prove public trust or scientific literacy, but they indicate a substantial social demand for direct engagement with research. They also demonstrate the Academy's capacity to organise outreach at a scale extending far beyond individual institute open days. The Science Fair became a meeting place between research institutions, education, industry, families, students, and media. In institutional terms, this represented a new form of public visibility in which the Academy acted not only as a producer of knowledge but as an organiser of national scientific culture. The 2024 Annual Report explicitly treated science promotion and dissemination of scientific knowledge as an integral part of the Academy's mission (*Czech Academy of Sciences, 2025*).

Public communication also became increasingly professionalised through media relations and Academy-produced publications. The Centre of Administration and Operations and its external-relations structures developed regular channels for communicating research results, institutional positions, and public events. Publications such as *A / Magazine* and *A / Easy* created different formats for general readers, while digital newsletters, podcasts, video projects, social media, and online reporting expanded the range of audiences. Academia publishing house continued a much older tradition of scholarly and intellectual publication while also connecting Academy research with wider reading publics. The *Science Around Us* series offered accessible introductions to fields, institutes, scientific personalities, and research problems. Such communication performs several functions simultaneously. It promotes scientific literacy, helps recruit future researchers, makes public expenditure more visible, and gives scientists experience in explaining their work beyond disciplinary language. It can also provide a partial defence against misinformation by ensuring that authoritative scientific institutions possess established public channels before a crisis begins. Yet

professional communication carries risks if it becomes excessively promotional. Scientific institutions gain trust not by presenting every result as a breakthrough but by communicating uncertainty, disagreement, limitations, and the provisional nature of knowledge. The modernisation of public mission therefore requires standards of communication compatible with scientific integrity. Visibility is most valuable when it strengthens rather than simplifies the epistemic character of research (*Czech Academy of Sciences, 2024*).

The public mission became especially visible when scientific expertise entered policy discussions. Academy researchers regularly contribute expert opinions, analyses, advisory reports, and testimony on questions involving environment, health, energy, language, law, demographics, economics, cultural heritage, technology, and security. Such work occupies a sensitive institutional space because scientific advice is neither identical to political decision-making nor entirely separate from it. Researchers can evaluate evidence, model consequences, identify uncertainty, and compare policy options, but democratic institutions must ultimately decide among competing public priorities. The authority of an academy therefore depends partly upon maintaining the distinction between expert judgement and political mandate. Historical experience gives this principle particular weight in the Czech context, where scientific institutions previously operated under a political system that claimed authority over acceptable knowledge. The modern public mission requires almost the opposite arrangement: science should be sufficiently autonomous to provide advice that political authorities may find inconvenient. At the same time, scientists must resist the temptation to treat expertise as a substitute for democratic legitimacy. The Academy's contribution is strongest when it clarifies what is known, what remains uncertain, and what consequences different courses of action may plausibly produce. This model turns scientific autonomy into a public resource rather than institutional privilege. The more deeply AV ČR became integrated into Czech and European policy networks, the more important this distinction became.

Crises during the 2020s tested whether decades of modernisation had created such a capacity. The COVID-19 pandemic demonstrated the importance of maintaining expertise before an emergency begins. Researchers working in molecular biology, medicine, modelling, economics, sociology, psychology, and other fields could contribute because relevant knowledge, laboratories, data, and international networks already existed. The war against Ukraine created different but similarly multidisciplinary demands involving energy, migration, security, geopolitics, historical interpretation, economics, language, and support for displaced researchers. Environmental emergencies and climate-related risks further illustrated the need for long-term monitoring and interdisciplinary analysis. These episodes showed that institutional resilience depends upon precisely the capacities that modernisation had developed: international networks, flexible research teams, digital communication, public outreach, and expertise distributed across many disciplines. They also demonstrated why the public mission cannot be organised only around predictable applications. A society cannot know in advance which areas of fundamental knowledge will become urgently necessary. Maintaining breadth therefore has strategic value even when particular fields appear remote from current political priorities. The Academy's role during crisis thus reinforced the argument that fundamental research and public usefulness should not be treated as opposites. Long-term research becomes socially useful partly because it preserves options for problems that have not yet emerged.

Knowledge and technology transfer added a more direct application-oriented dimension to the Academy's public mission. Over the post-1993 period, institutes developed greater capacity to

protect intellectual property, patent inventions, license technologies, collaborate with companies, and create spin-off relationships where appropriate. By the early 2020s, knowledge and technology transfer had become the subject of dedicated strategic planning within the Academy. The 2024 Annual Report recorded continuing development of transfer activities and preparation of plans for subsequent years under a strategy approved in 2022. Such institutionalisation matters because successful transfer rarely occurs automatically when a scientist makes a discovery. Researchers need legal advice, market assessment, intellectual-property support, partner identification, contract expertise, and sometimes entrepreneurial assistance. These functions require specialised professionals capable of translating between scientific and commercial environments. Yet the Academy's transfer mission differs from that of an industrial research company. Its institutes remain fundamentally public research organisations, and not every field should be judged by patents or commercial revenue. Humanities research may influence education, legislation, cultural institutions, or public understanding without producing proprietary technologies. Fundamental theoretical work may create applications only decades later. A mature transfer policy therefore broadens rather than narrows the concept of research application. It asks how knowledge can circulate beyond the institute while respecting disciplinary diversity and the long temporal horizon of basic science (*Czech Academy of Sciences, 2025*).

Modernisation also changed the Academy's geographical relationship with Czech society. Although its central administration and many major institutes are concentrated in Prague, significant research capacities exist in Brno, České Budějovice and other locations, while field stations, observatories, archaeological sites, environmental research areas, and regional collaborations extend scientific activity across the country. Public festivals similarly reach beyond the capital. The Week of the Czech Academy of Sciences includes events in numerous Czech cities and opens research workplaces directly to local communities. This matters because a national academy risks appearing metropolitan if its public presence is confined to the capital. Research on landscapes, biodiversity, regional history, water systems, archaeology, language, and social change often depends upon sustained engagement with places outside Prague. Institutes therefore connect national and regional scales. The Academy's public legitimacy benefits when citizens encounter research as something occurring within their own regions rather than an abstract activity concentrated behind institutional walls in the capital. Digital participation has further reduced geographical barriers by making lectures, publications, datasets, and other resources available beyond physical sites. The modern public mission consequently involves both territorial presence and digital accessibility. This combination broadens the meaning of a national scientific institution in a relatively small state.

The relationship between public mission and internationalisation is particularly important because the two can appear contradictory if understood superficially. Internationalisation encourages researchers to publish in global journals, participate in European consortia, spend time abroad, and compete for international grants. Public mission requires them to contribute to Czech society, communicate in Czech, support national cultural knowledge, and respond to domestic problems. In practice, the two orientations frequently strengthen one another. A scientist connected to leading international networks can bring methods, data, and comparative perspectives into Czech debates. Research on Czech-specific phenomena can acquire international relevance when framed within broader theoretical questions. Humanities institutes can protect national language and cultural heritage while participating fully in

European scholarship. Natural-science teams can address local environmental problems using global models and international datasets. International reputation can also strengthen the credibility of expert advice domestically. The key institutional challenge is therefore not choosing between national and international science but preventing one orientation from crowding out the other. AV ČR increasingly sought to define itself through precisely this synthesis: research at an internationally competitive level undertaken within an institution possessing specific responsibilities towards Czech society and culture. Its official mission explicitly combines advancement of knowledge with attention to the needs of Czech society and national culture (*Czech Academy of Sciences, 2025*).

The same synthesis applies to research topics that do not produce obvious immediate applications. Academies of sciences have historically justified their existence partly by supporting work whose value cannot be predicted through market demand. Mathematics, theoretical physics, fundamental chemistry, evolutionary biology, historical source criticism, linguistic research, philosophy, and many other areas may generate consequences that appear only after long periods or through indirect intellectual pathways. Modernisation therefore could not reasonably mean transforming every institute into a contract-research organisation. The Academy's challenge was to make long-term research compatible with contemporary expectations of accountability without reducing scientific purpose to short-term utility. Evaluation helped by asking whether research was excellent and strategically credible rather than merely immediately profitable. Internationalisation demonstrated whether teams participated meaningfully in disciplinary communities. Public communication explained why knowledge can possess value before applications are known. Strategy AV21 created pathways through which fundamental expertise could be connected with public challenges when appropriate. Knowledge transfer provided specialised mechanisms for areas where practical application was already possible. Together, these instruments produced a more differentiated concept of usefulness. The modern Academy could defend basic science not by claiming that it was socially detached, but by showing that a society's long-term knowledge capacity depends precisely upon research whose future uses cannot be completely specified in advance.

By the final years of the period, research integrity and research security added further dimensions to modernisation. Greater international openness had created enormous scientific benefits, but global technological competition and geopolitical tension introduced risks concerning sensitive knowledge, foreign interference, cyber threats, dual-use technologies, intellectual property, and dependency upon particular international partners. Research security therefore appeared among the Academy Council's strategic priorities for the 2025–2029 period. Its emergence is historically striking because the institution that spent the 1990s overcoming politically imposed restrictions on international contact now had to develop mechanisms for managing the risks created by extensive openness. The lesson cannot be a return to isolation. Rather, modern research organisations must distinguish legitimate collaboration from vulnerabilities that could threaten researchers, infrastructure, data, or national and European interests. Similar complexity applies to research integrity. International competition and publication pressure can encourage undesirable practices if institutional incentives reward quantity without sufficient attention to quality. Responsible assessment, open science, transparent authorship, data stewardship, and ethics procedures therefore form part of the same institutional ecosystem. Modernisation has consequently become increasingly normative. It concerns not simply whether science is efficient but whether it is

conducted in ways capable of sustaining trust. By 2025, AV ČR's strategic agenda placed research security, evaluation, international cooperation, digital transformation, and communication alongside one another, demonstrating how interconnected these responsibilities had become (*Czech Academy of Sciences, 2025*).

The cumulative effect of these changes was to alter what could reasonably be meant by "institutional performance". In the early transformation period, performance could be discussed primarily through survival, restructuring, publications, and personnel quality. By the 2020s, the relevant field had become considerably wider. An excellent institute was expected to produce strong research, participate internationally, train younger scientists, manage data responsibly, maintain infrastructure, attract grants, cooperate with universities, communicate with society, support ethical research, and contribute where appropriate to knowledge transfer or public expertise. Leadership was consequently required to balance scientific, financial, legal, personnel, communication, and strategic responsibilities. This expansion produces undeniable administrative burdens and can create tension when researchers perceive institutional procedures as competing with scientific work. A modern Academy therefore faces a permanent dilemma: sufficient administration is necessary for complex international science, but excessive administration can consume the time and flexibility that science requires. The solution cannot be simply to minimise administration because European projects, employment law, ethics, data governance, procurement, security, and public accountability are genuinely complex. The more realistic objective is professionalisation that transfers administrative burden away from researchers where possible while preserving necessary safeguards. Institutional capacity should enable research rather than dominate it. This tension is itself characteristic of mature research systems rather than evidence that modernisation has failed.

Modernisation between 1993 and 2025 should consequently be understood as a process of increasing institutional complexity accompanied by attempts to preserve intellectual freedom. The Academy became more internationally connected, more intensively evaluated, more digitally dependent, more publicly visible, and more strategically managed than it had been at the beginning of the period. Each development created new capacities and new vulnerabilities. Internationalisation expanded opportunities but increased competition for personnel. Evaluation strengthened accountability but risked bureaucratisation if poorly designed. Digitalisation improved access but generated preservation and security challenges. Public communication increased visibility but created pressure to simplify or dramatise scientific results. Knowledge transfer strengthened connections with society and industry but could distort priorities if commercial outcomes became universal measures of value. Open science increased transparency while requiring careful treatment of sensitive data and intellectual property. Modernisation was therefore never a straightforward accumulation of improvements. It was a continual process of balancing competing institutional goods. The Academy's achievement lies less in eliminating these tensions than in developing mechanisms through which they can be negotiated.

This perspective also explains why evaluation, internationalisation, and public mission should not be treated as separate policy categories. Evaluation connects the Academy with external scientific standards. Internationalisation provides the communities and comparisons through which those standards acquire meaning. Public mission explains why excellence deserves sustained national support. Modern infrastructure gives researchers the capacity to compete internationally, while institutional funding allows them to pursue long-term work that short

project cycles cannot sustain. Open science extends research into public and international knowledge environments, while communication makes the social character of science visible. Strategy AV21 links disciplinary depth with interdisciplinary public problems. Career policy ensures that these capacities can be transmitted to new generations. The entire system therefore operates through mutual dependence. Weakening one component can affect several others. Without credible evaluation, institutional funding becomes harder to defend; without stable funding, international excellence becomes difficult to sustain; without international excellence, public authority may lose credibility; without public legitimacy, political support for long-term funding becomes vulnerable. The post-1993 history of AV ČR is partly the history of learning how these institutional relationships fit together.

By 2025, this interdependence was visible in the strategic priorities articulated for the next leadership period. The Academy Council identified legislation and strategic management, economic questions, European funding, knowledge and technology transfer, international cooperation, research evaluation, scientific excellence and careers, cooperation with universities, digital transformation, sustainable development, research security, public communication, and Strategy AV21 among its principal areas of attention. Such a list would have looked very different in 1993. Then, the most urgent problems concerned institutional survival, restructuring, legal continuity, personnel reduction, and the establishment of professional evaluation after decades of political control. By 2025, the institution's agenda had become that of a mature European research organisation confronting the challenges of competitiveness, openness, security, sustainability, and societal engagement. The historical contrast is more revealing than any single indicator of publication or funding success. It shows how the basic questions surrounding the Academy changed over three decades. The institution moved from asking whether inherited scientific capacity could survive democratic transformation to asking how that capacity should be positioned within the future of European and global science. Modernisation had therefore changed not only the Academy's structures but its horizon of expectation (*Czech Academy of Sciences, 2025*).

Thus, modernisation, evaluation, internationalisation, and public mission formed four interconnected dimensions of the Czech Academy of Sciences' development between 1993 and 2025 rather than four parallel reforms. Modernisation reconstructed governance, infrastructure, information systems, research administration, career structures, and institutional culture. Evaluation converted autonomy into accountable self-government by subjecting institutes and research teams to increasingly systematic and international professional judgement while progressively moving away from simplistic reliance on quantitative indicators. Internationalisation transformed the Academy from an organisation recovering from Cold War restrictions into an active participant in European programmes, research infrastructures, academy networks, bilateral partnerships, global mobility, and debates over the future organisation of science. Public mission simultaneously broadened from the defence of publicly funded fundamental research towards science communication, education, interdisciplinary challenge-oriented programmes, expert advice, open science, knowledge transfer, and direct dialogue with society. Strategy AV21 provided a particularly visible synthesis by connecting disciplinary excellence with socially significant problems under the principle of research in the public interest. Large public events such as the Science Fair and the Week of the Czech Academy of Sciences made research institutions accessible to tens of thousands of citizens, while digital communication extended that visibility much further. Open-science policies redefined accessibility as part of responsible research, and reforms of

research assessment linked the Academy to wider European efforts to protect quality from distorted metric incentives. International recruitment and career support made the composition of research communities themselves increasingly European and global. At the same time, the persistence of stable institutional financing preserved the long temporal horizons without which fundamental research, collections, infrastructure, and scientific memory could not survive. The result was neither a market-oriented research corporation nor a restoration of the centrally organised academy inherited from ČSAV. By 2025, AV ČR had developed into a self-governing public research system in which international excellence, national responsibility, institutional continuity, and social accountability were expected to reinforce one another. The historical importance of this development lies precisely in that synthesis: the Academy modernised successfully not by abandoning the institutional idea of long-term publicly supported science, but by redefining how such science could remain autonomous, internationally competitive, professionally evaluated, open to society, and publicly legitimate in a democratic European state.

3. Why the Modern Academy Is Central to the History of Czech Science

The centrality of the modern Czech Academy of Sciences to the history of Czech science does not derive from a claim that it has ever represented the entirety of scientific life in the Czech lands. Universities, museums, hospitals, technical institutes, learned societies, industrial laboratories, state research organisations, libraries, and individual scholars have all made indispensable contributions to Czech knowledge production. To treat the Academy as the sole institutional protagonist would therefore reproduce precisely the kind of hierarchical interpretation that the democratic transformation after 1989 sought to overcome. Its centrality has a different character. The Academy occupies an exceptional position because several of the most important historical processes that shaped Czech science intersect within its institutional genealogy. The transformation of learned scholarship into organised research, the development of nationally representative scientific institutions, the expansion of permanent research employment, socialist centralisation, political interference, reform, normalisation, democratic reconstruction, European integration, and contemporary debates over the public value of science can all be examined through the Academy and its predecessors. Few other Czech institutions contain so many historical layers within one organisational lineage. The modern Academy therefore functions simultaneously as a research organisation, a successor institution, a repository of scientific memory, and a living outcome of previous reforms. Its history is not simply one sectoral story among many because changes within the Academy repeatedly reflected wider changes in the relationship between knowledge, state, society, and political authority. At the same time, developments elsewhere in Czech science repeatedly altered the Academy's position, forcing it to renegotiate relations with universities, government, industry, and international scientific communities. The institution is therefore central not because it stood above Czech science, but because it occupied one of the principal intersections through which Czech science repeatedly reorganised itself. Understanding the modern Academy consequently provides a privileged perspective on the broader history of Czech scientific institutions without reducing that history to the Academy alone (*Franc et al., 2010*; *Mádlová, 2024*).

This distinction between centrality and supremacy is particularly important when interpreting the post-1993 Academy. ČSAV had formally occupied the position of the highest scientific

institution of socialist Czechoslovakia, a formulation compatible with the strongly hierarchical organisation of the communist state. AV ČR emerged within a fundamentally different constitutional order in which no institution could plausibly claim a monopoly over scientific legitimacy. Act No. 283/1992 established the Academy as an organisational component of the Czech Republic conducting research through its workplaces and financed through a separate chapter of the state budget, while its Academic Assembly became its highest self-governing body (*Czech National Council, 1992*). The law simultaneously recognised international cooperation and embedded representatives from universities and other sectors within the Academy's institutional environment. Such provisions reveal how the position of the Academy was reconceived after the collapse of state socialism. It remained a major public institution but no longer possessed authority by virtue of occupying the top of an administrative pyramid. Its significance had to be created through research quality, institutional capacity, collaboration, expertise, and public responsibility. This transformation makes the modern Academy historically more representative of democratic Czech science than a continuation of the hierarchical model might have been. It illustrates how a country could preserve a large institute-based research sector while abandoning the political logic that had previously concentrated authority within it. The Academy's post-1993 history therefore captures one of the central problems of Czech transformation: how to retain accumulated scientific capital without retaining the structures of political domination under which part of that capital had been organised. The solution was not perfect or instantaneous, but it established a durable distinction between public support and political control. That distinction became foundational to the place of AV ČR within the Czech research system.

The breadth of the Academy's disciplinary structure further explains its historiographical importance. The modern institution encompasses natural sciences, technical sciences, social sciences, and the humanities rather than representing a single specialised sector. By the mid-2020s it consisted of fifty-four public research institutions employing more than 8,000 people, over half of whom were university-educated researchers (*Czech Academy of Sciences, 2025*). This scale makes AV ČR the largest non-university research organisation in the Czech Republic and gives it an institutional presence across an unusually wide range of knowledge. Physics, chemistry, mathematics, astronomy, earth sciences, biology, medicine-related research, engineering, information science, history, archaeology, philosophy, linguistics, literature, economics, sociology, law, psychology, ethnology, and other fields coexist within the same broader organisation. Such breadth is historically significant because it preserves the older academy idea that different branches of knowledge belong to a common intellectual institution even though contemporary disciplines are highly specialised. The internal diversity of AV ČR means that almost every major transformation in Czech research policy affects its institutes differently. A change in bibliometric evaluation may have different consequences for experimental physics and literary studies; infrastructure funding may transform molecular biology but have less direct relevance to philosophy; digitisation may revolutionise archival research while simultaneously changing computational sciences through different mechanisms. The Academy therefore provides a unique laboratory for observing how a national scientific system accommodates epistemic diversity. Its internal history reveals that there is no single model of scientific modernisation applicable equally to all disciplines. The persistence of such a broad organisation also demonstrates that Czech public policy continued to regard both fundamental natural science and humanities scholarship as components of national research capacity. This breadth gives the modern Academy a representational significance that exceeds the contribution of any individual institute.

The modern Academy is also central because it embodies the Czech tradition of non-university fundamental research more fully than any other contemporary institution. As shown in *From Learned Societies to the Modern Research Organisation*, this tradition cannot be reduced to the Soviet reorganisation of science after 1948. Purkyně's 19th-century vision had already articulated the idea that permanent research institutions beyond the university might be necessary for scientific development, while pre-war academies and specialised institutes progressively created environments devoted primarily to research. ČSAV expanded that principle dramatically and politically subordinated it to the socialist state, but the institute form itself proved scientifically more durable than the political order that controlled it. After 1989, Czech policymakers and scientists therefore confronted a genuine institutional question rather than a purely ideological one. Should permanent non-university institutes be dissolved because their large-scale organisation had developed under socialism, or should they be reformed because they performed functions that a modern national research system continued to need? The survival and restructuring of AV ČR represented the second answer. Its institutes preserved the ability to concentrate researchers on long-term scientific programmes without the full teaching obligations characteristic of universities. They maintained laboratories, observatories, specialised libraries, archives, collections, field stations, databases, and infrastructures whose continuity could be difficult to guarantee through temporary projects or university departments alone. This organisational form also created strong disciplinary communities around research questions requiring sustained collective effort. Its persistence after 1993 therefore demonstrated that an institution could have been politically appropriated by socialism without being scientifically reducible to socialism. That distinction is crucial for interpreting the broader post-communist transformation of Czech science. The Academy's history shows that institutional modernisation often works through critical preservation rather than total institutional replacement.

This position gives AV ČR unusual importance for understanding the relationship between historical inheritance and institutional innovation. Every major political transformation in Czech history created pressure to distinguish what belonged to a previous regime from what possessed longer scientific value. The First Republic inherited institutions established under the Habsburg monarchy without thereby remaining an imperial scientific system. Post-war Czechoslovakia reconstructed universities and research organisations damaged by occupation while simultaneously developing new scientific capacities. ČSAV absorbed older institutions into a socialist framework but could not erase all of their disciplinary traditions. AV ČR inherited institutes from ČSAV but subjected them to democratic governance, international evaluation, and a plural research environment. The recurring pattern is therefore not institutional purity but selective inheritance. Scientific systems are composed of assets whose political and epistemic histories do not necessarily coincide. A laboratory constructed during a dictatorship can become part of democratic science; a collection created in an imperial state can acquire new meaning in a republic; a research programme initiated for state-planning purposes can generate methods later used for entirely different questions. The Academy is central to Czech scientific history because these processes of reinterpretation are visible within its organisational structure with exceptional clarity. Its modern form is simultaneously old and new, inherited and constructed, national and international. Such combinations make simplistic periodisation difficult but historically productive. Instead of dividing Czech science into self-contained political epochs, the Academy's history encourages analysis of how knowledge and institutions cross those boundaries. It therefore provides one of the strongest

empirical arguments for treating scientific time as partly autonomous from political chronology (*Franc et al., 2010*; *Franc & Dvořáčková, 2020*).

The post-1993 transformation itself became a major episode in Czech scientific history because it demonstrated that democratic reform could be achieved without erasing institutional capability. The founding Academic Assembly explicitly declared its intention to create a modern system of autonomous scientific workplaces contributing high-level research, international cooperation, education, and culture, while simultaneously acknowledging that reduction of institutes and staff formed part of that transformation (*Czech Academy of Sciences, 1993*). The following years saw substantial restructuring, personnel evaluation, institutional mergers and closures, budgetary pressure, and the creation of independent mechanisms for assessing research. By 1995, the Academic Assembly considered the adoption of the Academy's scientific conception to have completed the basic system of documents implementing the transformation project. These decisions were historically consequential because they established the principles under which AV ČR would subsequently develop. Autonomy was connected with evaluation rather than simply institutional survival. Scientific quality became a principal criterion for legitimacy. International cooperation was treated as an essential feature rather than a supplementary activity. Relations with universities were reconstructed around cooperation rather than institutional hierarchy. The transformation therefore created a new model of continuity in which preserving an institute required demonstrating future scientific value rather than invoking historical existence alone. This principle influenced subsequent research policy far beyond the immediate crisis of the early 1990s. The Academy became an early Czech example of how institutional autonomy could be combined with systematic external judgement. Its experience subsequently provided a reference point in wider national debates about research evaluation and public financing. The founding documents themselves thus reveal how consciously the Academy sought to redefine its place in Czech science.

Evaluation became historically important precisely because it altered the basis upon which scientific authority was distributed. Under state socialism, professional reputation had never disappeared, but it existed alongside political vetting, administrative hierarchy, and ideological considerations capable of affecting institutional status and individual careers. The post-1993 Academy progressively reconstructed a system in which scientific work was judged through peer review and increasingly international comparison. This was more than a managerial reform. It changed the epistemic constitution of the organisation by asking professional communities rather than political institutions to define whether research met contemporary disciplinary standards. Later evaluation cycles expanded the participation of international experts and developed methods more sensitive to differences among scientific fields. The process for 2010–2014, involving more than 1,400 experts from around fifty countries, made this international reference point especially visible (*Czech Academy of Sciences, 2016*). Such evaluation could be criticised, revised, or improved, but its underlying principle became deeply embedded in Academy governance. By the 2020s, the institution was participating in European discussions about responsible assessment through CoARA rather than merely importing external evaluation practices. This evolution from domestic reform to participation in European methodological debate symbolises the wider transformation of Czech science. It marks a shift from asking how Czech institutions could catch up with established Western systems towards participating in arguments about how European science itself should be governed. The Academy's evaluation history is consequently central to the history of Czech research policy

because it shows how standards of scientific legitimacy were reconstructed after communism. It also demonstrates that democratisation of science involves procedures of judgement as much as formal political freedom.

The Academy is equally central because it preserved scientific schools and specialised competences through the disruptive transition from socialism to democracy. Institutions are often described through statutes and budgets, but their deepest scientific capital resides in communities capable of solving particular kinds of problems. A chemistry institute is valuable not simply because it occupies a building but because generations of chemists have developed instruments, techniques, tacit knowledge, and professional relationships within it. An archaeological institute possesses more than offices because it contains excavation archives, field experience, interpretive traditions, and knowledge of sites accumulated over decades. A linguistic institute maintains lexical, grammatical, and corpus expertise whose formation extends across several generations. Similar forms of accumulated competence exist in mathematics, physics, biology, history, philosophy, astronomy, and other fields. The severe restructuring of the early 1990s risked destroying some of these communities, which helps explain why contemporaries warned about irreversible losses if reductions proceeded too rapidly. Yet many research schools survived and subsequently adapted to international competition. Their survival meant that the Czech Republic entered the European research environment with existing centres of expertise rather than having to build every scientific capacity from the beginning. This inherited human capital became one of the foundations of post-1993 scientific success. The Academy therefore provides an unusually clear example of how knowledge can be institutionally transmitted even when governance, financing, political ideology, and international orientation change radically. The history of its research schools is inseparable from the history of Czech science because those schools contributed generations of specialists to universities, public institutions, industry, and international research.

The disciplinary breadth of AV ČR also makes it central to understanding the diversity of post-socialist scientific transformation. The effects of 1989 were not uniform across Czech disciplines. Humanities and social sciences experienced especially deep intellectual reconstruction because many of their interpretive frameworks, permissible research topics, and international connections had been strongly shaped by communist ideological controls. Contemporary history, sociology, political thought, legal studies, economics, philosophy, and parts of cultural scholarship could reopen subjects that had been politically restricted or institutionally distorted. Researchers regained access to previously marginalised intellectual traditions and could reconnect fully with international debates. Natural and technical sciences faced a different transformation. Their central methods had often been less directly ideological, but laboratories had to overcome technological deficits, restricted mobility, uneven access to international literature, and the disappearance of parts of the planned industrial environment that had supported applied research. Some teams adapted quickly because they had maintained strong international reputations despite political limitations. Others required major reorientation or investment. The Academy contained both types of transformation simultaneously. It therefore allows historians to avoid treating "post-socialist science" as a single homogeneous process. Political liberation, market transformation, technological modernisation, internationalisation, and disciplinary restructuring affected fields differently. AV ČR's internal diversity makes those differences analytically visible and demonstrates how a national research institution can contain multiple temporalities of transformation.

Its relationship with universities makes the Academy central in another sense. Modern Czech science is not divided neatly between Academy research and university research; instead, the two sectors have become increasingly intertwined. The Academy's statutes explicitly assign its institutes roles in doctoral education, cooperation with universities, scientific training, international collaboration, expert activity, and research infrastructure (*Czech Academy of Sciences, 2006*). Academy researchers teach, supervise dissertations, participate in joint doctoral programmes, and cooperate with university teams, while university researchers use Academy laboratories, archives, collections, and infrastructures. This interaction represents an important historical reversal of the more hierarchical relationship that existed during parts of the ČSAV period. The modern Academy derives much of its strength from being embedded in the national research and education system rather than institutionally separated from it. Doctoral students often move between university faculties and Academy institutes, creating personal networks that make organisational boundaries less rigid than their legal structures suggest. Joint research projects similarly combine capacities from both sectors. Such cooperation affects the reproduction of Czech scientific elites because future professors, institute directors, research-group leaders, and specialists frequently develop careers spanning both environments. The Academy is therefore central not only because of the research performed inside its institutes but because it participates directly in the formation of the wider Czech scientific community. Its influence diffuses through educational and professional networks. The boundaries of the institution are consequently narrower legally than scientifically.

The scale and quality of Academy research provide another reason why it cannot be treated as peripheral to the national scientific story. The Academy's 2024 Annual Report stated, on the basis of Research, Development and Innovation Council data for 2018–2023, that AV ČR produced almost 36 per cent of the Czech Republic's results classified as excellent scientific research (*Czech Academy of Sciences, 2025*). Any such aggregate indicator must be interpreted carefully because research quality cannot be reduced to one percentage and disciplinary differences complicate comparison. Nevertheless, the figure illustrates the disproportionate contribution made by an organisation that represents only one component of the national research system. The Academy's significance is therefore not merely historical or symbolic. Its institutes remain active producers of internationally recognised research. This contemporary performance strengthens the analytical connection between institutional continuity and scientific value. Had the Academy survived only as a historical remnant, its relevance to the history of Czech science would primarily concern the past. Instead, the organisation retained sufficient research capacity to contribute substantially to the scientific output of the Czech Republic decades after its transformation. The continuity of the institution therefore cannot be explained solely through political protection or cultural prestige. It is reinforced by ongoing scientific productivity. This combination of historical depth and contemporary performance is comparatively unusual. The Academy is at once one of the oldest institutional lineages in Czech science and one of the country's principal contemporary research performers.

Internationalisation further places AV ČR at the centre of the story of Czech science's return to Europe after the Cold War. The Velvet Revolution ended political restrictions on international mobility, but reconstructing Czech participation in European science required much more than simply reopening borders. Researchers had to rebuild professional networks, institutes had to learn new funding systems, and scientific careers had to adapt to a labour market increasingly

organised across national boundaries. Academy institutes became important sites where this transition occurred. Foreign postdoctoral experience became normal for many younger Czech researchers, international recruitment expanded, and publication strategies became increasingly oriented towards global disciplinary communities. European Union accession in 2004 deepened these trends by embedding Czech research within the European Research Area and successive Framework Programmes. Participation in multinational consortia required institutes to acquire professional capacities in grant management, legal agreements, procurement, financial reporting, intellectual property, and international personnel administration. Europeanisation therefore changed the administrative culture of science as well as its intellectual networks. By the 2020s, Academy strategy explicitly concerned ERC competition, Horizon Europe, European research infrastructures, mobility, and participation in the European Research Area. The trajectory of AV ČR consequently mirrors one of the defining developments of Czech science after 1989: the movement from recovering international access towards functioning routinely inside transnational research systems. The Academy's transformation provides one of the clearest institutional measures of how far Czech science travelled during the period (*European Commission, 2024*).

This Europeanisation did not mean the disappearance of national scientific identity. On the contrary, the modern Academy demonstrates how national and international functions can become mutually reinforcing. Research on the Czech language, national history, archaeology, literature, cultural heritage, social transformation, landscapes, biodiversity, water systems, and demographic change addresses subjects whose significance is strongly rooted in Czech society. Yet such research can be methodologically international and contribute to comparative European or global debates. Conversely, frontier research in physics, chemistry, mathematics, molecular biology, astronomy, or materials science may have no specifically national object while substantially increasing the scientific capacity of the Czech Republic. The Academy's official mission captures precisely this dual orientation: it seeks to advance scientific knowledge at the international level while considering the specific needs of Czech society and national culture (*Czech Academy of Sciences, 2025*). This formulation represents the mature outcome of a historical tension visible since the 19th century. Czech scientific institutions were expected to participate in universal scholarship while contributing to national cultural development. The balance has changed repeatedly, but it has never disappeared. In the modern Academy, national importance is no longer defined through intellectual isolation or linguistic exclusivity. It is defined through the capacity to bring internationally credible knowledge into sustained relationship with the needs, memory, and future of Czech society. The institution's centrality therefore rests partly upon its ability to connect these two scales.

Large research infrastructures make this transformation especially visible. In the early post-socialist period, Czech scientists often looked abroad for access to equipment and laboratories that domestic institutions could not afford. Over subsequent decades, Academy institutes increasingly became participants in—and in some cases hosts or major partners of—research infrastructures integrated into European networks. This changed the geographical meaning of Czech science. The country no longer functioned only as a scientific periphery sending talented researchers towards better-equipped centres. Czech facilities could themselves attract foreign scientists, collaborative projects, doctoral researchers, and technical expertise. Infrastructure participation also encouraged specialisation because a medium-sized country cannot reproduce every expensive scientific capacity domestically. Strategic choices had to be made concerning fields in which Czech institutions possessed

sufficient competence to make distinctive contributions. Academy institutes were frequently central to those choices because of their accumulated technical expertise and permanent research communities. The resulting infrastructures tied national public investment to European scientific planning. They also created obligations extending across political cycles, since sophisticated facilities require long-term maintenance and stable professional teams. In this respect, infrastructure development reinforced the Academy's historical function as an institution capable of sustaining scientific time horizons longer than normal political programmes. Modern European collaboration thus gave new technological form to an old academic function.

Success in highly competitive European funding similarly illustrates the change in the Academy's position. European Research Council grants are particularly important because they support investigator-driven frontier research and are awarded through international competition centred on scientific excellence. Academy researchers who secure ERC funding do more than bring resources into individual institutes. Their success demonstrates that Czech-based teams can formulate research programmes judged competitive within one of Europe's most demanding funding environments. Such grants can also transform local institutional cultures by allowing principal investigators to build internationally recruited teams and pursue ambitious questions with substantial independence. Host institutes must provide the administrative, infrastructural, and intellectual conditions required for these projects to succeed. ERC competitiveness therefore tests organisational quality as well as individual scientific creativity. By 2025, Academy governance treated ERC support and participation in European excellence programmes as strategic institutional priorities rather than exceptional achievements. This reveals how deeply European competition had become embedded within the organisation. The Academy no longer defined internationalisation principally through bilateral visits or symbolic agreements. It increasingly defined it through the capacity to compete, host, collaborate, and influence research agendas within transnational systems. That development makes AV ČR central to the history of Czech scientific Europeanisation because it shows the transition from external recognition to institutional participation.

Strategy AV21 adds another dimension to this centrality by revealing how the Academy sought to redefine the connection between fundamental research and national development. Approved at the end of 2014 and implemented from 2015, the strategy was explicitly organised around the motto "Top research in the public interest" (*Drahoš, 2015*). Its research programmes were designed to connect multiple Academy institutes and external partners around complex societal challenges. Universities, businesses, public administration, regional institutions, and international research groups could participate alongside Academy workplaces. The strategy therefore departed from the idea that an academy serves society primarily by producing isolated disciplinary excellence. Instead, it demonstrated how accumulated disciplinary capacities could be mobilised across institutional boundaries when contemporary problems demanded broader perspectives. Energy, health, environment, public policy, communication, digital transformation, materials, food, social conflict, and other themes required cooperation between fields that normal organisational structures often keep apart. Strategy AV21 did not replace curiosity-driven research, but it created an additional architecture for translating scientific breadth into public capacity. Historically, this represented an important answer to a question that had accompanied Czech academies since the 19th century: how can an institution devoted to knowledge demonstrate its importance to society without subordinating research to immediate political command? The democratic

answer was coordination around publicly meaningful problems while preserving scientific self-government. This makes Strategy AV21 relevant not merely as an internal programme but as part of the longer history of the Academy's public role.

The Academy's growing public visibility similarly changed its place within Czech scientific culture. Research organisations cannot rely indefinitely upon the assumption that citizens will understand why fundamental science requires public support. Modern democratic legitimacy depends partly upon communication, accessibility, and opportunities for direct engagement. AV ČR consequently expanded festivals, lectures, exhibitions, student programmes, podcasts, publications, open days, citizen-science activities, and other forms of public outreach. The Week of the Czech Academy of Sciences became the country's largest scientific festival, opening research workplaces to visitors and allowing the public to see laboratories, libraries, and scientific practice directly (*Czech Academy of Sciences, 2025*). Such activities do more than advertise successful discoveries. At their best, they make the institutional process of research visible. Citizens can encounter scientists as people who formulate questions, work with uncertainty, test evidence, and revise interpretations rather than as distant authorities who merely announce conclusions. This is particularly important in periods when public confidence in expertise becomes politically contested. The Academy's public mission therefore links the history of science communication with the history of democratic scientific authority. Under state socialism, public representation of science existed within a controlled communication environment. In democratic Czechia, authority must be sustained through dialogue and credibility rather than institutional decree. The growth of public engagement is consequently one of the markers distinguishing the modern Academy from its predecessor.

The public role of AV ČR also makes it central to the history of expertise within Czech government and society. Modern states constantly require knowledge concerning health, climate, energy, demography, law, economics, technologies, biodiversity, culture, language, security, and social change. Ministries and elected politicians cannot maintain full scientific competence internally across all such fields. A broad, publicly supported research organisation therefore provides a reservoir of expertise capable of being mobilised when specialised questions emerge. The Academy's statutes explicitly identify scientific expert opinions, positions, and recommendations among the functions of its institutes (*Czech Academy of Sciences, 2006*). This advisory role must remain carefully distinguished from political decision-making. Scientists can clarify evidence and uncertainty, but they do not possess democratic authority simply because they possess specialist knowledge. The Academy's historical experience makes this distinction especially important because earlier political systems repeatedly blurred the boundary in the opposite direction by allowing political authority to determine acceptable scientific conclusions. The modern relationship must therefore protect both scientific independence and democratic responsibility. Expertise should inform political choices without claiming to replace them. AV ČR occupies an important position within this relationship because its institutional breadth allows advice to draw upon many disciplines rather than narrowly technical knowledge alone. Its centrality to Czech science consequently includes a centrality to the country's evolving culture of evidence-based public decision-making.

The crises of the early 2020s demonstrated why this reservoir of expertise possesses historical as well as practical significance. The COVID-19 pandemic created an immediate need for knowledge from virology, molecular biology, epidemiology, mathematics, economics, psychology, sociology, and communication research. Climate-related emergencies required

long-term environmental observation and interdisciplinary interpretation. Russia's full-scale invasion of Ukraine in 2022 generated scientific and public questions involving energy, migration, history, language, political systems, economics, security, and international relations. None of these crises could be addressed by a single institute or discipline. The Academy's value lay partly in the fact that expertise had been maintained before society knew precisely when it would be needed. This observation connects the modern period with the longer institutional history developed throughout this book. Learned societies and academies historically preserved knowledge whose practical significance could not always be predicted. The institute-based Academy expanded that capacity by sustaining professional research communities over long periods. Post-1993 modernisation increased the speed with which those communities could connect with international evidence and public institutions. Crisis response therefore provides an unusually clear demonstration that institutional continuity and contemporary relevance are not opposites. Historical investment in research capacity becomes strategically visible precisely when unforeseen events make certain forms of knowledge suddenly indispensable.

The humanities and social sciences reinforce the Academy's centrality in ways that purely technological accounts of national science sometimes overlook. Czech history has repeatedly shown that scientific capacity is not exhausted by laboratory experimentation or economic innovation. A democratic society also requires reliable scholarship on language, history, law, institutions, culture, identity, social structure, political behaviour, memory, literature, philosophy, and changing forms of public communication. Academy institutes preserve exceptional archives, databases, editions, dictionaries, collections, and specialist communities in these fields. Their importance became particularly apparent after 1989 because the democratic transformation required Czech society to reconsider recent history, communist repression, legal continuity, property, national identity, European integration, and the social consequences of economic reform. Humanities and social-science institutes could contribute to these debates precisely because they possessed long-term disciplinary expertise. They also became central to the recovery of traditions suppressed or distorted during the communist period. Historical research reconstructed episodes omitted from official narratives, while philosophy, sociology, economics, and law re-entered broader international intellectual conversations. This intellectual reopening formed part of the democratic reconstruction of Czech society itself. The Academy therefore occupies a central place in the history of Czech science partly because it demonstrates that scientific modernisation includes critical reflection on society and culture. A national research system unable to investigate its own history and institutions would possess technological capacity without comparable historical self-understanding.

The natural and technical sciences provide the complementary dimension. Institutes in physics, chemistry, materials science, mathematics, information theory, mechanics, astronomy, earth sciences, and related fields have contributed to the international visibility of Czech research and to scientific capabilities relevant to technology and industry. Their historical importance lies not only in celebrated discoveries but in the creation of durable research schools. The traditions associated with figures such as Jaroslav Heyrovský and Otto Wichterle illustrate how individual scientific excellence can become embedded within institutional environments capable of training successors and generating further work. After 1993, these institutes had to adapt rapidly to technological change and global competition. International publication, modern instrumentation, European grants, and recruitment

increasingly shaped their scientific environment. Their success or failure therefore provided an important measure of whether Czech science could transform inherited capability into contemporary competitiveness. Where such institutes achieved strong international positions, they demonstrated that research traditions formed under very different political circumstances could be renewed rather than simply preserved. The continuity of scientific schools thus became active rather than commemorative. It allowed Czech science to participate in new fields while drawing upon accumulated methods and professional cultures. AV ČR's natural and technical sciences consequently connect several generations of Czech innovation within a single institutional framework.

Application and knowledge transfer broaden the Academy's importance further. Czech science has historically moved between periods in which research was expected to serve direct state economic objectives and periods in which fundamental inquiry was defended against excessive utilitarian pressure. The post-1993 Academy gradually developed a more flexible relationship between these poles. Fundamental research remained its core mission, but institutes expanded cooperation with companies, public agencies, hospitals, cultural institutions, and other users of knowledge. Intellectual-property management, technology transfer, contract research, licensing, and spin-off support became increasingly institutionalised by the 2020s. The Academy's 2024 Annual Report described the development of transfer projects and support for potential spin-off companies as part of this expanding activity (*Czech Academy of Sciences, 2025*). Such developments matter historically because they replace the command logic of socialist applied research with negotiated interaction between autonomous research organisations and external partners. Application is no longer defined by central planning but by combinations of scientific opportunity, public need, industrial demand, and strategic policy. This system remains imperfect, and Czech research policy continues to debate the weakness of some science-industry connections. Nevertheless, AV ČR occupies an important position at the interface because its institutes contain both deep fundamental expertise and specialised technological capabilities. The evolution of this interface belongs to the broader history of Czech innovation rather than to the Academy alone. Yet the Academy provides one of the clearest institutional sites in which the changing relationship between discovery and application can be observed.

The Academy's role as a carrier of scientific memory creates another form of centrality that is difficult to capture through contemporary performance indicators. The archives and libraries associated with AV ČR preserve documentation reaching back through ČSAV, the Czech Academy of Sciences and Arts, the Royal Bohemian Society of Sciences, and other scientific organisations. Institutional files, correspondence, personal papers, photographs, publications, collections, and other materials make it possible to reconstruct the intellectual and organisational development of Czech science across political regimes. Without such resources, much of the history examined in this book could not be written with comparable precision. The Academy therefore does not merely appear as an object within Czech scientific history; it preserves the evidence from which that history can be reconstructed. This reflexive function gives it a special place among research organisations. Its scholars investigate the history of its own predecessors, while its archives preserve records of achievements, conflicts, political interventions, reforms, and ordinary institutional life. Such self-documentation does not guarantee objective historical interpretation, but it provides the material conditions for critical inquiry. The preservation of uncomfortable evidence is particularly important because scientific institutions often prefer celebratory anniversary narratives. A mature research

organisation must instead be capable of acknowledging repression, exclusion, intellectual failure, and institutional mistakes alongside discovery and success. AV ČR's memory institutions therefore contribute not only to institutional prestige but to the historical accountability of Czech science.

This memory function also connects the Academy with broader Czech cultural heritage. Scientific archives contain evidence concerning political life, public administration, exile, international relations, educational development, national culture, and the biographies of individuals who operated simultaneously as scientists and public intellectuals. Archaeological collections preserve evidence of societies extending far beyond the history of modern science itself. Linguistic materials document changes in Czech language, while historical institutes preserve and interpret sources fundamental to national historiography. Art-historical, ethnological, philosophical, and literary research links academic science with cultural institutions and public memory. The boundary between scientific heritage and national cultural heritage is therefore porous. This has deep historical roots because 19th-century Czech academies were conceived partly as institutions of national culture, not merely as organisations supporting specialised research. The modern Academy no longer reproduces that 19th-century structure, yet it continues to carry parts of the same cultural responsibility through its humanities institutes, libraries, archives, and publishing activities. Such continuity helps explain why the Academy cannot be assessed solely through indicators designed for technological research. Its national function includes forms of knowledge whose significance lies in preserving interpretive capacity and cultural memory. These functions become especially important in a small-language environment where international market incentives may not support sustained research on nationally specific subjects. AV ČR therefore provides institutional protection for areas of knowledge whose value is simultaneously scholarly, cultural, and public.

The geographical distribution of Academy research contributes another dimension to its national role. Prague remains the administrative and scientific centre of AV ČR, reflecting the long historical concentration of Czech academic institutions in the capital. Yet major research capacities also developed in Brno, České Budějovice, and other locations, while observatories, field stations, archaeological workplaces, ecological research sites, and specialised facilities extend activity across the country. This geography matters because scientific knowledge is often produced through sustained interaction with particular territories. Environmental research depends upon long-term observation of landscapes, ecosystems, water systems, and climate conditions. Archaeology requires fieldwork across regions whose histories cannot be reconstructed from metropolitan archives alone. Historical and ethnological research similarly investigates local and regional communities. The Academy's national role therefore possesses a spatial dimension beyond the symbolic centrality of its headquarters on Národní Street. Public events and institutional partnerships further distribute its presence. Digital resources have expanded that reach by allowing publications, datasets, lectures, and archival materials to be accessed without physical proximity to Prague. A modern national academy consequently combines metropolitan concentration with distributed research networks. This pattern mirrors the broader history of Czech science, in which Prague has remained dominant but has never been the only site of significant research.

The Academy's centrality becomes even clearer when viewed from the perspective of a medium-sized European state. Czechia cannot reasonably reproduce every element of the research infrastructure available to the largest scientific powers, nor can it sustain excellence

in every rapidly developing field at equal intensity. National scientific strategy therefore depends upon concentration of expertise, selective infrastructure investment, international collaboration, and institutions capable of preserving specialised knowledge over time. AV ČR performs each of these functions. Its institutes provide critical mass in selected disciplines, while the broader Academy allows resources and strategic priorities to be discussed across fields. Participation in European infrastructures extends domestic capacity beyond what national resources alone could support. Stable institute structures make it possible to maintain research programmes that might otherwise be fragmented among smaller university departments. At the same time, the Academy cannot substitute for universities, firms, hospitals, or other public research organisations. Its value emerges through complementarity within the national system. This makes AV ČR particularly significant for understanding how smaller European states organise scientific capacity under conditions of limited resources and intense international competition. The institution represents one possible solution: a strong non-university research sector combined with autonomous universities and extensive European integration. The historical durability of this model in Czechia makes it an especially important case for the comparative history of European science.

The modern Academy also provides an institutional bridge between fundamental research and national resilience. The concept of resilience extends beyond emergency response. It concerns whether a society possesses enough independent knowledge capacity to understand technological, environmental, social, economic, and geopolitical changes before those changes become crises. Fundamental research is crucial to this capacity because expertise cannot be created instantaneously when political demand suddenly arises. A virologist, climatologist, historian of Eastern Europe, materials scientist, demographer, linguist, mathematician, or cybersecurity specialist requires years of training and an institutional environment capable of sustaining professional development. The Academy's breadth helps Czechia maintain such capacities across periods when particular subjects may receive limited public attention. Stable institutions therefore act as reservoirs of competence. Internationalisation strengthens resilience by connecting domestic researchers with wider scientific networks, while national anchoring ensures that expertise remains available to Czech society. This dual function became increasingly visible during the first decades of the 21st century. The Academy's centrality to Czech science thus includes a strategic dimension that older concepts of scientific prestige only partly captured. Knowledge is both a cultural achievement and a component of national adaptive capacity.

The history of AV ČR further illuminates the changing social position of scientific elites. Earlier Czech academies concentrated prestige through membership and cultural recognition. ČSAV combined scientific authority with a hierarchical institutional system in which political structures could shape leadership careers. The democratic Academy reconstructed scientific elite formation around research reputation, institutional elections, competitive appointments, evaluation, international networks, grants, and professional leadership. This does not eliminate inequality or informal power. Scientific communities continue to develop reputational hierarchies, generational tensions, disciplinary interests, and competition for scarce resources. Yet the basis of legitimate authority changed substantially after 1989. International scientific achievement became more important, while formal political reliability lost its institutional role. Leadership also became more accountable to self-governing bodies. The evolution of Academy elites therefore provides a valuable lens on the broader transformation of Czech professional society. It shows how post-socialist democratisation

involved not only replacement of political institutions but reconstruction of criteria through which expertise and authority were recognised. The scientists who lead institutes, evaluation panels, Academy bodies, and large research programmes participate in national knowledge governance even when they hold no governmental office. Their formation is consequently part of the political as well as scientific history of post-1989 Czechia.

The Academy's relationship with public funding makes it central to the history of the social contract surrounding Czech science. Every modern public research institution depends upon an implicit agreement that society will support work whose results may be uncertain, while researchers will use that support responsibly and produce knowledge judged valuable through credible professional procedures. Under socialism, state financing operated within a political system that could claim extensive authority over institutional priorities. After 1993, financing remained public but required a new form of legitimacy. The Academy had to demonstrate that state support was compatible with scientific autonomy and that institutional stability would not become protection from evaluation. Regular assessment, transparent governance, competitive grants, international performance, and public communication gradually became elements of this renewed contract. Debates over budget reductions periodically tested its durability. The Academy's response generally emphasised that fundamental research requires predictable institutional financing because laboratories, collections, long-term datasets, research schools, and infrastructures cannot be sustained exclusively through short grants. At the same time, it accepted the principle that stable public support must be accompanied by accountability. This balance became one of the central issues of Czech science policy after 1989. AV ČR stands at the centre of that debate because its organisational form makes the tension between long-term institutional continuity and competitive research particularly visible.

Contemporary performance by 2025 should therefore be interpreted historically rather than merely statistically. A network of fifty-four institutes, more than 8,000 employees, extensive university cooperation, significant international research activity, public programmes, European projects, and major research infrastructures represents the accumulated result of decisions made across several political eras (*Czech Academy of Sciences, 2025*). Some capabilities originated under ČSAV, others emerged from the post-1989 restructuring, and still others were built through European integration after 2004. The institution's present scale is consequently not the product of a single policy cycle. It is a layered structure in which different generations of investment coexist. An old laboratory tradition may operate with equipment purchased through recent European programmes. A humanities institute founded under socialism may preserve materials originating in the 19th century while using digital methods developed in the 21st century. A research team may contain scientists educated in Czechoslovakia, researchers trained after 1989, and international colleagues with no personal connection to the country's political past. Such combinations make the modern Academy a concentrated representation of Czech scientific temporality. Past and future are visible within the same workplace. This stratification is one reason why the institution occupies such a central place in historical interpretation: it demonstrates materially that scientific development is cumulative even when politics divides history into apparently distinct periods.

The Academy is central, finally, because its own transformation helps redefine what the history of Czech science is about. A traditional institutional history might concentrate on foundations, presidents, statutes, institutes, discoveries, and celebrated scientists. These remain essential subjects, but the trajectory from the learned societies to AV ČR demonstrates that scientific

history also concerns governance, infrastructure, mobility, funding, evaluation, political legitimacy, disciplinary cultures, memory, and relations with society. Scientific institutions are not containers within which discoveries happen independently of organisational life. They actively shape which questions can be pursued, which researchers receive careers, what equipment is available, how international contacts develop, and how knowledge enters public debate. The Academy's history makes these mechanisms unusually visible because its organisational form changed so dramatically while its scientific communities retained substantial continuity. The movement from 19th-century academy to ČSAV and then AV ČR transforms the history of Czech science from a sequence of achievements into an investigation of the conditions that make achievement possible. This broader perspective also explains why institutional failure matters. Political purges, isolation, funding crises, or poorly designed evaluation can alter the future development of disciplines just as decisively as successful discoveries. The Academy is central because both productive and destructive dimensions of scientific institutions can be studied through it. Its history therefore provides an analytical framework for understanding Czech science rather than simply another object to be described.

The period from 1993 to 2025 gives this centrality its contemporary meaning. During those decades, the Academy successfully moved beyond the question of whether an institute-based system inherited from ČSAV could survive post-socialist transformation. The founding challenge had been institutional justification. By the end of the period, the strategic challenges concerned excellence, European funding, international recruitment, research evaluation, knowledge transfer, digital transformation, security, sustainability, university cooperation, and communication with society. This change in agenda reveals that the institution's post-socialist identity had gradually receded. AV ČR no longer defined itself primarily through the system from which it had emerged. It increasingly defined itself through the problems confronting contemporary European science. Yet the institutional memory of socialism retained normative significance, particularly for the defence of autonomy and resistance to political interference in research. Historical inheritance therefore remained active without determining the whole institutional future. The Academy's maturity consisted partly in the ability to treat its past as experience rather than destiny. That transition is itself central to the history of Czech science after 1989 because it marks the point at which post-socialist reconstruction became normal institutional development.

The modern Academy's continuing importance also rests upon the fact that it preserves an alternative to a narrowly market-driven conception of scientific value. Contemporary societies increasingly expect research to contribute to innovation, competitiveness, technological sovereignty, healthcare, environmental adaptation, and economic growth. These expectations are legitimate, and Academy institutes participate in many such areas. Yet the history of science demonstrates repeatedly that the future usefulness of fundamental knowledge cannot be predicted reliably at the moment of discovery. Institutions dedicated to long-term research therefore perform a public function that markets and short project cycles cannot always reproduce. AV ČR maintains spaces in which questions can be investigated because they are scientifically significant even when immediate applications remain uncertain. The same principle protects humanities scholarship whose contribution may be cultural, interpretive, or democratic rather than commercial. This institutional breadth prevents the concept of national scientific capacity from collapsing into short-term technological productivity. At the same time, the Academy's modernisation shows that defending fundamental research need not imply isolation from application or society. Strategy AV21, technology transfer, expert advice,

and public engagement create pathways through which long-term knowledge can interact with contemporary needs. The Academy's centrality thus lies partly in preserving this plural conception of scientific value within Czech public life.

Seen across the entire history reconstructed in this book, AV ČR represents the point at which several older Czech scientific traditions have been recombined under democratic conditions. The learned-society tradition survives in the idea that knowledge requires collective professional judgement and public intellectual responsibility. The national-academy tradition survives in the commitment to Czech culture, language, history, and scholarly representation. The 20th-century institute tradition survives in permanent research workplaces and long-term scientific employment. The reformist traditions of the 1960s survive in the insistence that professional science cannot flourish without intellectual autonomy and international openness. The experience of normalisation survives negatively as a warning about the damage created by political intervention in scientific careers and interpretation. The Velvet Revolution survives institutionally in academic self-government and the reconstruction of scientific legitimacy. European integration survives in evaluation practices, mobility, shared infrastructures, competitive grants, and multinational research networks. None of these elements has remained unchanged, and their coexistence inevitably generates tensions. Yet their synthesis gives the modern Academy a historical depth unusual for an institution legally established only in 1992. AV ČR is therefore central because it does not merely follow Czech scientific history; it contains many of its accumulated institutional layers within its present structure.

This accumulated position places a particular responsibility on the Academy. Institutions central to national scientific history can easily treat their historical importance as evidence of permanent entitlement. Yet the history of AV ČR itself argues against such complacency. Its survival after 1993 depended precisely upon the willingness to evaluate inherited structures, close or reorganise workplaces, open institutions internationally, and redefine relations with society. Historical centrality therefore creates an obligation to change rather than a right to resist change. The Academy must continually demonstrate why its institute model remains scientifically productive within an environment transformed by digital research, artificial intelligence, global mobility, new infrastructure models, geopolitical competition, and changing public expectations. It must also preserve forms of research whose significance may not be captured easily by prevailing metrics or technological fashions. The balance between adaptation and continuity that characterised earlier transformations will therefore remain essential. The institution's history provides resources for this task because it demonstrates that the Academy tradition has repeatedly survived by altering organisational forms while transmitting underlying capacities. Centrality should consequently be understood dynamically. AV ČR remains central to Czech science only insofar as it continues to connect historical depth with future scientific relevance.

Thus, the modern Czech Academy of Sciences is central to the history of Czech science not because it encompasses every scientific institution or possesses a hierarchical authority over the national research system, but because it concentrates within one institutional genealogy many of the decisive transformations through which Czech science acquired its modern form. It connects the learned-society tradition with permanent research institutes, the national cultural ambitions of the 19th century with internationally competitive 21st-century science, and the material inheritance of ČSAV with democratic academic self-government. Its experience after 1993 demonstrates how scientific capital created under one political order

can be evaluated, transformed, and legitimately preserved under another. Its fifty-four institutes maintain research across natural, technical, social, and human sciences, giving the organisation a breadth that allows the diversity of Czech scientific development to be studied within a common institutional framework. Its research schools preserve knowledge accumulated across generations, while cooperation with universities connects Academy research directly with doctoral education and the formation of future scientific communities. Its evaluation system illustrates the reconstruction of professional scientific authority after political control, and its internationalisation mirrors Czech science's movement from post-Cold War reopening to full participation in European and global research networks. Its infrastructures, ERC ambitions, international collaborations, and European partnerships demonstrate that the institution has become an active scientific actor rather than simply a recipient of external standards. Strategy AV21, public communication, expert advice, knowledge transfer, and crisis response show how fundamental research has been reconnected with democratic public responsibility without returning to command-driven science. The Academy's humanities institutes preserve national language, history, cultural memory, and interpretive capacity, while its natural and technical institutes sustain internationally competitive scientific and technological expertise. Its archives and libraries make the Academy simultaneously a protagonist of Czech scientific history and one of the principal custodians of the evidence through which that history can be reconstructed. Its public financing places it at the centre of the continuing Czech debate over the relationship between autonomy, accountability, long-term research, and national strategic capacity. Most importantly, AV ČR embodies the principle that continuity in science does not require institutional immobility. The modern Academy has remained historically significant because it repeatedly transformed inherited organisational forms while preserving the knowledge, communities, infrastructures, and intellectual responsibilities that gave those forms value. In this sense, the history of the Czech Academy is not identical with the history of Czech science, but the history of Czech science cannot be understood fully without it.

The Czech Academy of Sciences as a Model of European Academic Continuity

1. The Academy in the Context of Small and Medium-Sized European States

The position of the Czech Academy of Sciences becomes clearer when it is examined not only within Czech institutional history but within the wider ecology of European academies. Europe has never possessed a single organisational model corresponding to the word *academy*. In some countries, academies are principally elected learned societies whose authority derives from the distinction of their members and their ability to represent scientific communities. Elsewhere, they combine learned-society functions with permanent institutes, archives, libraries, research infrastructures, grant programmes, or policy-advisory responsibilities. In several Central and Eastern European states, academies developed large networks of institutes during the 20th century and became major employers of professional researchers. Western and Northern Europe likewise contain mixed institutional arrangements, although the scale and legal relationship between academies and their institutes often differ from those inherited from socialist systems. ALLEA therefore explicitly treats its member academies as a heterogeneous family that includes learned societies, research-performing organisations, think tanks, and institutions with other combinations of functions (*ALLEA, 2026*). This diversity is not an organisational anomaly that European integration is expected eventually to remove. It reflects national histories in which universities, states, scientific societies, royal or national academies, foundations, and specialised institutes acquired different distributions of responsibility. The Czech Academy belongs within this diversity as one of Europe's substantial research-performing academy systems rather than as an institutional survivor situated outside a supposedly standard Western model. Its historical origins include Central European learned societies and the 19th-century national academy tradition, while its large institute structure carries the unmistakable imprint of 20th-century Czechoslovak development. The democratic reforms after 1989 then adapted this inheritance to a research environment characterised by peer evaluation, institutional autonomy, European mobility, and plural relations with universities. Comparative analysis therefore shows that the Czech model is historically specific without being institutionally anomalous.

The distinction is especially important because European academies themselves insist on the value of institutional plurality. ALLEA brings together academies from large scientific powers and from countries whose populations and research systems are comparatively small, and its membership deliberately accommodates different historical forms rather than ranking them according to one ideal structure. The organisation has observed that academies may perform as learned societies, research networks, research-performing organisations, grant givers, or combinations of these roles (*ALLEA, 2026*). A 2022 ALLEA report was even more explicit in noting that in Central and Eastern Europe the term academy frequently denotes clusters of research institutes, naming the Czech and Polish academies as characteristic examples (*ALLEA, 2022*). This comparative vocabulary helps remove one persistent misunderstanding about the Czech Academy. The existence of permanent institutes under an academy umbrella should not automatically be interpreted as unfinished convergence with a Western European norm. There is no single such norm. The Royal Netherlands Academy of Arts and Sciences maintains national research institutes, while the Austrian Academy of Sciences combines a large learned membership with more than two dozen research institutes. Other national

academies, by contrast, concentrate overwhelmingly on fellowship, scholarly representation, advice, or cultural responsibilities. What matters comparatively is therefore less whether an academy possesses institutes than how those institutes are governed, evaluated, financed, and connected with the rest of the national research system. In these respects, the reforms of AV ČR after 1993 are more significant than the mere survival of its institute network. They transformed the political and professional rules under which that network operated while preserving an institutional form that has parallels elsewhere in Europe.

The category of small and medium-sized European states is analytically useful because scale creates recurring problems for national science even though countries within this group differ substantially in wealth, institutional maturity, population, and research intensity. Smaller scientific systems normally possess fewer universities, fewer large laboratories, a narrower domestic labour market for highly specialised researchers, and less capacity to duplicate expensive research infrastructure. Their scientists may also depend more heavily on international networks because a complete disciplinary community cannot always be maintained within national borders. Concentration of expertise therefore becomes both advantageous and risky. It can create research groups with sufficient critical mass to compete internationally, but it may also make an entire national field unusually dependent upon the fate of one institution or a small number of senior researchers. Scientific policy consequently requires choices about which capacities should be maintained domestically, which should be shared internationally, and which can be accessed primarily through European collaboration. These issues have long been recognised within the European academy community. ALLEA established a Working Group on National Strategies of Research in Smaller European Countries in 1996, and its later report argued that strong national research capabilities were a necessary foundation for a functioning European Research Area rather than an alternative to European integration (*Engelbrecht et al., 2002*). The point remains fundamental. European cooperation does not remove the requirement for national institutions capable of generating knowledge and training researchers; cooperation becomes productive because such institutions already exist. For countries of Czechia's scale, the institutional problem is therefore not whether science should be national or European, but how sufficient national capacity can be preserved to participate meaningfully in European science. AV ČR has become one of the principal mechanisms through which the Czech Republic answers that question.

The scale of the Czech Academy gives it particular importance within this national strategy. By the end of the period examined here, AV ČR comprised fifty-four public research institutions and employed more than 8,000 people, with university-educated researchers constituting more than half of its workforce (*Czech Academy of Sciences, 2025*). Its institutes covered natural, technical, social, and human sciences and therefore represented a substantial proportion of Czech non-university research capacity. For a country of Czechia's demographic and economic scale, this concentration is significant. It allows highly specialised scientific communities to reach sizes that might be difficult to sustain if they were dispersed among many smaller organisations. Laboratories can maintain technical staff and complex equipment across multiple projects rather than rebuilding support structures repeatedly. Humanities institutes can sustain long-term editorial, linguistic, archaeological, archival, and historical programmes whose continuity exceeds ordinary grant cycles. Research infrastructures can be managed institutionally while remaining accessible to university collaborators and international users. The Academy can also coordinate scientific interests across disciplines when a problem requires knowledge that no single university faculty or

departmental structure can readily assemble. None of these functions implies that the Academy should dominate Czech science, and its post-1989 legitimacy depends partly upon rejecting such a claim. Rather, concentration gives a medium-sized state a means of maintaining specialised scientific capacities alongside a university sector that performs different but overlapping functions. The Czech model therefore rests upon complementarity: universities provide broad research and educational environments, while Academy institutes permit selective concentration around long-term research missions.

Austria provides one of the most instructive comparisons because its demographic scale is broadly comparable with that of Czechia while its political and economic development during the second half of the 20th century followed a very different course. The Austrian Academy of Sciences, founded in 1847, describes itself as Austria's largest non-university research and science institution. It combines more than 760 academy members with twenty-six research institutes and approximately 1,900 employees devoted to basic research, interdisciplinary exchange, and communication with society (*Austrian Academy of Sciences, n.d.*). This structure immediately demonstrates that the combination of academy membership and permanent research institutes cannot be regarded as inherently socialist or post-socialist. Austria retained an academy-based research-performing sector within a Western democratic and market economy throughout the period in which Czechoslovakia operated under state socialism. Its institutes cover humanities, social sciences, and natural sciences, including internationally prominent areas such as molecular biology, quantum research, archaeology, demography, and space science. Some individual institutes possess strongly international staff profiles and significant ERC success, illustrating how a relatively small national system can create globally competitive centres through concentrated investment (*Austrian Academy of Sciences, 2023*). The Austrian example therefore offers an important comparative correction to simplistic narratives of Czech post-1989 reform. The relevant question was never whether a democratic European country could legitimately possess academy institutes. Austria demonstrated that it could. The Czech question concerned the scale, governance, historical inheritance, and relationship of those institutes to universities and the state. In this respect, AV ČR and the Austrian Academy are different institutional solutions to a related small-state problem: preserving critical mass in fundamental research without attempting to reproduce every scientific capacity inside universities alone.

The differences between the Austrian and Czech models are nevertheless as important as their similarities. The Austrian Academy retains the classical learned-society function within the same organisation that performs substantial research. Its elected membership deliberates on scientific and societal questions, advises policy and the public, and operates commissions, while its institutes form the research-performing arm of the institution (*Austrian Academy of Sciences, n.d.*). The Czech system after 1989 developed a more pronounced functional separation. AV ČR became principally an organisation of public research institutes governed through its Academic Assembly and related academic bodies, whereas the Learned Society of the Czech Republic restored a separate fellowship tradition associated with the election of distinguished scholars. This arrangement reflected the historical problem created by ČSAV, where the elected-academician and institute-network functions had been combined within an authoritarian structure. The post-socialist Czech solution did not attempt simply to reproduce the Austrian model even though both systems share older Central European academy traditions. Instead, it distributed functions among institutions while retaining coordination through overlapping scientific communities. Such differences illustrate why comparative

institutional history should resist the search for a single optimal academy form. The relevant criterion is whether each configuration supports excellence, autonomy, continuity, and public responsibility within its national research ecology. Austria demonstrates the viability of a fully hybrid academy; Czechia demonstrates the viability of a research-performing academy operating alongside a distinct learned society. Both make use of concentrated non-university research to compensate for some of the scale constraints faced by medium-sized states.

The Slovak Academy of Sciences offers an even closer historical comparison because Czech and Slovak academic research developed for decades within the same Czechoslovak state and within interconnected scientific structures. After 1993, however, the two successor republics inherited different institutional configurations and proceeded through their own reform trajectories. The Slovak Academy retained an extensive network of research organisations across natural, technical, social, and human sciences, making it one of the European institutions structurally closest to AV ČR. Its continued membership in ALLEA and EASAC places it within the same transnational academy networks through which Czech academic science participates in European scientific advice and institutional cooperation (*Slovak Academy of Sciences, n.d.*). Slovak reform has also confronted questions familiar from the Czech experience: how to consolidate fragmented institutes, improve management, increase success in the European Research Area, strengthen technology transfer, and modernise legal status. The Centre of Biosciences, for example, was created through the integration of several previously separate institutes partly to share infrastructure, strengthen interdisciplinarity, improve efficiency, and increase European competitiveness (*Centre of Biosciences SAS, n.d.*). In 2022, it became a public research institution, illustrating Slovakia's continuing effort to construct a more autonomous and flexible legal environment for academy research. Czech institutes had undergone a related transition to the public-research-institution model from 2007. These parallel developments reflect a common post-socialist challenge rather than identical institutional histories. Both countries sought to preserve the advantages of concentrated academy research while moving beyond the administrative forms inherited from state socialism.

The Czech–Slovak comparison is especially revealing because it separates the Czechoslovak inheritance from subsequent national policy choices. Before 1993, both scientific communities participated in a federal state whose research architecture was historically asymmetrical but institutionally interconnected. After independence, Czechia and Slovakia could no longer assume that common federal structures would compensate for differences in national scientific capacity. Each state had to define which research institutions it would finance, which infrastructures it could sustain, and how academy research would relate to universities and European programmes. For Slovakia, with a smaller population and narrower domestic research base, concentration within the Slovak Academy remained especially significant. Czechia possessed a larger university and research system but nevertheless retained AV ČR as a major non-university sector. The persistence of substantial academies in both successor states indicates that the institute model met needs that outlived the political structure of Czechoslovakia. At the same time, reforms in legal status, evaluation, international cooperation, and institutional integration show that neither state simply froze the inherited structure. The two academies became laboratories for different national adaptations of a shared scientific tradition. Their continued bilateral and European cooperation also demonstrates that the dissolution of the federation did not eliminate the scientific networks formed under Czechoslovak conditions. Comparative analysis therefore transforms 1993 from

a simple dividing line into the beginning of two related institutional experiments. AV ČR belongs to a Central European family of academy systems, but its particular balance of self-government, institute autonomy, evaluation, and university cooperation emerged from specifically Czech choices after separation.

Poland supplies another highly relevant comparison, although its population and research system are substantially larger than those of Czechia. The Polish Academy of Sciences combines three functions within one organisation: an elected body of academy members, a large network of research institutes, and disciplinary or problem-oriented committees that contribute to scientific representation and public expertise (*Polish Academy of Sciences, 2024*). In the mid-2020s its network consisted of roughly sixty-nine institutes employing more than 9,000 people, including about 4,100 researchers. These institutes covered almost the entire disciplinary spectrum and were subjected to national research evaluation. PAS therefore resembles the Czech Academy in retaining a large permanent institute sector whose roots lie partly in the 20th-century Central European model of academy-based research. It differs, however, by retaining the elected fellowship function centrally within the same institution and by operating at a much larger national scale. The Polish case is valuable because it confirms that academy-based research can remain a major component of an EU Member State's contemporary research system without preventing extensive university development. PAS institutes have also become significant participants in European funding, securing substantial Horizon 2020 and Horizon Europe resources and hosting ERC-supported research (*Polish Academy of Sciences, 2024*). Their international activity includes thousands of partners and a network of scientific centres abroad (*Polish Academy of Sciences, n.d.*). These features place Polish and Czech academy research within a common European competitive environment despite different national scales. The comparison strengthens the interpretation of AV ČR as one member of a wider Central European research-performing academy tradition rather than an isolated national peculiarity.

Poland also illustrates how academy institutes can serve as instruments of concentration within research systems dominated numerically by universities. The Polish Academy's institutes employ only a fraction of the country's total research workforce, yet they include highly specialised centres in physics, biology, oceanology, space research, philosophy, history, engineering, and many other areas. Their performance in European programmes shows that relatively compact institutional networks can contribute disproportionately to internationally competitive research when resources and expertise are concentrated. The Czech Academy performs a related function on a smaller national scale. Such organisations therefore complicate comparisons based solely on university rankings or total national publication output. National research strength may reside in multiple institutional sectors that are differently visible in international league tables. In smaller and medium-sized European systems, this institutional diversity can be advantageous because it prevents all research functions from being concentrated within universities facing simultaneous teaching, regional, educational, and social obligations. Academy institutes can specialise more intensively, maintain long-term infrastructures, and develop research careers less closely tied to undergraduate education. The danger is institutional fragmentation if academy and university sectors compete without sufficient coordination. Both Czechia and Poland have therefore needed mechanisms of doctoral cooperation, joint projects, shared infrastructures, and researcher mobility across organisational boundaries. The comparative lesson is not that academy institutes are inherently more effective than universities. It is that a differentiated

system can increase national research capacity when its components are complementary rather than isolated. The Czech Academy's post-1993 evolution increasingly followed precisely this logic.

Hungary provides a more politically charged comparison because the institutional location of its academy research network changed dramatically during the period under consideration. For decades the Hungarian Academy of Sciences maintained a substantial network of research centres and institutes comparable in several respects to those of the Czech and Polish academies. In 2019, however, a major conflict developed between the Academy and the Hungarian government over financing, governance, and the future institutional control of the research network. The Hungarian Academy argued that the government's proposed restructuring threatened scientific autonomy and that international evaluation had confirmed the quality of the existing research network (*Hungarian Academy of Sciences, 2019*). The network, which then employed nearly 5,000 people, was subsequently separated from the Academy and transferred to the newly established Eötvös Loránd Research Network, later renamed HUN-REN (*Hungarian Academy of Sciences, 2019*; *HUN-REN, 2025*). By 2025, HUN-REN operated fifteen research institutions as legally independent entities within a new national framework. The Hungarian Academy continued as a major learned and representative scientific institution, but research performance and academy fellowship had been institutionally separated. This trajectory differs sharply from the Czech decision after 1989 to retain the institute network under AV ČR while reforming its governance. The contrast shows that the organisation of academy research remains politically contestable even decades after the end of state socialism. It also demonstrates that the relationship between scientific autonomy, public financing, property, and governmental strategic control cannot be regarded as permanently settled.

The Hungarian case gives the Czech model particular comparative significance because it highlights the value attached in Czechia to institutional self-government. AV ČR's post-1993 structure places substantial authority in elected academic bodies and the self-governing arrangements of public research institutions, while state influence is exercised principally through legislation, financing, and national research policy rather than direct definition of institute research agendas. This arrangement cannot eliminate political pressure, because annual budgets, legal reforms, and strategic programmes inevitably affect research organisations. Nevertheless, the Academy's institutional architecture creates multiple layers through which scientific communities participate in decisions about their own governance. Hungary's 2019 conflict showed how rapidly the balance can become contested when government and academy leadership disagree over who should control a publicly financed research network. The Hungarian Academy itself framed the dispute in terms of the freedom of scientific research and the professional justification for retaining academy supervision (*Hungarian Academy of Sciences, 2019*). The Czech experience since the severe budgetary conflicts of earlier decades suggests that institutional legitimacy depends upon combining autonomy with strong evaluation and public accountability. Self-government is easier to defend when research organisations can demonstrate international quality and transparent management. From this perspective, Czech continuity is not merely organisational continuity but continuity under a governance settlement that deliberately limits the direct politicisation of scientific authority. This characteristic is especially important for medium-sized states, where personal and institutional distance between researchers, ministers, funding bodies, and

political elites can be relatively short. Autonomy therefore requires institutional design rather than reliance on informal conventions alone.

Estonia offers almost the opposite post-socialist solution and therefore provides an equally valuable comparison. Like Czechoslovakia, Soviet Estonia possessed an academy of sciences with an institute-based research system. After the restoration of Estonian independence, however, policymakers and researchers concluded that a country of Estonia's small size could not maintain the inherited academy apparatus in its existing form. The Estonian Academy's own historical account records that in 1991 the Estonian Association of Researchers advocated dismantling the academy research network and transferring institutes to universities, an approach broadly supported by an external Swedish evaluation completed in 1992 (*Estonian Academy of Sciences, n.d.*). The post-independence Academy consequently evolved primarily towards the model of an autonomous personal academy centred upon scientific advice, representation, excellence, public communication, and national and international cooperation. Research institutions became located principally elsewhere in the national system, although the Academy retains some institutions and formal associations with research and cultural organisations. This is a revealing counterfactual for Czech history. Estonia and Czechia both emerged from socialist systems in which academies had organised substantial research, but they reached very different conclusions about what should survive. Estonia chose greater concentration of research within universities and independent institutions, while Czechia retained a large academy institute sector. Neither trajectory can be understood simply as more or less European. Both became integrated into European science. The difference demonstrates that national scale, institutional history, university capacity, political choices, and evaluation of inherited research assets can produce distinct legitimate models.

The Estonian comparison also cautions against assuming that institutional continuity is always preferable to rupture. In certain contexts, transferring institutes to universities may reduce duplication, strengthen higher education, and create more coherent research communities. A very small state may lack the personnel and financial resources necessary to maintain parallel academy and university systems across many disciplines. Estonia's reformers explicitly considered the inherited structure excessive for the country's scale and questioned its publication performance and weak university cooperation (*Estonian Academy of Sciences, n.d.*). Czechia confronted similar criticisms after 1989 but reached a different conclusion because its institute network was larger, its scientific communities more numerous, and many workplaces possessed substantial specialised capacity that would have been difficult to absorb into universities without disruption. The Czech Academy therefore survived not because academy continuity is universally optimal but because Czech reformers judged that sufficient parts of the inherited system possessed enduring value. Comparative history makes this contingency visible. The success of AV ČR cannot be turned mechanically into a prescription for countries with different demographic, financial, and university structures. Its value as a model lies instead in showing how rigorous restructuring can transform inherited institutes without requiring their complete abolition. Estonia represents another model: institutional continuity can be preserved at the level of scientific traditions even when the organisational academy network itself is dismantled. The contrast reinforces a central argument of this chapter—European academic continuity is compatible with substantial diversity of institutional form.

Slovenia provides yet another variant, located between the strong institute-network academy and the predominantly personal learned society. The Slovenian Academy of Sciences and Arts traces its institutional history to its foundation in 1938 while also invoking older learned traditions reaching back to the 17th-century Academia Operosorum (*Slovenian Academy of Sciences and Arts, n.d.*). During the socialist period, it initially developed institutes under a model influenced by Soviet academy organisation, but important technical institutes were subsequently separated and became independent. During the early 1980s, remaining research institutes in humanities, social sciences, and parts of the natural sciences became independent and formed the Scientific Research Centre associated with the Academy. After Slovenian independence in 1991, the Academy emphasised autonomy, international cooperation, learned representation, national cultural responsibilities, and adaptation to European academy norms. Its contemporary mission remains centred upon scientists and artists elected for distinguished achievement, public advice, international cooperation, and research particularly relevant to Slovenia's natural and cultural heritage (*Slovenian Academy of Sciences and Arts, n.d.*). This history is especially instructive because it shows that the internal separation of academy membership and permanent research began before the end of Yugoslav socialism. Slovenia therefore developed a different balance between the symbolic national academy and research-performing institutions without abandoning close intellectual relationships between them. Compared with Czechia, the Slovenian model gives the learned-society function greater institutional prominence and distributes research more widely outside the core Academy. Both nevertheless preserve strong connections between academy identity and national language, culture, heritage, and European scholarly integration.

The Slovenian example also demonstrates why national-cultural functions become especially important in smaller language communities. The Academy explicitly identifies research into Slovenia's natural and cultural heritage, language, and national identity among its enduring responsibilities (*Slovenian Academy of Sciences and Arts, n.d.*). Comparable functions exist within Czech Academy institutes concerned with Czech language, history, archaeology, literature, philosophy, ethnology, and cultural heritage. For small and medium-sized states, such fields cannot always rely upon the same international demand mechanisms as universally distributed disciplines. There will always be global interest in fundamental mathematics, molecular biology, or quantum physics, whereas highly specialised research on a smaller national language or regional archive may depend much more directly upon domestic institutional commitment. This does not make the latter scholarship methodologically provincial. Its methods, comparative frameworks, and theoretical contributions can remain fully international while its empirical object possesses strong national specificity. Academies have historically provided institutional protection for precisely this combination. They connect international scholarly standards with responsibilities that national societies cannot assume will be fulfilled elsewhere. Czechia's relatively large humanities sector within AV ČR should therefore be interpreted partly through the comparative sociology of smaller European nations. The same logic appears in Slovenia, Estonia, Slovakia, the Baltic countries, and elsewhere, even when the organisational location of such scholarship differs. A medium-sized state requires international science, but it also requires institutions willing to study questions that international science may not prioritise without national initiative.

The Royal Netherlands Academy of Arts and Sciences offers a useful Western European comparison because it combines fellowship, scientific advice, and a significant portfolio of national research institutes. KNAW is responsible for ten national research institutes and two

institutes providing research infrastructure, particularly across humanities, social sciences, and life sciences (*Royal Netherlands Academy of Arts and Sciences, n.d.*). These institutes serve as national centres of expertise and manage collections and facilities whose importance extends beyond the Academy itself. They undergo regular independent evaluation and operate within the highly developed Dutch university and research system. The Netherlands therefore demonstrates that even a country possessing internationally strong universities may find permanent academy institutes useful where national-level concentration, specialised collections, or distinctive infrastructure provides added value. The institutional logic resembles parts of the Czech model despite substantial differences in history and scale. Neither system assumes that universities must contain every form of publicly supported fundamental research. Both preserve specialised non-university organisations within an academy framework while requiring those organisations to demonstrate added value within the wider national knowledge landscape. KNAW's portfolio approach is particularly instructive because it explicitly asks whether national institutes contribute something distinctive to Dutch science. The Czech Academy's evaluations perform a related function, although across a much larger institute network. The comparison thus weakens any interpretation that associates academy research networks exclusively with East-Central European institutional inheritance. Research-performing academies belong to European science on both sides of the former Cold War divide.

The Austrian and Dutch cases together demonstrate that the decisive post-1989 question was not whether Czechia should imitate Western Europe by abolishing academy research. Western Europe itself contained multiple models of non-university public research. Germany possessed the Max Planck Society, Leibniz Association, Helmholtz Association, Fraunhofer Society, and academy projects; France maintained CNRS and other national research organisations; Austria retained academy institutes; and the Netherlands combined universities with KNAW and NWO institutes. These organisations differed legally and historically from AV ČR, but functionally they all demonstrated that mature research systems often distribute science across several institutional sectors. The idea that universities are the only natural home for fundamental research is therefore empirically difficult to sustain. The more useful comparative question concerns institutional division of labour. Some research benefits from close integration with undergraduate education, while other programmes require specialised infrastructures, extensive technical staff, long archival horizons, or organisational stability that can be easier to maintain in dedicated institutes. Czech reform after 1989 gradually moved towards this functional justification. AV ČR did not claim that academy institutes were inherently superior to universities; it defended them where concentrated research capacity created distinctive value. This placed the Czech system conceptually closer to European institutional pluralism than critics who equated academy institutes with socialism initially assumed. The transformation was therefore a Europeanisation of governance and standards rather than a Westernisation through institutional imitation.

European integration changed the meaning of national size itself. Before dense multinational funding programmes and shared infrastructures, smaller countries faced stronger incentives either to reproduce scientific capabilities domestically or accept dependence upon foreign institutions. The European Research Area altered this calculation by seeking a more integrated environment in which researchers, knowledge, and technology can circulate across national boundaries (*European Commission, 2024*). A Czech laboratory no longer needs to own every major instrument required by its researchers if access can be obtained through European

infrastructure partnerships. Conversely, Czechia can specialise in fields where it possesses strong traditions and host facilities serving users from other states. This increases the value of institutions capable of developing durable national specialisations. The Academy is especially well positioned for such a role because permanent institutes can sustain technical expertise over decades and negotiate participation in long-term international infrastructures. Europeanisation therefore does not make national academy systems obsolete. It changes their optimal function from aspiring towards self-sufficiency to becoming strong nodes within transnational networks. The Academy's size and disciplinary breadth allow Czechia to enter those networks with institutional weight greater than would be available to many isolated teams. This is one reason the preservation of substantial research capacity after 1993 proved strategically valuable when Czechia later joined the European Union and the European Research Area.

European integration nevertheless does not eliminate asymmetry among national research systems. Horizon Europe continues to include explicit measures for "Widening Participation and Spreading Excellence", designed to strengthen countries whose research and innovation performance remains below that of Europe's strongest systems (*European Commission, 2025*). Czechia belongs to the group of Widening countries alongside Slovakia, Poland, Hungary, Slovenia, Estonia, Croatia, and several other EU Member States. The existence of this policy category demonstrates that formal access to common European programmes does not automatically equalise research capacity. Differences persist in infrastructure, salaries, international networks, grant-writing experience, talent attraction, private R&D, and participation in frontier-science funding. Smaller and post-socialist research systems can therefore face a double challenge: they must compete within an open European environment while still overcoming structural disadvantages inherited from earlier periods or produced by their economic scale. Strong national research institutions are particularly important under these conditions. They can develop grant-support systems, concentrate internationally visible teams, provide stable employment between competitive projects, and create infrastructures capable of attracting collaboration. AV ČR performs all these functions at a scale unavailable to many individual Czech research organisations. In this sense, the Academy is not an alternative to European integration but part of the institutional apparatus that makes effective integration possible. The original ALLEA argument that European research depends upon strong national capacities remains highly relevant more than two decades later.

The problem of critical mass is particularly acute in disciplines requiring expensive equipment or highly specialised technical teams. A large state may sustain several competing centres in a field, creating domestic competition and redundancy. A smaller state may possess resources for only one or two centres capable of international performance. The consequences of institutional failure are therefore potentially larger. If a unique research team disperses, national competence may disappear rather than simply move to another domestic institution. The Academy's institute model can reduce this vulnerability by maintaining long-term organisational homes for specialised communities. Stable institutional funding does not guarantee excellence, but it provides time horizons within which expertise can accumulate. Periodic international evaluation then becomes essential to ensure that stability does not become stagnation. This combination—durable institution plus external assessment—is one of the strongest features of the Czech model. It allows the country to retain critical mass while exposing concentrated organisations to scientific comparison beyond national boundaries. Austria, the Netherlands, Poland, and Slovakia use related combinations in different

organisational forms. The comparative lesson is that small-state concentration requires stronger evaluation, not weaker evaluation, because the absence of numerous domestic competitors can otherwise protect underperforming monopolies. AV ČR's increasingly international assessment system therefore has significance beyond internal management. It is part of the institutional logic that makes concentrated national research defensible.

Talent creates a similar scale problem. Small and medium-sized research systems cannot assume that scientists educated domestically will remain within national institutions throughout their careers. European mobility makes departure easier, while salary and infrastructure differences can pull researchers towards richer scientific centres. Attempts to prevent mobility would be both unrealistic and scientifically damaging, because international experience is itself one of the principal mechanisms through which smaller systems acquire new methods and networks. The strategic objective must therefore shift from preventing brain drain to enabling brain circulation. Researchers should be able to leave, acquire experience, return, establish teams, or maintain collaborations that continue benefiting the national research environment even when careers become transnational. Permanent institutes can support this circulation if they offer credible positions, modern facilities, and sufficiently independent career pathways. Academy systems in Austria, Czechia, Poland, and Slovakia increasingly use international fellowships, ERC support, visiting programmes, and open recruitment for precisely this purpose. The Polish Academy's European activities and the Slovak Academy's international programmes illustrate the same strategic pressure confronting AV ČR (*Polish Academy of Sciences, 2024*; *Slovak Academy of Sciences, n.d.*). The Czech Academy's future competitiveness therefore depends less upon preserving a nationally homogeneous research workforce than upon becoming a place where international scientific careers can develop. In small and medium-sized states, institutional openness is not optional cosmopolitanism; it is a structural condition for maintaining sufficient human capital.

Scientific specialisation creates another reason why academies can matter disproportionately in medium-sized countries. A national research system cannot invest equally in every frontier field. Strategic capacity emerges through combinations of historical strength, institutional competence, infrastructure, and opportunities created by international cooperation. Czechia possesses long traditions in areas such as chemistry, physics, materials research, mathematics, astronomy, biological sciences, archaeology, linguistics, and historical scholarship. Academy institutes have served as institutional carriers of many of these traditions. Their continuity allows contemporary decisions to build upon accumulated capabilities rather than select priorities from an abstract policy catalogue. This does not mean historical strength should automatically determine future investment. Some fields decline, technologies change, and new disciplines emerge. Nevertheless, institutional memory provides information about where scientific ecosystems already possess researchers, infrastructure, international connections, and training capacity. For smaller states, leveraging such concentration is often more realistic than attempting to create excellence simultaneously across every fashionable field. The Academy can therefore function as a mechanism through which historical scientific capital becomes strategic specialisation. European networks then broaden the accessible scientific environment beyond what domestic resources alone can sustain. The Czech model demonstrates how continuity and selective adaptation can be more productive than repeated wholesale reconstruction of research priorities.

Humanities research makes the logic of concentration visible from another angle. A national language, archival tradition, literary corpus, archaeological record, and cultural heritage cannot be outsourced entirely to international institutions. External scholars can and do make major contributions, but sustained competence depends upon domestic organisations capable of preserving sources, training specialists, and maintaining projects whose relevance may be primarily national or regional. Smaller linguistic communities are particularly vulnerable because international publishing markets and global university rankings can undervalue scholarship written for national scholarly and cultural purposes. An academy institute can protect such work while simultaneously requiring methodological quality and international engagement. Czech institutions concerned with the Czech language, history, archaeology, literature, art history, philosophy, ethnology, and related fields therefore perform functions comparable to those emphasised by academies in Slovenia, Slovakia, Estonia, and other smaller European states. This does not justify shielding humanities research from evaluation. It does require evaluation capable of recognising forms of scientific contribution that differ from those of laboratory disciplines. The Academy's interdisciplinary structure can make this diversity more visible at national policy level because natural sciences and humanities negotiate institutional legitimacy within a common organisation. In countries where humanities scholarship is dispersed among financially pressured university departments, long-term national projects may be more vulnerable. AV ČR therefore represents one European solution to the problem of maintaining cultural and linguistic knowledge as part of the research system rather than treating it as a separate heritage activity.

Academies also have particular potential as providers of scientific advice in smaller states. The number of ministries, parliamentary committees, regulatory agencies, and specialist policy bodies may be limited, while governments still confront the same complex questions faced by larger states: public health, energy, climate, demographic change, artificial intelligence, biodiversity, security, social inequality, and technological regulation. Independent research organisations can supply expertise that public administration cannot reasonably maintain internally across every field. An academy with broad disciplinary representation is well placed to assemble multidisciplinary panels and identify credible specialists. ALLEA describes European academies collectively as institutions operating at the interface of science, policy, and society and emphasises their role in independent science advice (*ALLEA, 2026*). EASAC performs a related function at European level by pooling expertise from national academies. For Czechia, participation in such networks has two advantages. Domestic experts gain access to wider European evidence, and Czech scientific perspectives enter discussions that may shape European policy. The Academy thus multiplies the advisory capacity of a medium-sized state through international institutional cooperation. This function becomes especially important when political decisions require knowledge that is both technically specialised and publicly contested. The authority of advice depends upon professional independence, making academy autonomy directly relevant to democratic governance rather than merely to scientists' internal interests.

Small-state conditions can, however, make autonomy unusually fragile. Where political, administrative, business, and scientific elites operate within relatively compact national networks, institutional relationships may be more direct and personal than in very large systems. Such proximity can facilitate communication and rapid policy response, but it can also increase vulnerability to political patronage, informal pressure, or overdependence upon a small number of decision-makers. Research organisations receiving substantial public

funding therefore need governance mechanisms that protect professional judgement without rendering them politically unaccountable. The Czech Academy's Academic Assembly, Academy Council, Scientific Council, institute boards, external evaluations, and legally defined public-research-institution status together create layers of protection and responsibility. No institutional architecture can eliminate conflict over budgets or scientific priorities, but multiple decision centres make direct political capture more difficult than a purely ministerial chain of command would. Hungary's experience in 2019 illustrates why such structures matter, while the post-1989 histories of Estonia and Slovenia show alternative methods of securing academy autonomy. ALLEA itself places independence from political, commercial, and ideological interference among the defining concerns of European academies (*ALLEA, 2026*). The Czech model is therefore especially relevant comparatively because it attempts to reconcile a large publicly funded research network with self-government. For a medium-sized democratic state, this balance is arguably more important than the formal question of whether institutes sit inside an academy or another public organisation.

Funding presents another structural dilemma. Smaller states have fewer fiscal resources in absolute terms than large scientific powers, yet many forms of advanced research do not become proportionally cheaper because a country's population is smaller. A high-performance microscope, research vessel, clean room, archaeological laboratory, or advanced computing facility costs broadly similar amounts regardless of whether it serves five million or fifty million citizens. Small systems must therefore choose between concentration, international sharing, or foregoing some capabilities entirely. Permanent academy institutes can help manage concentration because infrastructure can be shared across projects and sustained through institutional budgets. European research infrastructures make international sharing increasingly feasible, reducing the pressure for national duplication. Competitive EU funding can supplement domestic resources, but it cannot substitute completely for stable national investment because successful participation itself requires institutions, staff, and co-financing capacity. This is why ALLEA's earlier work on smaller countries emphasised the necessity of consolidating national strengths and maintaining appropriate research funding as the basis for participation in the European Research Area (*Engelbrecht et al., 2002*). The Czech Academy's history after 1993 closely illustrates this principle. Severe domestic underfunding threatened research capacity during transition, whereas later European opportunities became genuinely useful only because sufficient institutes had survived to exploit them. Europeanisation therefore rewards national preparedness rather than replacing it.

The coexistence of universities and academy institutes must consequently be assessed through opportunity cost as well as institutional tradition. Public resources invested in AV ČR are resources unavailable for other forms of research, education, or innovation, and the Academy therefore needs a stronger justification than historical continuity alone. Its case rests upon added value: international-quality research, unique infrastructure, specialist communities, long-term projects, doctoral cooperation, public expertise, and capacities that would be difficult or more expensive to reproduce elsewhere. This is why regular evaluation is central to the sustainability of the Czech model. The Academy cannot defend every institute simply because academy-based research has historical legitimacy. Individual organisations must demonstrate that concentrated public support produces scientific or public benefits commensurate with their mission. The Dutch KNAW articulates a similar principle by evaluating whether its national institutes add distinctive value to the Dutch knowledge

landscape (*Royal Netherlands Academy of Arts and Sciences, n.d.*). Polish institutes undergo national evaluation, while Austrian Academy institutes compete within an internationally oriented environment. The convergence lies not in organisational form but in the expectation that permanent research institutions justify their continued existence through performance and strategic relevance. For smaller states, such evaluation is particularly important because resources consumed by weak institutions have a larger opportunity cost. The Czech Academy's comparative strength therefore lies not merely in having survived but in having made evaluation part of the institutional bargain supporting survival.

European academy networks reduce another traditional disadvantage of small states: limited domestic access to disciplinary breadth. ALLEA brings together around sixty academies from roughly forty European countries and explicitly uses this diversity to mobilise multidisciplinary expertise across borders (*ALLEA, 2026*). EASAC similarly enables national academies to pool expertise when preparing European scientific advice. Czech scientists participate in working groups concerned with research policy, integrity, trust in science, sustainability, equality, and other cross-cutting questions. This means AV ČR can contribute to European debate without needing to maintain every relevant form of policy expertise inside its central administration. Network membership also gives smaller academies collective influence they would rarely possess independently when dealing with European institutions. The same logic applies scientifically through Horizon Europe consortia, COST networks, research infrastructures, bilateral programmes, and professional societies. Institutional networks therefore convert national scale from a fixed limitation into a variable that can be partly offset through cooperation. The Czech Academy's successful Europeanisation illustrates how an academy can act as an intermediary between domestic research communities and continental scientific governance. Its role is neither merely national nor supranational. It functions as a node through which Czech expertise enters Europe and European standards, opportunities, and debates enter Czech science. This intermediary function is particularly valuable for states whose individual institutions might otherwise have less visibility within a vast European research landscape.

The history of ALLEA itself provides an instructive symbol of this post-Cold War integration. Discussions about a federation of European academies began in 1990, when new possibilities for cooperation opened after the collapse of the political division of Europe. ALLEA was formally established in 1994 with participation from academies across the continent and with the explicit purpose of strengthening cooperation between scientific communities that had previously operated within different geopolitical systems (*ALLEA, 2023*). The sixth ALLEA General Assembly was held at the Czech Academy of Sciences in Prague in 2000, and the organisation developed working groups concerned with research in smaller European countries and the emerging European Research Area. The chronology closely overlaps with AV ČR's own transformation. During the same decade in which the Czech Academy was reconstructing its internal governance, it was also helping build a trans-European institutional environment within which academies from East and West could cooperate. This participation matters historically because it contradicts any image of AV ČR as a passive institution waiting to be integrated by more established Western partners. Czech academic science was already participating in the institutional construction of post-Cold War European research networks. The Czech Academy's development therefore belongs not only to national transformation but to the history of European academy integration itself. The coincidence of domestic

reconstruction and European network-building is one reason the period after 1993 acquired such long-term significance.

Comparison with small and medium-sized European states also helps explain why public mission remains central to academy legitimacy. In very large research systems, public engagement can be distributed among numerous universities, institutes, museums, think tanks, and specialised science organisations. Smaller states possess fewer nationally visible scientific institutions, so an academy may carry disproportionate symbolic responsibility for the public standing of research. The Czech Academy's festivals, media work, expert commentary, publications, and educational programmes should therefore be understood not only as institutional outreach but as contributions to Czech scientific culture more broadly. Similar representative roles are visible in Estonia, Slovenia, Austria, Slovakia, and other European academies, even where they conduct much less research directly. The Estonian Academy explicitly defines public appreciation of science and scientifically informed thinking as part of its mission (*Estonian Academy of Sciences, n.d.*). Slovenia's Academy contributes opinions on science and culture, while the Austrian Academy combines research performance with public and policy engagement. Such functions become particularly important in periods of misinformation, crisis, or political polarisation because citizens require institutions whose authority is not tied directly to electoral or commercial interests. AV ČR's large research base gives its public voice a distinctive connection to active scientific communities. Yet that same visibility creates responsibility to communicate uncertainty and disciplinary disagreement accurately. Comparative European experience therefore reinforces the argument that the academy of the 21st century is simultaneously a research or learned institution and a public institution of knowledge.

The Czech model also illustrates how a medium-sized state can separate prestige from direct control more effectively than the classical academy structure sometimes allowed. In many historical academies, membership itself was the principal source of authority, and elected academicians could combine symbolic distinction with substantial influence over institutional resources. AV ČR's post-1993 system is different because its research institutes do not derive their scientific legitimacy from an exclusive fellowship of lifetime members. Research groups are evaluated, institute directors are appointed through institutional procedures, and scientific authority is distributed across professional communities. The Learned Society provides a separate framework for recognising eminent scholars. This division can reduce the risk that symbolic academy membership becomes the sole gateway to institutional power. It also allows younger researchers and external experts to participate in evaluation and leadership without waiting for elevation to a traditional academy fellowship. The price is that the word *academy* in Czechia describes something different from its meaning in many neighbouring states, requiring explanation in international comparison. Yet functional differentiation may be one of the Czech model's strengths. It preserves the research-performing institution while allowing the learned-society tradition to operate independently. In a medium-sized system where personal networks can easily become dense, separating recognition from direct organisational control may contribute to pluralism. The model is not automatically superior, but it represents a distinctive solution to a recurrent academy problem: how to reconcile prestige, representation, and the governance of large research resources.

At the same time, the Academy's size creates risks that comparative analysis should not ignore. An organisation consisting of dozens of institutes can develop central administrative layers, internal bargaining, disciplinary competition, and inertia. Stable public research

institutions may become resistant to restructuring because closure or merger threatens established careers and local scientific cultures. Large academy systems can also create the impression of a parallel state within science if their internal procedures become insufficiently connected to national research policy or university development. These concerns appeared during the debates surrounding AV ČR's survival after 1989 and have analogues in Poland, Hungary, Slovakia, and other academy systems. The appropriate response is not necessarily institutional dismantling, but continuous evaluation and transparent strategic coordination. The Czech Academy's experience since 1993 suggests that large institute networks remain legitimate only when they accept that organisational continuity is conditional upon scientific value. This is another respect in which the model differs fundamentally from the late socialist system. Institutes are not preserved because an administrative plan requires a complete hierarchy of disciplines. They must demonstrate excellence, relevance, infrastructural value, or other functions justifying continued public support. Comparative examples from Estonia and Hungary remind Czech science that organisational architecture can change dramatically if this legitimacy weakens. The Academy's history therefore encourages institutional confidence without institutional complacency.

The same caution applies to the idea of AV ČR as a "model". A model in comparative institutional history should not be understood as a template to be copied wholesale by other states. Czechia's academy reflects an unusual combination of Habsburg learned traditions, 19th-century national institution-building, Czechoslovak research expansion, socialist centralisation, democratic transformation, and European integration. No other country possesses exactly the same sequence. Austria retained stronger continuity with the classical learned-society model; Poland maintains a larger combined membership-and-institute academy; Slovakia inherited related Czechoslovak traditions but operates at a smaller scale; Estonia transferred most academy research elsewhere; Slovenia separated much research from the core Academy; the Netherlands preserves a smaller portfolio of national institutes; and Hungary separated its research network from MTA in 2019. The comparative value of AV ČR therefore lies in demonstrating a principle rather than prescribing a structure. A large inherited research system can be democratised, internationally evaluated, legally modernised, and integrated into European science without being dismantled merely because part of its organisational form developed under authoritarian rule. Continuity can coexist with radical changes in governance. This lesson is potentially relevant wherever states confront the problem of reforming historically accumulated research institutions. The Czech model demonstrates that institutional inheritance becomes an asset only when it is subjected to critical transformation.

What the Czech case offers particularly clearly is a synthesis of concentration and pluralism. Concentration exists because fifty-four Academy institutes create large communities of specialised research under a common public framework. Pluralism exists because the Academy is not legally or intellectually superior to universities and must operate within a research system containing multiple autonomous institutions. Concentration allows expensive infrastructures, long-term programmes, specialist archives, and research schools to survive. Pluralism ensures that these capacities face competition, collaboration, and comparison beyond the Academy itself. International evaluation adds another layer by preventing the national system from becoming the sole judge of its own performance. European integration widens the environment further, allowing Czech institutes to collaborate with and compete against organisations across the continent. The resulting model is therefore

neither a centralised academy-state nor a fully fragmented research market. It occupies an institutional middle position in which stable organisations coexist with competitive funding and external assessment. For medium-sized states, such a balance can be advantageous because pure fragmentation may prevent critical mass while excessive centralisation may weaken adaptability. AV ČR's historical experience shows that the balance must be continually negotiated rather than permanently solved. Its comparative importance lies precisely in the durability of this negotiated structure.

The future viability of such a model also depends upon maintaining constructive relations with the university sector. Small and medium-sized states cannot afford unnecessary duplication of research and doctoral education between parallel institutional systems. Academy institutes need universities for student recruitment, teaching cooperation, degree programmes, and broad disciplinary interaction. Universities benefit from Academy laboratories, collections, research schools, and researchers able to devote substantial time to investigation. Joint doctoral arrangements are therefore not merely convenient partnerships but mechanisms through which a national system combines complementary capacities. The Dutch, Austrian, Polish, Slovak, and Czech examples all show substantial interaction between academy research and university communities even when legal arrangements differ. The strongest comparative lesson is that the institutional boundary between academy and university need not correspond to an intellectual boundary. Researchers move across it, projects span it, and infrastructures often serve both sectors. The Czech Academy's continued legitimacy therefore depends partly upon remaining permeable. If AV ČR were to become a closed institutional world competing defensively against universities, the advantages of concentration could turn into fragmentation. Its post-1993 movement towards cooperation represents an essential part of its European normalisation.

Another comparative advantage of a broad academy network is the ability to preserve capacities that are temporarily unfashionable but strategically difficult to reconstruct. Research policy often follows changing priorities—biotechnology in one period, nanotechnology in another, artificial intelligence or quantum technologies in another. Competitive programmes can mobilise resources rapidly, but they can also encourage institutions to abandon areas that lack immediate political visibility. Medium-sized states are especially vulnerable because once a specialised national community disappears, restoring it may require recruiting almost entirely from abroad. Stable academy institutes can buffer this volatility if they maintain scientifically credible programmes across policy cycles. Such buffering should not become an excuse to preserve obsolete work, which is why international evaluation remains indispensable. The ideal is selective durability: retaining competences whose long-term scientific potential or public importance justifies continuity while allowing organisational change when fields genuinely decline. Czech academic history provides numerous examples of knowledge becoming useful under circumstances that earlier policymakers could not predict. This long institutional memory strengthens the argument for preserving a degree of research diversity in a medium-sized state. European cooperation broadens access, but national absorptive capacity still depends upon having researchers capable of understanding and applying external knowledge. The Academy therefore supports resilience partly by maintaining scientific option value.

This resilience has cultural as well as technological dimensions. Small and medium-sized European states frequently developed academies during periods of national consolidation because scholarship was understood as part of cultural sovereignty. Language

standardisation, historical research, archaeology, literature, and documentation of cultural heritage contributed to the intellectual infrastructure through which nations understood themselves. European integration did not make these functions obsolete. On the contrary, participation in a larger multilingual political and scientific space can increase awareness that national languages and cultural archives require sustained domestic expertise. The Czech Academy's humanities institutes perform this role without withdrawing from international scholarship. Slovenia's Academy similarly emphasises national heritage and language, while the Estonian Academy explicitly connects knowledge with the development of a knowledge-based national society. These examples show that Europeanisation and national cultural responsibility are complementary rather than contradictory. A European research system gains intellectual richness from strong national traditions provided that those traditions remain methodologically open and internationally connected. AV ČR therefore illustrates how a medium-sized state can treat cultural research as part of modern scientific capacity rather than as a nostalgic residue of 19th-century nationalism. The Academy's centrality to Czech culture is one of the features that differentiates it from purely technological research organisations.

By 2025, the Czech Academy could consequently be located within several overlapping European institutional families. It belonged to the Central and Eastern European tradition of academies with substantial institute networks, together with organisations such as the Polish and Slovak academies. It also shared important functional characteristics with Western research-performing academies such as the Austrian Academy and KNAW. Its separate relationship with the Czech Learned Society gave it a structure unlike either of those examples. Its participation in ALLEA, EASAC, the European Research Area, Horizon programmes, European infrastructures, and international evaluation embedded it within continental institutions that did not exist when ČSAV was founded. At the same time, its legal status and substantial national institutional funding preserved a specifically Czech public research capacity. This combination makes AV ČR neither a residual Eastern academy nor a copied Western institution. It is a European hybrid created through historical adaptation. The notion of hybrid should not imply incompleteness. European scientific organisation itself is hybrid because national traditions coexist within common research spaces. The Czech Academy exemplifies this coexistence particularly clearly because several different historical layers remain institutionally visible within one organisation.

Its experience also offers a broader lesson about European integration after the Cold War. The successful incorporation of Central and Eastern European research systems did not require the disappearance of their institutional particularities. Integration proceeded through common standards of peer review, mobility, competitive funding, research integrity, open science, shared infrastructure, and scientific collaboration. Organisations could retain different legal and historical forms provided that they operated credibly within those common frameworks. This is an important distinction between institutional harmonisation and institutional homogenisation. Harmonisation concerns the conditions allowing researchers and organisations to cooperate and trust one another. Homogenisation would require them to become structurally identical. The European Research Area has pursued the first much more than the second. The Czech Academy's trajectory demonstrates why this flexibility matters. Had Europeanisation been defined as the abolition of institute-based academies, substantial Czech research capacity might have been destroyed without clear scientific benefit. Instead, AV ČR retained its institutional specificity while adopting and contributing to shared European

standards. Its continuity therefore represents one of the ways in which post-Cold War Europe integrated different scientific histories without eliminating them.

The comparative experience also shows that national research institutions remain important even as science becomes increasingly transnational. European programmes, multinational consortia, and global disciplinary communities might appear to reduce the relevance of national academies. In practice, however, researchers still require employment contracts, laboratories, infrastructure, legal support, training systems, and stable organisations situated within national jurisdictions. European projects are implemented by institutions capable of managing them. International mobility depends upon domestic organisations willing to recruit and host researchers. Scientific advice enters national political systems through institutions possessing domestic legitimacy. Language, cultural heritage, and many environmental or social questions remain territorially rooted. The nation-state therefore remains an important organisational level of science even when knowledge itself crosses borders easily. For medium-sized states, strong national institutions may actually become more important under global competition because they provide the platforms from which researchers participate internationally. AV ČR exemplifies this paradox. Its Europeanisation did not make it less Czech as an institution; it made Czech public investment more deeply connected to European and global knowledge production. The national Academy became one vehicle through which international science was internalised into Czech society.

Thus, the Czech Academy of Sciences should be understood in the context of small and medium-sized European states as one historically specific but broadly European solution to the problem of sustaining scientific capacity under conditions of limited national scale. European academies encompass a wide variety of forms, from predominantly elected learned societies to extensive research-performing organisations, and AV ČR belongs to the latter tradition without being reducible to its socialist-era institutional inheritance. Comparisons with Austria and the Netherlands show that academy-based research institutes also form part of Western European scientific organisation, while Poland and Slovakia demonstrate the continuing importance of substantial institute networks in Central Europe. Estonia illustrates an alternative post-socialist strategy in which most academy institutes were transferred elsewhere, and Slovenia demonstrates a model in which the learned academy and research institutions became more clearly differentiated. Hungary's separation of the academy research network in 2019 shows that governance and scientific autonomy remain politically contested even in mature European research systems. Against this diverse background, the Czech model is distinguished by the preservation of a large research-performing Academy alongside a separate Learned Society, autonomous universities, competitive grant systems, and extensive European integration. Its fifty-four institutes give a medium-sized state critical mass in fields that might otherwise be difficult to sustain, while international evaluation and European competition reduce the dangers associated with institutional concentration. The Academy preserves expensive infrastructure, long-term datasets, research schools, linguistic and cultural scholarship, public expertise, and disciplinary capabilities whose future strategic value cannot always be predicted. At the same time, it remains dependent upon cooperation with universities, foreign partners, European infrastructures, and transnational academy networks. Its history therefore demonstrates that national scientific strength and European integration are not rival strategies. Smaller and medium-sized states participate most effectively in European science when they possess robust domestic institutions capable of producing, absorbing, preserving, and communicating knowledge. AV ČR is not a universal

organisational template, and its institute network should not be protected from reform merely because of historical continuity. Its comparative significance lies instead in showing that inherited scientific institutions can be transformed without being erased and that institutional diversity can coexist with common European standards of excellence, autonomy, evaluation, and public responsibility. In this sense, the Czech Academy represents a model of European academic continuity precisely because it has remained recognisably Czech in historical form while becoming fully embedded in a research environment whose intellectual and institutional horizons extend across Europe.

2. Fundamental Research and National Resilience

The relationship between fundamental research and national resilience is one of the clearest reasons why a small or medium-sized European state may choose to maintain a strong public academy of sciences. Resilience is often discussed only in connection with emergency response, yet for scientific institutions its meaning is broader and more demanding. It concerns the capacity of a society to absorb disruption, understand unfamiliar threats, preserve essential knowledge and infrastructure, adapt to changing circumstances, and recover without losing the intellectual resources required for future development. Fundamental research contributes to this capacity precisely because it develops knowledge before governments, markets, or citizens can know exactly when that knowledge will become urgently necessary. Laboratories studying viruses are valuable before the arrival of a pandemic, just as long-term climatic observations matter before an exceptional drought or flood becomes a political emergency. Expertise in energy systems acquires strategic importance before geopolitical disruption reveals dangerous dependencies, while scholarship on political institutions, social trust, propaganda, and historical memory may become indispensable when democratic stability is challenged. The central paradox is that research is often most useful during a crisis when it has been cultivated for many years without being organised specifically for that crisis. A national research system cannot manufacture mature expertise on demand because researchers, laboratories, datasets, infrastructures, and disciplinary communities require long periods of accumulation. Scientific preparedness therefore resembles other forms of strategic capacity whose usefulness depends upon their existence before the moment of maximum demand. The experience of COVID-19 brought this principle into unusually sharp international focus, with the OECD concluding that science, technology, and innovation systems had played a decisive role in societal resilience while also revealing weaknesses in preparedness and research capacity (*OECD, 2021*). For the Czech Academy of Sciences, the relationship between fundamental research and resilience consequently became not simply a rhetorical justification for public funding but an observable feature of institutional performance during several overlapping crises after 2020.

For countries of Czechia's scale, the resilience argument has particular structural force because scientific vulnerability can increase when nationally unique competences are concentrated in relatively few institutions. A large scientific power may possess several university departments, national laboratories, specialist companies, and research hospitals working in the same field, so the decline of one organisation does not necessarily eliminate domestic capability. A medium-sized state may instead depend upon one or two research groups for expertise in a narrow but strategically important domain. If such a group disperses, the loss cannot always be reversed by allocating money after a crisis has already emerged.

Experienced scientists may have moved abroad, technical staff may have changed careers, instruments may have been decommissioned, and datasets or collections may have ceased to be maintained. The Czech Academy's institute system reduces some of this vulnerability by providing long-term organisational homes for specialised scientific communities. Its value in this respect lies less in centralisation itself than in its ability to maintain critical mass across areas where fragmentation would make national competence fragile. Stable institutions can preserve teams through periods in which their research attracts limited political attention, allowing expertise to remain available when circumstances suddenly alter priorities. This is especially important because political perceptions of strategic importance fluctuate more rapidly than the time required to build a research school. A field ignored during one decade may become essential in the next because of technological, environmental, epidemiological, or geopolitical change. The Academy therefore contributes to national resilience by preserving a diversified scientific portfolio whose future usefulness cannot be predicted perfectly in advance. Such portfolio logic is consistent with the broader OECD conclusion that resilient research systems require the preservation of long-term capabilities rather than indiscriminate diversion of resources towards whichever crisis happens to dominate the present (*OECD, 2021*).

This logic helps explain why fundamental research should not be judged exclusively through immediate application. A commercially useful technology can often be evaluated through identifiable users, markets, or cost savings, whereas the contribution of basic science to resilience may remain latent for years. The accumulated knowledge of molecular mechanisms, materials, statistical modelling, plasma behaviour, crop genetics, atmospheric processes, demographic change, or social trust may possess no single application at the moment of discovery. Yet when a crisis arises, society rarely begins its response from a blank sheet of paper. It draws upon conceptual frameworks, techniques, datasets, instruments, professional networks, and trained people generated by earlier research. The speed of response is therefore partly a function of the depth of pre-existing knowledge. This is why the distinction between "useful" and "non-useful" science becomes especially misleading in questions of resilience. Research that appears remote from policy can provide the intellectual components from which practical responses are later assembled. Even failed experiments and abandoned hypotheses can contribute by clarifying which approaches are unlikely to work when time becomes scarce. Long-term institutional memory therefore forms part of preparedness alongside current scientific excellence. The Academy's capacity to maintain research programmes across decades gives Czech society access not merely to published results but to communities capable of interpreting new evidence through accumulated experience. Fundamental research consequently operates as a form of strategic option value: it preserves multiple possible responses to futures that cannot yet be specified.

The Academy's own post-1993 history reinforces this argument because institutional resilience was itself required before the institution could contribute effectively to national resilience. The severe restructuring of the 1990s forced AV ČR to decide which scientific capacities should survive the transition from ČSAV and which structures no longer possessed sufficient scientific justification. Regular evaluation, institute self-government, international opening, and stable public financing gradually created a research system capable of combining continuity with adaptation. This institutional architecture proved important once rapid external shocks arrived decades later. A research organisation that had remained administratively rigid or internationally isolated would have been less capable of redirecting

expertise quickly during the pandemic or the energy crisis. Conversely, a system composed only of short-lived project teams might have lacked the durable infrastructures and professional relationships necessary for rapid mobilisation. The Czech model therefore illustrates a broader principle of resilience theory: robustness and adaptability are complementary rather than contradictory when institutions are well designed. Stability protects accumulated resources, while evaluation and international competition prevent stability from becoming immobility. The Academy's ability to respond to crisis after 2020 was built upon organisational reforms whose original purpose had not been crisis management at all. Scientific self-government, professional assessment, digital infrastructure, international cooperation, and interdisciplinary programmes became latent assets capable of being activated under pressure. In this sense, resilience was produced historically through institutional modernisation rather than created suddenly by emergency decrees.

The COVID-19 pandemic provided the most immediate demonstration of this latent capacity. When the novel coronavirus reached Europe in early 2020, governments required diagnostic capacity, epidemiological modelling, understanding of viral biology, protective materials, economic analysis, behavioural research, and public communication almost simultaneously. The Czech Academy could mobilise several institutes because relevant scientific competence already existed before the virus appeared. Academy laboratories assisted with testing samples, researchers worked on faster diagnostic methods, and materials scientists analysed substances used for respirators and other protective equipment. The Academy also offered logistical resources to the government, while economists at the IDEA think tank examined the social and economic consequences of emergency measures (*Czech Academy of Sciences, 2020*). This diversity of response is institutionally important because it shows that a health crisis was never purely a biomedical event. Its effects extended through labour markets, education, public trust, behaviour, fiscal policy, logistics, and communication. The Academy's disciplinary breadth therefore provided a type of resilience unavailable to a narrowly specialised biomedical institute. Several forms of expertise could be mobilised under one public research umbrella without requiring the creation of entirely new organisations during the emergency. The response also demonstrates why national resilience depends on scientific capacity that is broader than the immediate sector in which a crisis originates.

The specific work undertaken during the pandemic further illustrates how fundamental and applied research interact under emergency conditions. Researchers who had previously studied molecular biology, analytical chemistry, materials, modelling, or population behaviour could redirect part of their knowledge towards diagnostic, protective, or policy problems without abandoning the scientific foundations of their disciplines. The Academy reported not only routine testing but attempts to develop more efficient diagnostic methods and to examine materials suitable for protective equipment (*Czech Academy of Sciences, 2020*). Economists and social scientists contributed analyses of behavioural changes and the economic effects of restrictions, while epidemiological modelling increasingly required cooperation with statistical and mathematical expertise. These activities did not emerge because every participating research group had anticipated a coronavirus pandemic years earlier. They became possible because fundamental competences were sufficiently mature to be repurposed. The distinction between preparedness and prediction is therefore critical. A resilient research system does not need to forecast every future crisis correctly; it needs enough intellectual diversity and institutional flexibility to respond when forecasts fail. COVID-19 demonstrated internationally that research infrastructures, scientific databases, open access, and rapid collaboration could

be redirected under unprecedented pressure (*OECD, 2021*). It also exposed the risks of narrowing science too aggressively towards predetermined applications, because unpredictable crises require knowledge that may have developed outside politically prioritised missions. The Czech experience corresponded closely with this international pattern.

The pandemic also revealed that resilience concerns the scientific system itself, not merely the services science provides to society. Laboratories faced restrictions, researchers lost normal access to workplaces, fieldwork was interrupted, international travel collapsed, and younger scientists encountered severe uncertainty concerning careers and projects. Scientific institutions had to maintain continuity while simultaneously redirecting resources towards emergency needs. The OECD warned that indiscriminate movement of funding towards COVID-related topics risked damaging non-pandemic research whose long-term importance remained substantial (*OECD, 2021*). This lesson is highly relevant to an academy responsible for a wide disciplinary portfolio. A crisis generates legitimate pressure to concentrate attention, but research policy must resist turning temporary urgency into permanent intellectual monoculture. The most resilient response therefore protects the broader science base even while specific teams pivot towards emergency work. AV ČR's institute structure offered some protection because institutional funding allowed research groups to retain organisational existence when ordinary projects were disrupted. Digital systems and international networks also helped sustain scholarly communication during periods of physical restriction. The crisis accelerated open-science practices and remote collaboration while exposing inequalities in researchers' working conditions, career security, and care responsibilities. National resilience thus depends partly upon whether scientific institutions themselves can withstand shocks without losing a generation of researchers. The pandemic transformed resilience from a subject studied by scientists into a condition they had to practise within their own organisations.

Health resilience extends beyond COVID-19, and one of the dangers of emergency politics is that preparedness is forgotten once an immediate threat recedes. Infectious diseases evolve, antimicrobial resistance continues, demographic ageing alters disease burdens, and biotechnology creates both therapeutic possibilities and new regulatory questions. Fundamental research in molecular biology, chemistry, microbiology, genetics, biophysics, and related disciplines therefore remains strategically important even when no single pathogen dominates public attention. The Academy's role is to maintain knowledge capacity between crises rather than simply react during them. This long horizon differentiates research institutions from emergency agencies, whose mandates are understandably concentrated on immediate operational response. Scientific preparedness requires investigation of mechanisms whose eventual relevance cannot be known with certainty. Novel diagnostic technologies may originate in work directed towards entirely different biological questions, while advances in imaging, computation, or materials science can unexpectedly transform medical research. Such cross-disciplinary spillovers are especially valuable in a broad academy where institutes do not operate in complete isolation from one another. A resilient health system therefore depends not only upon hospitals and pharmaceutical capacity but also upon a surrounding ecosystem of fundamental research. The pandemic made that dependence visible, but the institutional lesson extends much further. Research systems that dismantle biomedical capacity after a crisis because immediate demand has fallen may recreate the very vulnerability that the crisis exposed.

Russia's full-scale invasion of Ukraine in February 2022 revealed another dimension of national resilience by transforming energy security from a long-term policy problem into an immediate geopolitical concern. Czechia, like much of Europe, faced the consequences of dependence upon imported fossil fuels and the volatility of energy markets. The Academy had already maintained research in nuclear technologies, plasma physics, photovoltaics, hydrogen, energy storage, materials, thermodynamics, and economic aspects of the energy transition. During the Czech Presidency of the Council of the European Union in 2022, low-emission and safe energy became one of three principal research themes through which AV ČR connected its expertise with European policy discussions (*Czech Academy of Sciences, 2022*). Researchers explicitly linked the war and the resulting energy crisis with the need to diversify the European energy mix. Academy representatives emphasised that research in areas such as thermonuclear fusion could not solve the immediate winter crisis but might reduce vulnerability to comparable shocks in the future (*Czech Academy of Sciences, 2022*). This distinction between immediate relief and strategic preparedness captures the role of fundamental research particularly well. Politicians confronted with high prices must secure supply within months, whereas scientists working on new energy systems may operate on horizons of decades. National resilience requires both temporal scales and institutions capable of protecting the longer one when short-term pressure becomes intense.

Fusion research is an especially revealing case because its timescale makes simplistic demands for immediate economic return impossible to satisfy. Plasma physics, materials capable of surviving extreme conditions, reactor engineering, diagnostics, control systems, and theoretical modelling require sustained international investment across generations. Commercial fusion power may remain distant, yet participation in such research creates capabilities in advanced materials, computation, engineering, and high-energy systems that can generate benefits before a reactor supplies electricity. It also embeds Czech scientists within international networks concerned with technologies potentially relevant to Europe's long-term energy autonomy. Similar logic applies to nuclear fission safety, advanced photovoltaics, hydrogen technologies, and energy storage. The Academy's Sustainable Energy programme connected more than ten institutes with universities and state partners around these themes (*Czech Academy of Sciences, 2022*). Such interdisciplinarity is necessary because energy resilience is not purely an engineering challenge. Economic incentives, public acceptance, regulation, materials availability, grid design, environmental consequences, and geopolitical dependencies interact with technological performance. A research organisation containing engineering, physical, economic, environmental, and social expertise can therefore analyse energy security more comprehensively than a single technological institute. For a medium-sized state, the ability to participate intelligently in European energy choices may be more realistic and strategically valuable than attempting complete technological self-sufficiency. Fundamental research supplies the expertise necessary to make that participation substantive rather than politically symbolic.

Food security provides a parallel example in which long-term biological research became connected with climate change and geopolitical instability. The Czech Academy's work on plant genetics and breeding had developed over many years before food security became one of the research priorities associated with the Czech EU Presidency. Researchers at the Institute of Experimental Botany and collaborating institutions contributed expertise concerning new genomic techniques, including targeted genome editing and CRISPR-based approaches. The Academy framed this work within the problem of maintaining agricultural productivity under

changing climatic conditions and potential food shortages (*Czech Academy of Sciences, 2022*). Again, the strategic relevance derives from cumulative basic knowledge. Genome editing becomes possible because decades of research have clarified plant genomes, cellular mechanisms, chromosome organisation, and patterns of heredity. Policy debate over agricultural biotechnology therefore depends upon scientific competence that cannot be generated after droughts or supply disruptions have already intensified. Food resilience also involves soil, water, biodiversity, agricultural economics, environmental regulation, and social acceptance. The Academy's broad disciplinary structure makes it possible to connect technological options with ecological and social consequences. Such integration is important because resilience should not be confused with maximising production through one method irrespective of long-term environmental effects. A genuinely resilient food system must preserve productivity, adaptability, resource efficiency, and public legitimacy simultaneously.

Climate change broadens the resilience question from individual crises to a prolonged transformation of environmental conditions. Drought, heat, flooding, ecosystem disruption, changes in agricultural suitability, forest stress, water scarcity, and biodiversity loss cannot be understood through short observational windows. They require long-term environmental monitoring and historical datasets capable of distinguishing structural change from ordinary variability. Academy institutes working in ecology, atmospheric science, hydrology, soil science, geography, biology, geology, economics, and social research therefore contribute complementary forms of resilience knowledge. The strategic importance of such research lies partly in temporal continuity. A climate dataset becomes more valuable as its time series lengthens, while ecological collections and field observations may acquire new meaning decades after they were created. Closing a monitoring programme because its immediate annual output appears modest can destroy an irreplaceable future baseline. This is another reason institutional funding matters for resilience. Competitive projects are excellent mechanisms for addressing defined questions, but they are less well suited to maintaining observations whose full value may become apparent only after many project cycles. The Academy's long-lived institutes can protect these scientific commons while integrating them with contemporary modelling and international datasets. National resilience to climate change therefore depends not only upon new technologies but also upon the preservation of memory about how Czech environments have already changed.

Biodiversity research reinforces the same principle because ecosystem resilience itself depends upon knowledge accumulated across species, landscapes, and long periods. Biological collections, genetic databases, ecological field sites, taxonomic expertise, and historical observations provide evidence that cannot easily be recreated after habitats disappear. The scientific infrastructure surrounding biodiversity is consequently a form of national insurance against environmental ignorance. A society may not know in advance which organism will become agriculturally important, which ecosystem service will prove critical, or which invasive species will threaten local environments. Maintaining taxonomic and ecological competence preserves the ability to recognise and respond to such changes. Fundamental biology also provides conceptual frameworks for understanding adaptation, population dynamics, and interactions among species. These frameworks influence conservation and land-use policy even when the original research was not commissioned for a specific administrative decision. Climate and biodiversity crises therefore demonstrate a recurring feature of resilience: knowledge must often exist before the political system can formulate the correct question. The Academy's role is partly to maintain the communities capable of

recognising emerging questions early. This anticipatory function is difficult to value through conventional cost-benefit calculations because avoided ignorance does not appear easily in financial accounts. Yet the absence of such knowledge can become extremely expensive once environmental thresholds are crossed.

The Academy's contribution to resilience is not confined to natural and technical threats because societies can be destabilised by institutional distrust, polarisation, disinformation, inequality, demographic change, and political conflict. The Strategy AV21 programme *Resilient Society for the 21st Century* explicitly approached resilience as the capacity of social systems to cope with crises, unexpected emergencies, and changing living conditions (*Czech Academy of Sciences, 2022*). During the Czech EU Presidency, the Academy connected this programme with questions of public trust in state institutions and resistance to disinformation. The timing was significant because the COVID-19 pandemic and the war in Ukraine exposed the degree to which social cohesion affects a society's ability to implement technically sound policies. Scientific evidence can exist without producing effective action if citizens distrust institutions, political actors manipulate uncertainty, or information systems reward falsehood. Social resilience therefore depends upon understanding how people interpret authority, risk, identity, and collective obligation. Sociology, psychology, philosophy, economics, political research, history, and communication studies all contribute to this understanding. These disciplines are sometimes described as less strategically important than engineering or biomedical science because their outputs are rarely embodied in machines or medicines. Crisis experience demonstrates the inadequacy of that hierarchy. A technologically capable society can still fail to respond effectively if its institutions lack legitimacy or if social conflict prevents coordinated action.

The humanities contribute to national resilience through an even longer temporal horizon. Historical scholarship allows societies to compare present crises with earlier political, economic, epidemiological, and geopolitical disruptions rather than interpreting each shock as historically unprecedented. Research on totalitarianism and democratic transition helps identify the institutional consequences of concentrated political power and the mechanisms through which public trust can be destroyed or reconstructed. Linguistic expertise supports reliable public communication and preserves the capacity of Czech to function as a language of administration, science, education, and culture under conditions of rapid technological change. Philosophy clarifies ethical conflicts that cannot be resolved through technical evidence alone, while legal scholarship examines how emergency measures interact with constitutional principles and rights. Archaeology and cultural research contribute indirectly by maintaining a sense of historical continuity that can become important when national identity is subjected to external or internal pressures. These functions cannot be reduced to symbolic heritage. Democratic resilience depends partly upon a society's capacity to interpret its own past critically rather than allowing history to be monopolised by propaganda. The Czech experience of occupation, communist dictatorship, normalisation, and democratic transition makes such knowledge particularly relevant. An academy preserving strong humanities institutes therefore maintains forms of resilience that would disappear from national strategy if knowledge were defined only through technological utility. Fundamental research in history or philosophy may not prevent a cyberattack, but it can strengthen the institutional and cultural environment within which democratic responses to crisis are formulated.

Economic and demographic research adds another dimension because resilience is always mediated by the distribution of resources and vulnerabilities within society. Economic shocks

do not affect households, firms, regions, and generations equally, and poorly designed emergency policies can deepen inequalities that later weaken social cohesion. During the COVID-19 crisis, researchers connected with the Economics Institute and IDEA contributed analyses of the effects of restrictions, behavioural changes, employment, and public-policy choices (*Czech Academy of Sciences, 2020*). Such work illustrates why economic expertise must exist before a crisis if governments are to compare interventions rapidly. Demographic research is similarly strategic because ageing, migration, fertility, regional depopulation, and labour-force change develop over decades rather than electoral cycles. These processes influence healthcare capacity, pension systems, housing, education, labour markets, and regional resilience. A medium-sized state that lacks independent analytical capacity becomes more dependent upon external models that may not reflect its own institutional conditions. National research therefore creates interpretive sovereignty even where policy remains integrated within European frameworks. The purpose is not to produce exclusively Czech answers but to ensure that international knowledge can be evaluated against high-quality domestic evidence. In this sense, social-science capacity is as important to resilience as technological infrastructure.

Digitalisation has created new forms of both resilience and vulnerability. Modern societies depend upon communication networks, data infrastructures, algorithms, automated systems, and increasingly artificial intelligence for public administration, business, science, healthcare, and everyday life. Fundamental research in computer science, mathematics, information theory, linguistics, cognitive science, cybersecurity, and ethics therefore contributes to national capacity far beyond the information-technology sector itself. The Academy's digital research is valuable partly because public institutions need expertise independent of commercial vendors whose incentives may not coincide with long-term national interests. Mathematical and theoretical research can provide conceptual foundations for security, optimisation, modelling, cryptography, and machine learning before specific products emerge. Humanities and social-science expertise becomes equally important because digital resilience concerns misinformation, labour transformation, privacy, political communication, cultural change, and the distribution of technological power. Artificial intelligence intensifies the need for this multidisciplinary perspective. A country may import AI systems technologically while remaining strategically dependent if it lacks people capable of evaluating how those systems work and what social consequences they produce. Fundamental research therefore supports technological sovereignty not by requiring national production of every platform, but by preserving the intellectual capacity to assess, adapt, regulate, and improve imported technologies. For a state of Czechia's scale, such absorptive capacity is a more realistic measure of resilience than complete technological autarky.

Research infrastructures themselves are components of national resilience because they preserve scientific capacity through material systems that cannot be improvised rapidly. Laboratories, observatories, biological collections, archives, specialised libraries, supercomputing resources, experimental facilities, and long-term monitoring stations concentrate expensive equipment together with human expertise. Their strategic value becomes especially clear when a crisis requires rapid access to data or experimental capability. During COVID-19, international experience showed that existing research infrastructures could be redirected towards urgent projects much faster than entirely new facilities could be established (*OECD, 2021*). The same principle applies to energy, environmental, or security challenges. A country able to mobilise established scientific

infrastructure has a shorter path from problem recognition to credible analysis. AV ČR's network contributes substantially to this capacity because its institutes maintain facilities across many disciplines. European integration multiplies their value by connecting Czech infrastructure with multinational networks and allowing Czech researchers to access facilities located abroad. National resilience is therefore increasingly networked rather than self-contained. The objective is not to possess every infrastructure domestically but to remain a capable partner whose own contributions ensure reliable access to wider systems.

Data constitute a comparable strategic resource. Scientific resilience increasingly depends upon the ability to preserve, interpret, share, and secure large bodies of information across time. Epidemiological modelling requires health and behavioural data, climate research depends upon long observational series, social science uses surveys and administrative datasets, while artificial intelligence relies upon enormous data infrastructures. The Academy's development of digital repositories, research-data management, and open-science practices therefore contributes indirectly to national resilience by making knowledge more reusable. Yet openness introduces a genuine tension because some data are sensitive, strategically significant, personally identifiable, or potentially dual-use. The principle that information should be as open as possible and as closed as necessary becomes especially important in this context. A resilient system must avoid both extremes: secrecy that prevents scientific collaboration and indiscriminate openness that creates security or ethical risks. Research institutions consequently need professional expertise in data governance, cybersecurity, licensing, privacy, and long-term preservation. These functions may appear administrative, but they increasingly determine whether scientific capacity survives technological change and geopolitical tension. Digital resilience therefore belongs inside the scientific mission rather than outside it. The Academy's post-1993 modernisation created precisely the information infrastructure upon which contemporary crisis response increasingly depends.

Human capital is even more difficult to replace than equipment. A scientific instrument can sometimes be purchased within months, but a researcher capable of using it at an internationally competitive level may require fifteen or twenty years of education and professional development. National resilience therefore depends heavily upon career systems that preserve expertise while enabling renewal. For Czechia, this means maintaining a productive circulation between domestic institutions and the international scientific labour market. Researchers should be able to train abroad without disappearing permanently from the national system, while foreign scientists should be able to build serious careers within Czech institutions. Academy institutes contribute by providing long-term research environments capable of hosting specialised teams and international grant holders. The threat of brain drain is particularly significant for medium-sized states because the loss of a handful of leading scientists can weaken an entire field. Yet attempts to restrict mobility would damage science even more severely by cutting researchers off from international networks. The relevant concept is therefore brain circulation rather than retention at all costs. A resilient scientific system allows people to move while preserving institutional relationships through which knowledge can return. Internationalisation and national resilience are thus mutually reinforcing when domestic institutions remain sufficiently attractive to participate in that circulation.

The Researchers at Risk Fellowship programme developed after Russia's invasion of Ukraine adds an important ethical and strategic dimension to this human-capital argument. The

Academy rapidly created a programme enabling Ukrainian researchers and doctoral candidates whose scientific work was threatened by war to continue research in Czech institutes. It initially aimed to support at least fifty Ukrainian researchers, and by the following year the Academy reported that forty-nine researchers had been supported through the programme (*Czech Academy of Sciences, 2022*; *Czech Academy of Sciences, 2023*). In 2024, the programme was broadened towards researchers from other countries where scientific work was threatened by war, persecution, or authoritarian conditions (*Czech Academy of Sciences, 2024*). This initiative demonstrates that scientific resilience has an international dimension. Protecting threatened researchers preserves knowledge communities that might otherwise be destroyed by political violence, while host institutions gain intellectual relationships that can outlast the immediate emergency. Czech academic history gives this policy particular resonance because generations of Czech and Czechoslovak scientists themselves experienced occupation, political purges, forced exclusion, and exile. The programme therefore connects historical memory with contemporary scientific responsibility. It also illustrates how academic freedom becomes a component of resilience rather than merely an ethical aspiration. A research system that can provide safe institutional continuity when another system is disrupted contributes to the resilience of European science as a whole.

The war in Ukraine simultaneously demonstrated that international cooperation cannot be treated as politically neutral under all circumstances. In March 2022, the Czech Academy suspended or terminated institutional scientific cooperation with organisations in Russia and Belarus in response to the invasion (*Czech Academy of Sciences, 2022*). Such measures introduced a difficult tension between the universalist traditions of science and the security responsibilities of public institutions. Scientific openness has historically been one of the main mechanisms through which knowledge survives political division, yet institutions cannot always ignore the conduct of states controlling potential partners. Research involving sensitive technologies, dual-use applications, strategic infrastructure, or access to data may create security risks that were less visible during the optimistic phase of post-Cold War internationalisation. By the mid-2020s, research security had therefore become a more explicit strategic concern within the Academy. This does not invalidate international collaboration; it makes governance of collaboration more complex. National resilience requires both openness sufficient for scientific excellence and safeguards sufficient to protect strategically important knowledge, people, and infrastructure. Medium-sized states face a particular challenge because they benefit enormously from international networks and cannot compensate for excessive isolation through vast domestic resources. The appropriate response is therefore selective risk management rather than scientific autarky. The evolution of AV ČR from overcoming Cold War isolation to managing the security implications of deep internationalisation captures a wider European transition.

European cooperation itself is one of the strongest sources of Czech scientific resilience. The European Research Area is intended to reduce fragmentation and create a more integrated environment for researchers, knowledge, and innovation across national borders (*European Commission, 2024*). For a medium-sized state, such integration expands the effective scale of the national scientific system. Czech researchers can participate in infrastructures, consortia, databases, and research programmes far larger than those the state could finance independently. During crises, these networks accelerate access to emerging knowledge and reduce the danger that national decision-makers operate from an isolated evidence base. The COVID-19 response demonstrated internationally how rapid data sharing and collaboration

could compress research timescales dramatically (*OECD, 2021*). Energy and climate research similarly depend upon continental systems whose underlying phenomena do not respect national boundaries. European integration therefore strengthens resilience not by eliminating national institutions but by connecting strong national institutions into wider networks. AV ČR's ability to contribute meaningfully depends upon retaining sufficient domestic expertise to understand and use the knowledge circulating through those networks. This is why national capacity and European interdependence should be viewed as complements. A weak national science base cannot benefit fully from European cooperation because it lacks the absorptive capacity required to participate at a high level.

The Czech Presidency of the Council of the European Union in 2022 provided an unusually clear demonstration of this connection between national expertise and European resilience. The Academy organised its contribution around three areas: food security and new genomic techniques, low-emission and safe energy, and a resilient society (*Czech Academy of Sciences, 2022*). Each topic had a direct relationship with crises affecting Europe at the time, including war, energy dependence, climate pressure, food uncertainty, disinformation, and weakening trust in institutions. Yet each also drew upon research programmes that predated those crises. This chronology is important because it demonstrates the institutional advantage of maintaining strategic knowledge before governments formulate urgent agendas. Strategy AV21 could supply scientific substance rapidly because researchers had already been cooperating across institutes. The Academy therefore entered the Czech EU Presidency not merely as an organisation responding to political priorities but as one capable of shaping the scientific content underlying them. National research capacity became European policy capacity. This is precisely the type of role through which a medium-sized state can exercise influence disproportionate to its demographic scale. Expertise becomes a resource of international agency as well as domestic resilience. The Academy's contribution in 2022 thus connected its historical mission as a national institution with its contemporary identity as a European research actor.

Stable financing is indispensable to this resilience function because scientific preparedness cannot depend exclusively upon the timing of competitive grants. Project funding is valuable for stimulating new questions, identifying excellent teams, and connecting researchers with external evaluation. It is poorly suited, however, to maintaining every component of the research base needed for unknown future crises. Long-term datasets, collections, technical personnel, observatories, specialist libraries, and unique laboratory capacities may require support even when they are not attached to a fashionable project. Researchers also need periods in which high-risk questions can be pursued without certainty that results will emerge within a three-year funding cycle. The OECD's analysis of the pandemic warned governments that damage to research systems during economic crisis can reduce the capacity to confront later challenges such as climate change and digital transformation (*OECD, 2021*). The Czech Academy's hybrid funding model, combining institutional support with national and European competitive grants, therefore has direct relevance to resilience. Institutional resources protect continuity, while competition introduces challenge and renewal. The balance is difficult because too much guaranteed funding can reduce pressure for improvement, whereas excessive project dependence can produce fragility and short-termism. Regular evaluation is consequently what allows stable funding to remain compatible with accountability. A resilient Academy is not one protected from change but one able to preserve strategic capacity while continually testing its scientific quality.

This funding logic also supports risk-taking, which is an underappreciated component of resilience. Breakthroughs often arise from research whose probability of success is uncertain and whose practical consequences cannot be specified convincingly in advance. During crises, policymakers tend naturally to prefer projects promising visible solutions quickly, yet excessive concentration on "safe" research can reduce the possibility of more transformative discoveries. The OECD explicitly identified this tension during the COVID-19 response, noting the need for systems capable of calculated scientific risk as well as immediate mobilisation (*OECD, 2021*). An academy conducting fundamental research can protect some intellectual space for such uncertainty because its institutional horizon is longer than that of emergency programmes. This does not mean funding speculation without evaluation. It means recognising that scientific excellence includes questions whose value lies partly in exploring possibilities that may fail. National resilience benefits from a portfolio in which some research is highly applied, some addresses strategic missions, and some remains driven primarily by curiosity. The reason is not romantic attachment to pure science but uncertainty about the future structure of threats and opportunities. A society that supports only foreseeable applications becomes vulnerable to unforeseeable change. Resilience therefore requires epistemic diversity as well as infrastructural strength.

Strategy AV21 provides one mechanism for connecting this curiosity-driven base with explicit questions of national resilience without collapsing one into the other. Its programme structure encourages institutes to cooperate around broad societal challenges while preserving their independent disciplinary research. Energy, food, environmental change, social resilience, new technologies, and other themes can draw upon expertise created through projects not originally designed for those missions. This arrangement is institutionally preferable to attempting to reorganise the whole Academy whenever a new strategic priority appears. A programme layer can mobilise existing capacity while leaving the underlying research ecosystem intact. The Czech EU Presidency demonstrated this mechanism particularly clearly when three Strategy AV21 areas could be translated quickly into European-facing initiatives (*Czech Academy of Sciences, 2022*). The approach also makes public mission more visible because citizens and policymakers can see how apparently specialised research contributes to concrete national challenges. Yet Strategy AV21 remains strongest when it does not substitute mission labels for scientific judgement. Its long-term legitimacy depends upon programmes being built from genuine research strength rather than political fashion. The model therefore reflects the Academy's broader post-1993 philosophy: strategic coordination should operate through scientific self-government rather than command administration. Resilience is created through mobilisable expertise, not through permanent politicisation of research priorities.

A national resilience strategy centred too narrowly on missions would nevertheless carry significant risks. Governments confronting war, pandemics, climate change, energy dependence, and technological competition understandably seek to direct research towards urgent priorities. Yet today's strategic categories cannot encompass tomorrow's unknowns. The history of science contains numerous examples in which abstract work later generated transformative applications that policymakers could not have specified in advance. Fundamental research also produces trained people whose problem-solving skills can move into areas far from their original specialisation. A mathematician may contribute to epidemiological modelling, a materials scientist to protective equipment, or a linguist to artificial intelligence. The resilience value of scientific institutions therefore lies partly in

preserving cognitive capabilities that are transferable across problems. Excessive mission orientation can weaken this flexibility if researchers are forced continually to justify work through the vocabulary of currently fashionable policy concerns. The Academy's institutional autonomy provides some protection against such narrowing. Evaluation can ask whether research is excellent and intellectually credible even when its immediate strategic relevance is unclear. This preserves the diversity from which future adaptive responses can emerge. National resilience consequently depends as much upon avoiding premature concentration as upon identifying genuine strategic priorities.

The Academy's historical memory strengthens this argument because Czech science has repeatedly experienced the consequences of political attempts to define scientific usefulness too narrowly. Under state socialism, research priorities could be connected formally with planned economic objectives and ideological expectations, while politically sensitive disciplines faced direct limitations on acceptable questions. Some applied programmes produced valuable results, but the broader system demonstrated the scientific dangers of allowing political authority to determine intellectual legitimacy. The post-1989 transformation therefore deliberately reconstructed autonomy alongside accountability. Contemporary resilience policy must avoid reproducing command logic under the more attractive language of strategic urgency. Energy security, health, artificial intelligence, and defence-related research are legitimate priorities, but their importance does not justify treating all other fundamental scholarship as expendable. Historical continuity gives AV ČR a particularly strong institutional reason to maintain this boundary. The Academy remembers that political systems often believe they can predict which knowledge society requires, yet scientific development repeatedly exceeds those predictions. Its contribution to national resilience therefore includes preserving a space in which future relevance can emerge unexpectedly. Institutional memory becomes a safeguard against excessively instrumental conceptions of knowledge.

Resilience also has a democratic dimension because crisis politics can place exceptional pressure on institutions, rights, and public debate. Pandemics encourage emergency restrictions, war increases secrecy and security concerns, and economic crises can intensify polarisation and distrust. Scientific organisations participate in such periods not only by supplying technical evidence but by modelling norms of transparent reasoning, uncertainty, criticism, and revision. An academy whose researchers can disagree publicly without political punishment embodies principles directly relevant to democratic resilience. The reliability of science does not arise from the absence of disagreement but from procedures through which claims can be criticised and evidence reassessed. Public communication during crisis therefore needs to distinguish scientific uncertainty from incompetence. The OECD emphasised during COVID-19 that governments and experts should communicate uncertainty transparently and use multidisciplinary advisory structures rather than presenting changing evidence as a failure of science (*OECD, 2021*). AV ČR's public mission becomes especially important under such conditions because trust cannot be manufactured only after misinformation has become widespread. Relationships with journalists, schools, policymakers, and citizens need to exist before crisis communication becomes urgent. The Academy's festivals, publications, media activity, and expert interventions therefore form part of resilience infrastructure as surely as laboratories do.

Academic freedom itself should similarly be treated as resilience infrastructure. A scientific institution in which researchers fear political or administrative retaliation cannot provide reliable warning when evidence conflicts with government preferences. History offers

numerous Czech examples in which political intervention damaged disciplines, distorted institutional memory, and excluded researchers whose expertise might otherwise have benefited society. Democratic resilience therefore requires research organisations capable of producing inconvenient knowledge. The Researchers at Risk programme symbolically extends this principle beyond Czech borders by recognising that threatened scientific freedom is both a human-rights problem and a loss of intellectual capacity. Supporting displaced researchers also strengthens networks of solidarity through which European science can absorb political shocks. Such networks matter because authoritarianism and war often target universities and research institutions precisely because independent knowledge challenges monopolies of political truth. A resilient European research area must therefore be able to preserve researchers even when individual national systems fail them. The Czech Academy's response after 2022 placed it within this wider protective function. Its own historical experience of exile and political exclusion gives this policy more than contemporary humanitarian meaning. It transforms memory of vulnerability into institutional capacity for solidarity.

For Czechia, national resilience should therefore not be equated with scientific self-sufficiency. A medium-sized European country cannot and should not attempt to reproduce every advanced technology, dataset, infrastructure, or specialist discipline entirely within its borders. Such an approach would waste resources and reduce the benefits of European cooperation. The more realistic objective is strategic competence: the ability to understand critical technologies and risks, participate in international research at a high level, maintain selected national strengths, and absorb knowledge generated elsewhere. AV ČR contributes to each component. Its institutes preserve domestic expertise, international programmes connect researchers with foreign knowledge, and long-term infrastructures provide platforms through which Czech science can contribute something distinctive to shared European capacities. National resilience is strongest when interdependence rests upon competence rather than dependency. A country that cannot evaluate the technologies or scientific claims on which it relies has limited strategic agency even if those technologies remain available. Conversely, a state embedded in international networks but supported by strong domestic expertise can adapt sources, partners, and policies more effectively when disruptions occur. European integration and national resilience are therefore not opposing principles but mutually reinforcing layers of the same scientific strategy.

By 2025, the concept of resilience had consequently moved much closer to the centre of the Academy's public role than it had been at the beginning of the post-socialist period. In 1993, institutional debates concerned the survival, restructuring, evaluation, and democratic legitimacy of a research organisation inherited from ČSAV. Three decades later, the central question was increasingly what kinds of knowledge capacity a democratic Czech state required in an environment characterised by pandemics, war, energy transition, climate change, technological competition, disinformation, and geopolitical uncertainty. The Academy's answer was not to abandon fundamental research in favour of emergency-oriented science. Instead, its programmes and public interventions increasingly demonstrated that long-term fundamental capacity is what makes rapid response possible. The Czech EU Presidency themes of food security, safe energy, and social resilience provided a particularly concentrated expression of this idea. The rapid establishment of support for threatened Ukrainian researchers added academic freedom and international solidarity to the same resilience framework. Research security introduced a further layer by requiring the Academy to protect openness from exploitation without returning to political isolation. These

developments transformed resilience from an external policy topic into a principle connecting research strategy, institutional design, international cooperation, and public mission. The historical evolution of AV ČR thus offers a strong example of how an academy of sciences can reinterpret the traditional defence of fundamental research through the contemporary language of national and European preparedness.

Thus, fundamental research strengthens national resilience because it preserves knowledge, people, infrastructures, methods, datasets, and institutional memory before society can know which of them will become strategically decisive. The Czech Academy of Sciences demonstrates this function particularly clearly because its broad institute structure combines biomedical, environmental, technological, economic, social, and humanistic expertise within a durable public research system. The COVID-19 pandemic showed that laboratories, diagnostic knowledge, materials research, modelling, and economic analysis could be mobilised rapidly only because relevant capacities had been built beforehand. Russia's invasion of Ukraine and the subsequent energy crisis revealed the strategic importance of long-term research in nuclear technologies, plasma physics, renewable energy, hydrogen, storage, and energy-system transformation. Food insecurity and climate pressure connected decades of plant-genetics research with new genomic techniques and questions of sustainable agriculture, while environmental research demonstrated the irreplaceable value of long observational series, collections, and ecological expertise. Social-science and humanities research showed that resilience also depends upon trust, democratic institutions, historical understanding, reliable communication, and resistance to disinformation. European networks expanded Czech resilience by giving national researchers access to shared knowledge and infrastructure, while strong domestic institutions ensured that Czechia possessed the absorptive capacity necessary to benefit from those networks. The Researchers at Risk Fellowship demonstrated that protection of academic freedom and endangered scientists is itself part of scientific resilience, and the Academy's response to the war converted Czech historical memory of exile and political repression into contemporary institutional responsibility. Stable institutional funding remained indispensable because no competitive project system can preserve every capability required for unpredictable future crises. Evaluation, however, ensured that stability could be combined with scientific renewal rather than institutional inertia. Strategy AV21 created a mechanism through which accumulated fundamental expertise could be mobilised around strategic societal questions without reducing the whole research system to short-term political missions. The central historical lesson is therefore that resilience depends not upon predicting every future crisis correctly but upon maintaining a sufficiently diverse, autonomous, internationally connected, and scientifically excellent knowledge system to respond when prediction fails. In this sense, AV ČR contributes to Czech national resilience precisely by remaining what a modern academy of sciences is meant to be: a long-term institution capable of preserving intellectual options for futures that cannot yet be fully imagined.

3. The Future of Academies of Sciences in the 21st Century

The future of academies of sciences in the 21st century will depend less upon their ability to preserve inherited organisational forms than upon their capacity to preserve the functions for which those forms were historically created. European academies emerged under very different political conditions, and their institutional diversity is unlikely to disappear simply

because research has become more internationalised. Some will continue primarily as learned societies, others will operate major research institutes, and still others will combine scientific representation, policy advice, infrastructure, archives, funding, and research performance. What will increasingly unite them is not a common organisational chart but a common problem: how to sustain reliable, independent, long-term knowledge in societies where scientific production is becoming more expensive, more technologically complex, more international, and more politically consequential. The historical legitimacy of an academy will no longer be sufficient by itself. Institutions founded centuries ago will need to demonstrate that historical continuity enhances rather than inhibits their capacity to respond to contemporary scientific change. Equally, recently reorganised academies will need to show that modernisation has not reduced them to ordinary research administrations lacking the intellectual independence traditionally associated with academic institutions. The most viable academies will therefore combine continuity with permanent institutional self-criticism. They will preserve research schools, collections, infrastructures, disciplinary memory, and traditions of scholarly judgement while remaining willing to reform governance, evaluation, recruitment, communication, and relations with society. This balance is especially important because scientific institutions increasingly operate within political environments that demand simultaneously greater usefulness, greater openness, greater security, and greater accountability. These requirements can easily conflict if they are pursued independently. The academy of the future will consequently be valuable not because it eliminates such tensions but because it provides a relatively durable institutional setting within which they can be negotiated according to scientific as well as political criteria. The European academy networks already reflect this changing agenda by devoting increasing attention to research integrity, open science, trust, security, data governance, sustainability, and the science–policy interface rather than restricting their activities to scholarly representation alone (*ALLEA, 2025*).

One enduring function will nevertheless remain fundamental: academies will have to protect the long temporal horizon of research. Political systems work through electoral cycles, businesses frequently evaluate investments through expected returns, and competitive research programmes normally operate through projects lasting only several years. Many of the most consequential forms of knowledge do not fit comfortably within these timescales. Fundamental mathematical research may acquire technological significance decades after its formulation, while long-term ecological observations become more valuable precisely because they continue across generations. Historical dictionaries, archaeological archives, genomic collections, astronomical datasets, materials research, and fundamental physics similarly depend upon continuity that cannot be reconstructed easily after interruption. The academy tradition has historically provided institutional shelter for intellectual work whose importance cannot always be demonstrated through immediate utility. That function is likely to become more rather than less significant as governments increasingly orient science policy towards economic competitiveness, strategic technologies, resilience, and measurable impact. These priorities are legitimate, but a system dominated entirely by them would risk losing the research from which future strategic capabilities may unexpectedly emerge. Academies therefore have a distinctive role in defending the principle that uncertainty about application is not evidence of absence of value. At the same time, they cannot invoke fundamental research as an exemption from quality assessment. The future legitimacy of long-term institutional support will depend upon convincing mechanisms of peer review, international comparison, and strategic reflection capable of distinguishing intellectually productive continuity from organisational inertia. In this respect, the Czech experience since

1993 offers a relevant precedent because institutional stability and recurring evaluation were developed as complementary rather than contradictory principles. The academy of the future will need precisely this combination: enough durability to permit intellectual risk and enough evaluation to ensure that durability remains scientifically justified.

The political meaning of scientific autonomy will also become more demanding. During much of the 20th century, the defence of academic freedom was often framed primarily as protection from direct ideological or governmental interference. That problem has not disappeared, as recent European debates concerning universities and research organisations demonstrate, but contemporary threats are more diverse. Political pressure may emerge through funding decisions, legislation, appointments, public campaigns, cybersecurity incidents, litigation, geopolitical conflict, commercial dependency, or attempts by foreign actors to obtain sensitive knowledge. Research organisations may also constrain themselves by responding excessively to short-term political priorities, donor expectations, reputational concerns, or publication incentives. Academic autonomy therefore cannot be protected through a single constitutional provision. It requires distributed institutional mechanisms, professional norms, transparent procedures, independent evaluation, secure financing, and leadership willing to defend unpopular or inconvenient research. At the same time, autonomy must remain compatible with democratic accountability because publicly funded academies cannot plausibly claim freedom from all external scrutiny. The future institutional challenge will be to distinguish legitimate public oversight from inappropriate interference in scientific judgement. European discussions increasingly connect research security with academic freedom precisely because overly broad security measures can themselves damage the openness and intellectual independence they are intended to protect (*OECD, 2025*; *European Commission, 2025*). The OECD's 2025 analysis warned that research security policies need to be proportionate and precisely targeted if they are not to undermine research quality and international cooperation. The European Research Area likewise placed research security among its strategic priorities while retaining open science and scientific careers as structural policy concerns. For academies whose historical authority rests partly upon intellectual independence, defending this balance will become one of their defining 21st-century responsibilities.

The future of research evaluation will constitute another decisive test. During the late 20th and early 21st centuries, evaluation systems increasingly relied upon publication counts, journal indicators, citation measures, competitive funding success, and rankings because quantitative information appeared to offer comparable evidence across large research systems. These instruments made important forms of performance visible, but their limitations became progressively harder to ignore. Metrics can encourage publication strategies directed towards indicators rather than intellectually important questions, disadvantage fields whose outputs do not conform to journal-based models, and obscure collaborative, infrastructural, data, software, mentoring, and public-service contributions. The humanities and social sciences are especially vulnerable when systems designed around high-volume journal publication are applied without disciplinary adjustment, but distortions also occur in laboratory sciences. The future academy will therefore need evaluation procedures that retain external rigour without allowing proxy indicators to become substitutes for professional judgement. Qualitative peer assessment, contextual information, recognition of multiple forms of output, and transparent treatment of disciplinary differences are likely to become more important. Participation in the Coalition for Advancing Research Assessment reflects this broader European reconsideration of how excellence should be recognised. For AV ČR, which

had already developed large-scale international peer evaluation before joining the reform movement, responsible assessment offers an opportunity to refine rather than abandon its post-1993 evaluation tradition. The principle is institutionally significant because the future academy will increasingly be judged not only by the research it produces but by the incentives through which it shapes research behaviour. Evaluation determines which careers prosper, which topics appear prestigious, which collaborations become attractive, and which forms of scholarship remain institutionally viable. An academy that values long-term, interdisciplinary, open, or socially relevant research must therefore ensure that its assessment system does not reward the opposite behaviour. Research evaluation in the 21st century will consequently become a form of scientific governance rather than a retrospective exercise in measurement (*ALLEA, 2023*; *Czech Academy of Sciences, 2024*).

Artificial intelligence may transform the practice of research more rapidly than any previous development in scientific administration and communication. By the middle of the 2020s, AI systems were already being used for literature analysis, image interpretation, protein modelling, code generation, statistical processing, experimental design, language translation, and increasingly sophisticated forms of hypothesis generation. The OECD observed in 2025 that AI, large language models, and robotics were changing not merely the speed of research but some of the traditional divisions of labour between human researchers and computational tools (*OECD, 2025*). The European Commission likewise treated AI in science as a strategic field capable of accelerating scientific discovery and strengthening European competitiveness (*European Commission, 2025*). For academies, this transformation creates both an opportunity and an institutional obligation. Research-performing academies will need shared computational infrastructure, access to high-quality data, professional AI expertise, and mechanisms through which researchers in disciplines outside computer science can use these tools effectively. Learned academies will increasingly be asked to evaluate the epistemic and ethical consequences of machine-supported knowledge production. Humanities institutes will confront questions concerning machine-generated text, authorship, language models, cultural bias, and the preservation of multilingual scholarly traditions. Natural-science laboratories will need to determine when AI-generated patterns constitute meaningful hypotheses and when they merely reproduce artefacts present in data. Research training will have to change because future researchers will need both disciplinary expertise and the capacity to judge computational outputs critically. The academy of the future cannot simply add AI to existing workflows; it will need to reconsider how evidence, creativity, expertise, and scientific responsibility are defined when machines participate extensively in research processes.

AI will simultaneously increase the importance of human scientific judgement rather than render it obsolete. Automated systems can process information at scales inaccessible to individuals, but they operate through training data, algorithms, optimisation objectives, and infrastructures whose limitations must be understood. A plausible textual or numerical output is not equivalent to a scientifically justified conclusion, and the speed of automated production may actually increase the difficulty of distinguishing reliable knowledge from superficially convincing error. Academies therefore have an opportunity to become institutions that certify not particular technologies but standards of responsible scientific use. Research integrity policies will need to address disclosure of AI assistance, responsibility for machine-generated errors, protection of confidential data, reproducibility of algorithmically assisted analyses, and the preservation of human accountability for scientific claims. The 2023 revised *European*

Code of Conduct for Research Integrity was designed precisely to remain relevant as research practices and technologies change (*ALLEA, 2023*). Future revisions will almost certainly have to confront increasingly autonomous forms of computational research. The challenge is not simply preventing fraud but maintaining epistemic traceability: readers should be able to understand how a result was generated, what evidence supports it, and which decisions remained the responsibility of human researchers. The proliferation of synthetic images, automated articles, fabricated datasets, and AI-assisted misinformation will make such traceability socially important as well as scientifically necessary. Academies possess historical authority partly because they organise communities of recognised expertise, and this function may become more valuable in information environments where the volume of apparently authoritative material grows faster than the capacity of citizens to evaluate it. Their future authority, however, will depend on applying stringent standards to themselves rather than merely criticising unreliable information produced elsewhere. AI therefore reinforces the older academic principle that institutional reputation must rest upon procedures of verification rather than prestige alone.

Open science will produce an equally fundamental change in the relationship between academies and the circulation of knowledge. The traditional academy published proceedings, maintained libraries, exchanged books and correspondence, and created scholarly communities whose membership often determined access to specialised knowledge. Digital technologies have made such restricted circulation increasingly difficult to justify where research is publicly financed. The UNESCO Recommendation on Open Science defines openness broadly to include publications, data, software, infrastructure, societal participation, and dialogue across different knowledge systems (*UNESCO, 2021*). It also emphasises that scientific knowledge should be as open as possible while recognising justified restrictions connected with privacy, security, intellectual property, and other legitimate concerns. The Czech Academy adopted a closely related approach in its 2024 Open Science Principles, recommending FAIR data, trustworthy repositories, open access, transparent licensing, sustainable preservation, and the rule that research should be as open as possible and as closed as necessary (*Czech Academy of Sciences, 2024*). These developments point towards a future in which academies will increasingly maintain infrastructures for knowledge rather than merely institutions for researchers. Repositories, metadata services, publication platforms, data-management support, software archives, and persistent identifiers will become components of scientific capacity comparable in importance with libraries and laboratories. The historical archive will not disappear, but it will increasingly coexist with continuously generated digital research records. Open science can strengthen reproducibility, accelerate reuse, widen public access, and reduce unnecessary duplication. Yet openness without sustainable infrastructure risks producing a vast but unstable digital accumulation whose long-term preservation is uncertain. Academies therefore have a plausible future role as custodians of open scientific commons, extending their older library and archival functions into the digital research environment.

The transition to open science will also force academies to confront inequalities that openness alone cannot solve. Making an article freely readable does not eliminate disparities in access to laboratories, computing, data, publishing resources, research time, or specialist training. Article-processing charges can transfer financial barriers from readers to authors, disadvantaging institutions with fewer resources. Large datasets may technically be open while remaining practically unusable to researchers lacking computational infrastructure.

English-language dominance can expand international visibility while marginalising scientific communication in smaller languages. Disciplines with strong traditions of monographs, critical editions, or locally oriented scholarship can be poorly served by open-science policies designed primarily around experimental journal articles. UNESCO therefore explicitly links open science with equity, multilingualism, inclusion, and bibliodiversity rather than interpreting openness only as unrestricted digital access (*UNESCO, 2021*). Academies in smaller European states are particularly well positioned to defend these dimensions because they understand that international participation and national intellectual responsibility must coexist. AV ČR, for example, has strong reasons to promote internationally accessible research while also maintaining Czech-language scholarship in fields where national communication has cultural or public significance. The future academy will therefore need to resist both technological isolation and the assumption that globalisation requires linguistic or disciplinary homogenisation. Digital openness should expand the audience for knowledge without forcing every form of knowledge into one publishing model. Academies can contribute by supporting non-profit publishing platforms, repositories, multilingual communication, and evaluation systems that recognise legitimate diversity of scholarly outputs. In this way, the open academy of the 21st century could become more internationally connected without becoming less culturally rooted.

Digital preservation will become inseparable from the academy's traditional function as a carrier of scientific memory. Earlier generations left letters, printed publications, notebooks, photographs, instruments, minutes, maps, and collections that could survive for centuries if physically preserved. Contemporary research increasingly produces websites, databases, software, cloud-stored documents, dynamic datasets, email, collaborative platforms, code repositories, digital images, and algorithmically generated research objects. These materials can disappear far more quickly than a printed volume if formats become obsolete, accounts are deleted, services close, or metadata are lost. Future historians of science may therefore face an apparent paradox: the most extensively documented period in scientific history could become one of the most difficult to reconstruct coherently because its evidence is dispersed across unstable digital systems. Academies with archival and library traditions have a particular responsibility to prevent this loss. Preservation will need to begin during the lifecycle of research rather than decades after a scientist retires. Data-management plans, persistent identifiers, trusted repositories, preservation standards, and institutional records policies will become part of scientific memory as well as current research practice. The European Open Science Cloud illustrates the movement towards federated infrastructures capable of connecting national and institutional research resources across Europe. By 2025–2026, questions of security, verification, FAIR objects, and sustainable federation were already becoming central to this environment (*European Commission, 2025*). The Czech Academy's combination of a specialised library, repositories, archives, and research institutes gives it an organisational basis from which to participate in this development. The academy of the future may therefore be judged partly by whether the knowledge it creates today remains intelligible to researchers fifty or one hundred years later.

Geopolitical fragmentation will create perhaps the most difficult challenge to the cosmopolitan traditions of science. Modern research has benefited enormously from international mobility, collaborative infrastructures, shared datasets, multinational teams, and relatively open circulation of methods and results. Yet governments increasingly regard artificial intelligence, quantum technology, biotechnology, advanced materials,

semiconductors, space technologies, and other research areas as components of economic and national security. The OECD reported in 2025 a rapid increase in research-security policies across countries, alongside growing concern about unauthorised knowledge transfer and foreign interference (*OECD, 2025*). The European Union similarly adopted a Recommendation on Enhancing Research Security in 2024 and made research security part of the European Research Area Policy Agenda for 2025–2027 (*European Commission, 2025*). Academies will therefore have to operate between two historically powerful principles: the universality of knowledge and the political responsibility of institutions situated within particular states. Absolute openness is increasingly difficult to defend in every technological field, but excessive restriction could damage research quality and recreate forms of isolation whose costs European science knows well from the 20th century. The emerging principle that research should remain as open as possible and as secure as necessary offers a useful orientation but does not eliminate difficult decisions. Different disciplines face different risks, and humanities researchers confronting transnational political repression require different safeguards from laboratories working with dual-use technologies. Research institutions will need professional risk assessment rather than broad political suspicion directed at particular nationalities or fields. Academies, with their combination of scientific expertise and relative institutional independence, can help develop these proportionate standards. Their future credibility may depend upon showing that security can be strengthened without allowing geopolitics to redefine scientific legitimacy.

Science diplomacy will consequently become another important academy function. International scientific relations have always carried political implications, but academies possess a distinctive capacity to maintain professional contact beyond the rhythms of diplomatic relations between governments. During periods of political tension, scientific organisations can sometimes preserve channels of communication that formal diplomacy cannot sustain easily. At the same time, war and serious breaches of international law can make institutional cooperation morally and strategically untenable, as the Czech Academy's suspension of formal activities with Russian and Belarusian institutions after the invasion of Ukraine demonstrated. Future academies will therefore need clearer principles concerning when scientific engagement should continue, when it should be restricted, and how individual researchers should be distinguished from the policies of states controlling their institutions. Support for scholars at risk offers one constructive response because it protects people and knowledge communities without legitimising repressive governments. The Czech Academy's programme for threatened researchers illustrated how institutional solidarity can transform academic freedom from an abstract principle into practical protection. Science diplomacy in the 21st century will consequently involve more than ceremonial agreements between academies. It will include support for displaced researchers, participation in rebuilding damaged scientific systems, negotiation of secure collaboration, and collective responses to attacks on academic freedom. European academy networks can amplify these efforts because smaller national academies acting alone possess limited geopolitical influence. The academy of the future will therefore remain international, but its internationalism will require more explicit ethical and strategic judgement than during the optimistic post-Cold War decades. Its challenge will be to preserve science as a global public good without pretending that research exists outside political realities.

Interdisciplinarity will provide another major reason for maintaining broad academy structures. Many of the most pressing scientific problems of the 21st century are not organised according

to the disciplinary divisions through which universities and institutes historically developed. Climate adaptation involves atmospheric science, ecology, engineering, economics, law, demography, psychology, and political governance. Artificial intelligence combines mathematics, computer science, linguistics, philosophy, cognitive research, legal analysis, economics, and social science. Pandemic preparedness links molecular biology, medicine, statistics, logistics, behavioural science, communication, economics, and public administration. Energy transitions similarly require physics, chemistry, materials, engineering, environmental science, market analysis, law, and social legitimacy. The OECD's 2025 analysis of technology convergence argued that interactions among technologies and disciplines are becoming increasingly important to innovation and transformative research (*OECD, 2025*). Academies with broad disciplinary portfolios can therefore possess an institutional advantage if they learn to use that breadth effectively. Their organisational challenge is that institutes and disciplinary communities develop their own languages, funding patterns, methods, and professional identities. Simply placing many disciplines under one institutional umbrella does not automatically produce meaningful interdisciplinary work. Future academies will need funding instruments, shared infrastructures, temporary programmes, research centres, and evaluation practices that lower barriers between fields without dissolving disciplinary depth. Strategy AV21 already represents one Czech experiment in creating such an additional interdisciplinary layer without abolishing institute autonomy. The future academy may increasingly operate through this combination of strong disciplinary homes and flexible problem-oriented networks connecting them.

The rise of technological convergence will make such institutional flexibility even more important. Artificial intelligence is already intersecting with synthetic biology, quantum science, earth observation, neurotechnology, robotics, and materials research in ways that create fields difficult to classify according to older disciplinary structures (*OECD, 2025*). Future discoveries may occur precisely at boundaries where administrative systems remain least prepared to support them. Institutes built around established disciplines can become protective environments for expertise, but they can also create barriers when resources, careers, and evaluation are tied too rigidly to inherited categories. Academies therefore face a structural dilemma between continuity and permeability. They must preserve research schools long enough for knowledge to accumulate while allowing new communities to emerge when scientific problems change. One solution may be increasingly modular organisation: stable institutes combined with temporary cross-institute programmes, shared technological platforms, joint doctoral environments, and research groups whose institutional affiliations are deliberately multiple. Another will be evaluation systems capable of recognising collaborative work without making interdisciplinary research compulsory everywhere. Strong disciplines remain necessary because superficial interdisciplinarity cannot substitute for deep methodological competence. The aim should therefore be connection rather than dissolution. AV ČR's broad system provides unusual possibilities for this form of organisation because natural sciences, technical fields, humanities, and social sciences already coexist institutionally. Whether that breadth becomes a genuine strategic advantage will depend upon mechanisms that allow intellectual movement across internal boundaries while retaining responsibility for long-term disciplinary development.

Climate change will also require academies to examine the sustainability of their own institutional practices. Scientific organisations rightly produce evidence concerning global warming, biodiversity decline, adaptation, energy transition, and environmental risk, but they

also operate energy-intensive laboratories, buildings, computing centres, international travel programmes, conferences, and research infrastructures. The credibility of academic advice can be weakened when institutions call for societal transformation without examining their own environmental footprint. ALLEA's report *Towards Climate Sustainability of the Academic System in Europe and beyond* therefore argued that academic institutions should reduce their emissions while preserving research excellence and international collaboration (*ALLEA, 2022*). European academies subsequently began developing net-zero policies and exchanging institutional practices concerning travel, buildings, meetings, and operational sustainability. This creates difficult trade-offs rather than simple moral choices. International mobility remains essential for scientific exchange, especially for younger researchers whose professional networks depend upon direct contact. Advanced laboratories may consume substantial energy because of the physical requirements of their science. Digital substitution can reduce travel while increasing computational energy use. Renovating historical research buildings can require substantial investment unavailable from normal project funding. The academy of the future will consequently need evidence-based sustainability strategies rather than symbolic restrictions. It can also function as a demonstration environment in which research on energy, architecture, behavioural change, and organisational governance is applied to scientific institutions themselves. For AV ČR, digital transformation and sustainable development already appeared together among the strategic priorities articulated for the 2025–2029 leadership period, suggesting that institutional sustainability is becoming part of scientific strategy rather than merely estate management (*Czech Academy of Sciences, 2025*).

The science–policy interface will become another field in which academies can demonstrate distinctive value. Governments face decisions concerning climate, health, energy, demographic change, artificial intelligence, biotechnology, security, and economic transformation that require specialised knowledge extending far beyond the normal competence of public administration. Yet science does not provide a single mechanically correct answer to most policy questions because evidence must be combined with political priorities, ethical choices, distributional consequences, and uncertainty. Academies can contribute by synthesising knowledge, identifying areas of consensus and disagreement, and clarifying what consequences different policy choices are likely to produce. Their relative distance from both government bureaucracy and commercial interests can strengthen the credibility of such advice. European academy organisations such as EASAC and ALLEA already operate extensively at this interface, pooling expertise from national institutions to address transnational policy questions. The European Research Area Policy Agenda for 2025–2027 also identified science for policy as an area for more structured cooperation between researchers and policymakers (*European Commission, 2025*). The future academy will therefore need professional structures capable of translating research into timely advice without converting institutes into political consultancies. Speed will become increasingly important because policymakers often require guidance before a complete scientific consensus has emerged. This places a premium on honest communication of uncertainty and on institutional mechanisms capable of assembling multidisciplinary expertise rapidly. Academies must also avoid presenting policy preferences as inevitable consequences of scientific evidence. Their authority will be strongest when they distinguish clearly between empirical assessment, normative judgement, and political choice. In democratic societies, the role of the academy should be to improve the quality of decision-making rather than to replace democratic decision-makers.

Trust in science will determine whether this advisory capacity remains politically effective. Scientific institutions historically derived authority partly from professional status and the difficulty non-specialists faced in accessing specialised knowledge. Digital communication has fundamentally changed this environment. Citizens can now encounter scientific papers, preprints, expert commentary, conspiracy theories, manipulated images, political propaganda, and automated content within the same information systems. The problem is therefore not simply lack of information but the difficulty of evaluating competing claims whose outward forms may appear equally authoritative. The OECD's 2025 analysis emphasised that research integrity, science communication, citizen engagement, and a trustworthy science–policy interface are increasingly interconnected (*OECD, 2025*). ALLEA's 2025 restructuring similarly created a dedicated task force on strengthening trust in science, including attention to misinformation, scientific literacy, policymaking, and AI-generated content (*ALLEA, 2025*). A future academy cannot respond to this environment simply by asserting that experts should be trusted because they are experts. Institutional trust must be supported through transparent methods, admission of uncertainty, visible correction of errors, and communication that distinguishes scientific disagreement from political conflict. Researchers also need professional support because public communication requires skills different from writing for disciplinary peers. Academies can provide institutional legitimacy to individual experts while also setting standards that prevent celebrity or media visibility from substituting for genuine competence. Trust will therefore become an outcome of institutional behaviour rather than an inherited social asset. In this respect, the future public mission of academies may be as important to their survival as their research performance.

Citizen engagement will extend this public mission beyond conventional popularisation. 20th-century science communication was frequently conceived as transmission from experts who possessed knowledge to publics who lacked it. That model remains useful for some educational purposes, but it is increasingly insufficient for research concerning environmental monitoring, health, urban development, heritage, digital technology, and other issues in which citizens possess relevant experience or can participate directly in data collection. The UNESCO Recommendation on Open Science explicitly includes open engagement of societal actors among the pillars of open science (*UNESCO, 2021*). Citizen science can expand datasets, increase scientific literacy, and create stronger relationships between research institutions and communities. Yet participation should not be romanticised as though public involvement automatically improves every research project. Some questions require highly specialised expertise, sensitive data may preclude broad participation, and poorly designed citizen involvement can become a symbolic exercise rather than genuine collaboration. Academies are well positioned to develop standards distinguishing meaningful engagement from superficial consultation. They can also protect scientific judgement where political pressure demands that expertise be replaced by popularity. The future relationship between science and society will therefore require both openness and boundaries. Citizens should have greater opportunities to understand, question, and sometimes participate in scientific work, while researchers must retain responsibility for methodological standards and interpretation. An academy that manages this relationship successfully can become a civic institution of knowledge rather than an enclave separated from society. Such a role would return academies, in a technologically transformed form, to their older function as public arenas where knowledge acquires social legitimacy.

The future of academies will also depend upon whether scientific careers remain attractive to talented younger generations. Research institutions cannot preserve excellence merely by maintaining established senior researchers because scientific capability must be recreated continually through recruitment, mentorship, mobility, and generational succession. Early-career researchers across Europe face uncertainties connected with temporary contracts, competition for grants, international mobility, high housing costs, family responsibilities, and pressure to accumulate publications rapidly. These conditions can select for researchers willing or able to tolerate prolonged insecurity rather than necessarily those with the strongest scientific potential. Academies possessing stable institutional funding have an opportunity to offer a different balance between competition and career predictability. They can support early independence, provide bridging support between projects, enable return after career interruption, and recruit researchers from abroad. Such policies are scientifically strategic because lost talent represents an institutional cost that may become visible only years later. For small and medium-sized states, international attractiveness is particularly important because domestic demographic pools cannot supply every specialised field indefinitely. The Czech Academy's priorities for the 2025–2029 period explicitly included excellent research and scientific careers, while programmes under development emphasised ERC competitiveness and improved conditions for researchers (*Czech Academy of Sciences, 2025*). The underlying issue is broader than any one funding programme. The academy of the future must become an institution in which talented researchers can imagine a sustainable professional life rather than merely a temporary sequence of grants. Career policy will consequently become part of research strategy rather than an administrative function delegated entirely to personnel departments.

Equality, diversity, and inclusion will form another component of this generational challenge. European science has historically failed to use its available talent equally, with women, researchers from less privileged backgrounds, scholars with disabilities, and scientists from some national or ethnic communities facing structural barriers to recruitment or advancement. Formal legal equality has not automatically removed informal networks, career interruptions, unequal care responsibilities, or evaluation practices that reproduce earlier inequalities. Academies have a particular responsibility because they often represent the highest symbolic levels of scientific recognition and therefore influence perceptions of who belongs within scientific elites. Diversity also possesses epistemic value because scientific communities benefit when assumptions are challenged by researchers with different experiences and intellectual traditions. The OECD's discussion of future science systems emphasises the importance of diverse perspectives in an environment increasingly shaped by AI and complex interdisciplinary problems (*OECD, 2025*). European academy networks have therefore incorporated equity, diversity, and inclusion into their science-policy work. Future progress should nevertheless avoid reducing diversity to numerical targets disconnected from scientific standards. The more demanding objective is to ensure that standards themselves are applied transparently and that talented researchers are not excluded by unnecessary structural barriers. Flexible career pathways, transparent recruitment, parental support, accessibility, and international mobility policies all contribute to such an environment. For AV ČR and comparable academies, these measures will affect both scientific excellence and institutional legitimacy. An academy that claims to represent future knowledge while reproducing avoidable exclusions from the past would weaken its own credibility.

Relations with universities will remain decisive because academies cannot prosper as institutional islands. European research systems have become increasingly interconnected, and boundaries between university, academy, hospital, government, and industrial research are often more administrative than intellectual. Doctoral candidates may receive university degrees while conducting most of their research inside Academy institutes. Senior Academy scientists teach at universities, while university researchers use Academy infrastructure and participate in joint projects. Large European consortia routinely combine multiple institutional sectors because research problems do not respect organisational boundaries. The future academy should therefore define its value through complementarity rather than claims of superiority. Dedicated research institutes can offer long-term concentration, specialised equipment, technical staff, collections, and environments in which research rather than undergraduate teaching is the primary mission. Universities contribute broad disciplinary communities, education, student recruitment, and the integration of research with successive generations of learners. National systems benefit when researchers can move freely between these environments and when funding rules do not create unnecessary barriers to cooperation. In medium-sized states, duplication of expensive infrastructure or specialised teams can be particularly wasteful. The Czech Academy's long-term legitimacy will consequently depend partly upon whether universities regard its institutes as indispensable partners rather than protected competitors. Its 2025 strategic priorities explicitly included cooperation with universities, indicating recognition that non-university research must be integrated into the wider national knowledge system (*Czech Academy of Sciences, 2025*). The academy of the future will therefore be institutionally distinctive but intellectually porous.

Relations with industry and other users of research will become similarly important without transforming academies into commercial research corporations. Contemporary governments increasingly expect public science to contribute to innovation, technological sovereignty, productivity, healthcare, environmental transition, and competitiveness. Fundamental research can create such contributions, but the pathway from discovery to application is rarely automatic. Researchers may lack knowledge of patenting, regulation, market conditions, licensing, manufacturing, or entrepreneurship. Companies may lack the scientific expertise necessary to recognise potentially transformative discoveries at an early stage. Technology-transfer offices, collaborative programmes, incubators, and professional intermediaries can reduce these gaps. Academies with strong research-performing institutes therefore have reason to develop knowledge-transfer capacity while preserving the independence of fundamental inquiry. The central principle should remain pluralism of outcomes. A chemistry discovery may lead to a patent, while historical research may influence museum practice, legal scholarship may reshape legislation, and linguistic work may support educational or AI technologies. Measuring all societal contribution through commercial revenue would therefore distort the academic mission. The OECD's 2025 emphasis on diffusion of scientific and technological benefits similarly indicates that frontier research and economy-wide application require different but connected policy mechanisms (*OECD, 2025*). The academy of the future should become more permeable to external partners without allowing short-term market demand to define the whole research agenda. Its comparative advantage may lie precisely in maintaining knowledge whose applications are uncertain until new technological or social opportunities appear.

Research infrastructure will increasingly determine which academies can participate at the frontiers of science. Modern experiments in physics, biology, materials science, climate

research, astronomy, and computation often require facilities whose costs exceed the budgets of individual institutes and sometimes of individual countries. The response cannot be simple national duplication because even wealthy European states cannot efficiently reproduce every advanced instrument. Shared European infrastructures therefore make international scientific interdependence permanent rather than optional. Academies can participate as hosts, national coordinators, institutional partners, or users, depending upon their scientific strengths. This creates opportunities for medium-sized states because specialised domestic capabilities can become components of continental research systems. It also creates vulnerability because access to strategic infrastructure becomes dependent upon long-term international relationships and national ability to contribute resources credibly. Future academy strategy will therefore need to combine national specialisation with European integration. Large facilities must also be accompanied by less visible infrastructure such as data centres, technical workshops, repositories, libraries, and highly skilled support staff. Scientific policy often celebrates equipment while underestimating the people required to maintain it. Permanent research institutes are well suited to sustaining such technical communities across project cycles. AV ČR's future importance within European research will depend partly upon its capacity to identify fields where Czech expertise warrants sustained infrastructural investment and fields where access through multinational collaboration is more rational. The academy of the 21st century will consequently manage networks of capacity rather than aspire to institutional self-sufficiency.

The position of small and medium-sized states will make this network logic particularly important. Countries such as Czechia cannot compete with the absolute research expenditures of the United States, China, Germany, or other major scientific powers across every field. Their strength must derive instead from selective excellence, institutional continuity, international mobility, strategic infrastructures, and the ability to absorb knowledge produced elsewhere. An academy can contribute by preserving critical mass in fields where dispersed university departments might struggle to sustain nationally significant teams. It can also maintain specialist humanities and cultural research that global funding systems may not prioritise adequately. European programmes widen the effective scale of the Czech research system, but they do not eliminate the need for strong domestic organisations capable of entering those programmes competitively. The future of AV ČR is therefore connected directly with the future of the European Research Area. A more integrated Europe can allow medium-sized countries to specialise without becoming scientifically dependent, provided that they retain sufficient expertise to participate in shared networks as genuine partners. Conversely, weakening national institutions in the assumption that European collaboration can replace them would reduce the capacity to benefit from collaboration. The experience analysed in *The Academy in the Context of Small and Medium-Sized European States* therefore points towards an academy whose future role is simultaneously national and transnational. It must preserve Czech scientific capacity precisely so that Czech science can remain deeply European. The distinction between sovereignty and cooperation becomes less useful than the idea of strategic competence within interdependence.

Funding models will determine whether such long-term competence is sustainable. Public research systems increasingly combine institutional funding, project grants, European programmes, charitable support, industrial collaboration, and infrastructure investment. Each source creates different incentives and timescales. Competitive grants can stimulate new ideas and expose researchers to external review, but they can also produce short-term

employment and discourage maintenance of activities whose value does not fit project cycles. Institutional funding protects continuity but can become ineffective when disconnected from evaluation. Commercial collaboration can accelerate application while potentially narrowing research agendas towards areas with immediate economic return. European funding can bring large resources while imposing substantial administrative costs and creating dependence upon programme priorities that change periodically. The future academy therefore requires a diversified financial ecology rather than reliance upon a single mechanism. For AV ČR, stable national financing will remain essential because European or competitive funding cannot responsibly maintain every laboratory, archive, collection, or long-term research programme. At the same time, international excellence increasingly requires success in external competition. The Academy's future funding argument must therefore move beyond the simple demand for larger budgets towards demonstration that stable institutional resources are what allow researchers to compete, innovate, and respond when new priorities emerge. Transparent evaluation and strategic planning will remain essential to this political bargain. In the 21st century, institutional stability will survive only when it can be presented convincingly as an investment in adaptability rather than protection from change.

The humanities will remain central to the academy model even as governments emphasise technological competition more strongly. Artificial intelligence, biotechnology, climate transition, war, demographic change, migration, and digital communication are not merely technical processes because they alter institutions, identities, ethics, law, language, and social relations. Societies need historical and philosophical capacities to interpret technological change rather than simply implement it. Smaller national languages also require sustained scholarly infrastructures if they are to remain capable of functioning within advanced digital environments. Corpora, dictionaries, textual editions, archives, and linguistic research increasingly interact directly with language technologies and AI systems. Cultural heritage similarly becomes a digital as well as physical research domain, creating new connections between archaeology, history, computer science, imaging, and data preservation. Academies that abandon humanities scholarship in pursuit of narrowly defined technological competitiveness would therefore weaken their capacity to understand the consequences of the technologies they help create. They would also surrender one of the historical functions that distinguished academies from specialised laboratories. AV ČR's broad disciplinary structure gives it the possibility of integrating humanistic interpretation into discussions of scientific and technological futures. This is especially important in Czechia, where the academy tradition has long been connected with language, national memory, historical scholarship, and cultural heritage. The future academy should not preserve these fields merely because they are old. It should demonstrate that historical depth and cultural self-understanding remain necessary forms of knowledge within technologically transformed societies.

Scientific memory itself will become strategically important in another way: institutions will need to remember not only discoveries but previous policy experiments. Research systems repeatedly rediscover debates concerning centralisation, evaluation, funding, interdisciplinary work, careers, public communication, and relations with government. Without institutional memory, each generation risks presenting familiar dilemmas as unprecedented and repeating avoidable mistakes. Archives of governance, evaluation reports, oral histories, correspondence, and institutional studies can therefore contribute directly to contemporary strategic intelligence. This is particularly relevant to AV ČR because its history encompasses

monarchy, democratic Czechoslovakia, occupation, state socialism, reform, normalisation, democratic transformation, and European integration. Few European research organisations possess a comparably concentrated record of how scientific institutions behave under radically different political environments. That history offers warnings against politicisation, excessive centralisation, isolation, complacency, and the confusion of organisational survival with scientific value. It also demonstrates that large transformations can preserve scientific capital when reforms distinguish carefully between institutions, people, infrastructures, and political structures. The future Academy should therefore treat historical scholarship on science as an active resource for governance rather than merely anniversary material. Institutional self-knowledge can strengthen foresight because it expands the range of scenarios leaders are capable of imagining. An institution that remembers having survived several apparently permanent political orders is less likely to assume that present arrangements are immutable. Scientific memory can thus become one of the mechanisms through which the academy remains adaptable.

Strategic foresight will consequently become increasingly important. The scientific and political environment of 2050 cannot be predicted in detail from the perspective of 2025, just as many of today's scientific priorities would have appeared speculative in 1993. Yet academies can identify classes of change requiring preparation: demographic ageing, climate transformation, automation, geopolitical fragmentation, new biological technologies, quantum systems, changing energy structures, and evolving forms of public communication. Foresight should not be confused with attempting to select winners or predetermine future discoveries. Its purpose is to identify capabilities whose absence would reduce a society's ability to respond across several plausible futures. Such capabilities may include advanced computation, mathematical expertise, long-term environmental monitoring, biomedical science, social analysis, historical knowledge, research security, and strong international networks. OECD recommendations increasingly emphasise strategic intelligence and institutional agility as components of science, technology, and innovation policy under uncertainty (*OECD, 2025*). Academies can contribute because their disciplinary breadth allows future problems to be examined from perspectives that specialised ministries or companies may not combine. They also possess longer organisational memories than normal political administrations. Strategy AV21 represents one mechanism through which the Czech Academy has already experimented with problem-oriented coordination extending beyond individual disciplines. Future versions of such strategies will need to remain sufficiently flexible to incorporate questions that cannot yet be anticipated. The academy's strategic advantage lies not in predicting the future correctly but in preserving enough intellectual diversity to cope when predictions fail.

Generational renewal of governance will be as important as renewal of research topics. Historically, academies could become associated with seniority because membership and leadership often represented the culmination of long scientific careers. Experience remains valuable, but institutions shaped exclusively by established elites can underestimate the research practices, technologies, and career problems confronting younger scientists. Digital science, open data, new forms of collaboration, international mobility, and precarious employment affect younger generations differently from those who entered stable research careers decades earlier. Future academies will therefore need more systematic mechanisms for incorporating early- and mid-career researchers into strategic discussion. Young academies already perform this function in several European countries by creating

representative communities of excellent younger scholars. Research-performing academies can complement such institutions by ensuring that scientific councils, programme committees, evaluation discussions, and policy consultations do not become generationally closed. Greater participation does not mean substituting age for expertise, but it can broaden the institutional information available to leadership. Intergenerational governance also improves succession because future directors and scientific leaders develop experience before suddenly acquiring responsibility. The Czech Academy's challenge will be to combine the institutional memory of established researchers with the expectations of generations whose entire scientific careers have developed after European integration and digitalisation. By the later 21st century, the experience of socialism that shaped the founders of AV ČR will no longer exist as personal memory among active researchers. Institutional values such as academic autonomy will therefore need to be transmitted through governance culture and historical education rather than direct recollection. Generational change will test whether the lessons of Czech scientific history can survive after the generations who experienced its political ruptures have disappeared.

The Academy's internal institutional architecture will likewise need continuous adaptation. A network of fifty-four research institutions provides breadth and stability, but no organisational map devised in the 20th or early 21st century can be assumed to fit permanently the evolution of disciplines. Some institutes may need to merge where scientific convergence makes separation artificial, while new centres or programmes may become necessary when fields grow rapidly. Digital infrastructures may centralise services once organised separately within every institute. Shared legal, grant, data, technological, or personnel support can reduce duplication while preserving scientific autonomy at research level. Conversely, excessive centralisation could slow decision-making and reproduce precisely the bureaucratic problems that post-1989 reform sought to overcome. Future governance must therefore distinguish functions that benefit from common Academy-wide coordination from those best left to institutes. The principle of subsidiarity may become increasingly useful: decisions should remain as close as possible to the research communities affected unless coordination creates clear additional value. Evaluation can provide evidence for restructuring, but organisational change should not follow mechanically from short-term performance indicators. Research schools, infrastructures, collections, and disciplinary ecosystems can be damaged when administrative reorganisation is faster than scientific adaptation. The history of the 1990s demonstrates both the necessity and the costs of structural transformation. The future Academy will need to reform earlier and more incrementally so that periodic modernisation does not require another emergency restructuring on the scale experienced after the collapse of ČSAV.

The public identity of academies will also change as institutional authority becomes less hierarchical. Earlier societies often recognised academicians as a clearly defined intellectual elite whose status alone carried substantial cultural prestige. Contemporary publics encounter expertise through universities, media, companies, social networks, think tanks, government agencies, independent researchers, and international organisations. Academies are therefore only one source of scientific authority among many. Their future relevance will depend upon what they can offer that fragmented expert environments cannot. One answer is collective judgement: academies can convene diverse specialists, organise evidence review, and distinguish individual opinion from positions supported by broader scientific communities. Another is continuity: an academy can maintain expertise and institutional relationships

beyond the media cycle attached to one public controversy. A third is independence from direct commercial or electoral incentives. A fourth is disciplinary breadth, particularly where public problems require expertise extending from natural sciences through social sciences and humanities. These advantages are real only if academy procedures are transparent enough to prevent collective authority from becoming opaque institutional assertion. Public statements should therefore explain how experts were selected, how evidence was evaluated, where disagreement remains, and what limitations apply. The academy of the future must earn intellectual authority through visible procedures rather than rely upon inherited prestige. This does not diminish academic status; it places that status on a more defensible democratic foundation.

By 2025, many of these future challenges were already visible within the strategic agenda of the Czech Academy itself. The Academy Council identified legislation and strategic management, economic sustainability, European funding, knowledge and technology transfer, international cooperation, research evaluation, research excellence and scientific careers, university cooperation, digital transformation, sustainable development, research security, public communication, and Strategy AV21 among its principal areas of responsibility (*Czech Academy of Sciences, 2025*). The range of these priorities is historically revealing because it differs markedly from the institutional problems that dominated the Academy's first years after 1993. The early post-socialist agenda centred upon survival, restructuring, personnel reduction, legal continuity, democratisation, and the establishment of scientific evaluation. The mid-2020s agenda assumed the continued existence of the Academy and instead asked how it should operate within a research environment transformed by European integration, digital technology, geopolitical uncertainty, and changing public expectations. This transition indicates that the post-socialist phase of institutional identity had largely given way to a forward-looking European orientation. It also demonstrates the increasing complexity of academy governance. Scientific excellence can no longer be separated neatly from career policy, infrastructure, data, security, sustainability, public communication, or legislation. Each affects the conditions under which knowledge is produced. The future of AV ČR will therefore depend upon whether strategic coordination can address these interactions without suffocating the decentralised scientific creativity of its institutes. In this sense, the priorities articulated in 2025 already describe the institutional problem of the academy's next historical period.

The wider European agenda confirms that these Czech priorities are not nationally isolated. The European Research Area Policy Agenda for 2025–2027 combined long-term structural policies concerning open science, research infrastructures, and research careers with new actions addressing artificial intelligence in science, research security, and science for policy (*European Commission, 2025*). ALLEA's reorganisation of its science-policy work in 2025 similarly concentrated expert activity around trust in science, data governance, research security and academic freedom, equity and inclusion, and climate sustainability (*ALLEA, 2025*). OECD analysis in the same period identified geopolitical fragmentation, AI, technology convergence, trust, openness, research security, and adaptation of public science systems as defining challenges for contemporary science policy (*OECD, 2025*). These agendas converge because academies now operate within a research system whose greatest problems are systemic rather than disciplinary. The future of physics may depend partly upon data governance and international security, while the future of humanities scholarship may depend upon AI, multilingual infrastructures, and digital preservation. Biomedical research is

inseparable from ethics and data protection, and climate science depends upon public trust and policy implementation as much as observational accuracy. Academies whose institutional cultures encourage interaction across these domains may therefore acquire renewed relevance. Their broad remit, once sometimes criticised as administratively old-fashioned, can become an advantage in a period when knowledge systems themselves are converging. The essential condition is that breadth must be translated into genuine intellectual coordination rather than remain a formal catalogue of disciplines. AV ČR's future will thus be shaped simultaneously by Czech institutional traditions and challenges shared across the European research landscape.

No plausible future, however, removes the basic political question underlying publicly financed academies: why should society continue to support them? Historical achievement cannot provide a sufficient answer indefinitely, because every generation is entitled to reconsider how public resources should be distributed. Nor can the answer consist only of economic innovation, since universities, companies, and specialised research organisations also contribute to technological development. The distinctive justification of an academy lies in the combination of functions that other institutions may perform separately: long-term fundamental research, institutional memory, independent expertise, cultural scholarship, interdisciplinary capacity, scientific advice, international representation, research infrastructure, and public communication. In research-performing systems such as AV ČR, this combination is strengthened by permanent institutes capable of sustaining communities beyond individual grants. Such an arrangement deserves public support only when those institutes remain scientifically credible and institutionally responsive. Evaluation therefore becomes part of democratic legitimacy, while public engagement explains why research whose applications remain uncertain can still constitute a public good. Open science expands access to results, and knowledge transfer increases the pathways through which research reaches society. Academic autonomy protects the reliability of the knowledge on which those benefits depend. The academy of the future must therefore justify itself through a social contract rather than historical privilege. Society provides time, resources, infrastructure, and a degree of institutional independence; the Academy returns knowledge, expertise, cultural memory, innovation capacity, critical reflection, and intellectual preparedness for uncertain futures. The durability of this contract will depend upon both scientific performance and the institution's willingness to explain what cannot be expressed through short-term measurable returns.

Thus, the future of academies of sciences in the 21st century will depend upon their capacity to transform continuity from passive institutional survival into an active scientific resource. Academies will remain valuable where they protect long-term fundamental research while subjecting permanent institutions to credible evaluation, where they defend academic freedom while accepting democratic accountability, and where they combine international openness with proportionate research security. Artificial intelligence will alter methods of discovery, scholarly communication, and research integrity, requiring academies to build computational capacity while preserving human responsibility for scientific judgement. Open science will expand access to publications, data, software, and infrastructures, but it will also require sustainable repositories, equitable participation, multilingualism, and careful protection of sensitive information. Digital preservation will extend the academy's traditional memory function into research environments whose evidence can disappear rapidly unless preservation begins during the research process itself. Geopolitical fragmentation will make

science diplomacy, support for threatened researchers, and principled management of international cooperation increasingly important. Technology convergence and global challenges will reward institutions capable of connecting strong disciplines through flexible interdisciplinary structures. Climate change will require academies not only to provide evidence to society but to make their own operations more environmentally sustainable. Public trust will depend less upon inherited authority than upon transparency, integrity, effective communication, and visible procedures of expert judgement. Career systems will need to attract internationally mobile researchers, support younger scientists, reduce avoidable inequalities, and permit scientific lives compatible with responsibilities outside research. Universities and academies will have to operate as complementary parts of national and European knowledge systems rather than defend rigid institutional territories. Research infrastructures, stable financing, strategic foresight, and accumulated human expertise will remain essential for smaller states seeking meaningful participation in European science. Humanities and social sciences will retain strategic importance because technological societies require historical memory, ethical reflection, linguistic capacity, institutional analysis, and critical understanding of social change. For AV ČR, the strategic agenda visible by 2025 already indicated this transition from post-socialist reconstruction towards questions of excellence, digital transformation, European funding, security, sustainability, careers, public communication, and interdisciplinary research. The Czech Academy will therefore not secure its future by becoming organisationally identical to academies elsewhere in Europe, nor by preserving every structure inherited from the 20th century. Its strongest historical lesson is precisely that scientific continuity has survived because institutional forms were repeatedly capable of change. The future academy should remain a place where knowledge can outlast immediate political and economic priorities while remaining sufficiently open, critical, and adaptable to serve societies whose future problems cannot yet be fully predicted.

Final Synthesis

1. The Academy as an Institution of Knowledge, Memory, and Innovation

The historical development of the Czech Academy of Sciences can ultimately be understood through three functions that repeatedly survived changes of political regime, legal form, institutional structure, and scientific practice: the production of knowledge, the preservation of memory, and the creation of conditions for innovation. These functions did not emerge simultaneously, nor did they possess the same institutional meaning in the 18th century, the period of the Czech national movement, socialist Czechoslovakia, or the democratic Czech Republic. Learned societies initially concentrated upon communication, scholarly judgement, publication, and the accumulation of intellectual authority. The 19th-century academy added a stronger national and cultural dimension, while the 20th-century institute system transformed organised research into a permanent profession supported by laboratories, archives, collections, specialised staffs, and state resources. The modern Czech Academy inherited these layers without reproducing any of them unchanged. Its contemporary scientific work depends upon research infrastructures and international networks unimaginable to 18th-

century scholars, yet it still performs the older academic functions of preserving evidence, evaluating claims, transmitting expertise, and sustaining intellectual continuity beyond individual careers. Innovation, similarly, has ceased to mean only invention or technological application and increasingly includes conceptual, methodological, organisational, cultural, and social forms of novelty. Memory is no longer confined to archives and commemorative history, because research data, digital repositories, long-term observations, institutional records, tacit knowledge, and scientific schools have become integral parts of scientific continuity. Knowledge itself is increasingly produced through international collaboration, computational infrastructures, interdisciplinary teams, and open-science systems while remaining dependent upon institutions capable of protecting intellectual independence and long-term inquiry. The Academy therefore represents not three separate institutional missions but a single historical system in which knowledge, memory, and innovation reinforce one another. Knowledge becomes cumulative because it can be remembered, memory becomes productive because it can be reinterpreted, and innovation becomes sustainable because it emerges from accumulated competence rather than from permanent institutional amnesia (*Franc et al., 2010*; *Czech Academy of Sciences, 2025*).

The first of these functions, the production of knowledge, forms the most obvious justification for an academy of sciences, yet the history reconstructed throughout this book demonstrates how radically the institutional conditions of knowledge production have changed. The Royal Bohemian Society of Sciences operated through meetings, correspondence, publications, competitions, and the reputational authority of its members. 19th-century academicians remained closely connected with universities, museums, libraries, private scholarship, and cultural institutions because a modern research profession was only gradually emerging. By the 20th century, however, scientific work increasingly required permanent laboratories, technical employees, expensive equipment, specialised collections, systematic fieldwork, and long-term institutional employment. ČSAV embodied this transformation on an unprecedented scale by making the research institute rather than the individual academy member the principal operational unit of organised science. The socialist political environment distorted this development through ideological supervision and centralised control, but it did not invalidate the underlying institutional logic that certain forms of research require organisations devoted primarily to research. The creation of AV ČR after 1992 preserved this organisational insight while altering its constitutional framework fundamentally. Knowledge was no longer to be produced within an academy understood as a political component of socialist planning, but within self-governing public research institutions assessed increasingly through international professional standards. The Academy's contemporary mission therefore retains one of the most important 20th-century achievements—the capacity to sustain permanent research communities—while embedding that capacity within a democratic and plural scientific system. This combination explains why institutional continuity after 1993 was neither a simple restoration nor a failure to dismantle the past. It represented a selective judgement that organised fundamental research possessed value independent of the regime under which part of its infrastructure had been created (*Franc & Dvořáčková, 2020*; *Czech National Council, 1992*).

Knowledge within the Academy has consequently always been inseparable from institutional form. A scientific idea may originate in an individual's imagination, but whether it becomes durable knowledge depends upon communities capable of testing, criticising, reproducing, preserving, and extending it. Laboratories transform personal insight into collective

experimental practice. Archives and libraries make earlier evidence available to new researchers. Journals and publishing systems expose arguments to communities of judgement. Research institutes provide careers through which expertise can deepen across decades rather than disappear after the end of a single project. Evaluation systems organise professional scrutiny, while international cooperation widens the communities capable of identifying weakness or originality. Doctoral supervision transmits not merely information but habits of evidence, criticism, authorship, methodological discipline, and intellectual responsibility. The Academy therefore demonstrates a broader principle of modern science: knowledge becomes socially powerful because it is institutionalised without becoming completely administratively determined. The history of ČSAV revealed the danger created when institutionalisation becomes too closely subordinated to political authority, while the history of AV ČR illustrates the opposite problem of ensuring that autonomy does not become freedom from professional accountability. Scientific institutions must organise research strongly enough to make complex work possible while leaving enough intellectual freedom for researchers to challenge established assumptions. That equilibrium can never be solved once and for all because the technologies, disciplines, costs, and political environments of research continue to change. The Academy's historical importance lies partly in having served as one of the principal Czech arenas within which this balance has repeatedly been renegotiated (*Franc et al., 2010*; *Franc & Dvořáčková, 2024*).

The second function, memory, gives knowledge its temporal depth. Scientific systems are often described through the language of novelty because publications, grants, prizes, and research strategies reward what is new. Yet no research community could innovate continuously if it had to reconstruct its methods, evidence, terminology, and institutional experience in every generation. The Academy contains multiple forms of memory extending from 18th-century scholarly records to born-digital datasets generated in contemporary laboratories. The archives of older academies preserve meetings, correspondence, membership decisions, research proposals, disputes, political interventions, and the everyday organisational processes through which Czech scholarship developed. Personal fonds preserve dimensions of scientific careers that official institutional documentation cannot capture fully, including networks, intellectual conflicts, exile, rehabilitation, and the practical circumstances surrounding discoveries. Libraries preserve the published history of disciplines, including theories later abandoned and results whose significance became apparent only retrospectively. Research collections preserve material objects capable of being reinterpreted using techniques unavailable when those objects were first acquired. Long-term observation programmes create temporal series without which climatic, environmental, demographic, or social changes cannot be recognised reliably. Institutional memory also survives through teams, mentoring, laboratory practices, editorial traditions, and disciplinary cultures that may leave only partial documentary traces. The Academy's role as a carrier of scientific memory therefore does not simply commemorate the past; it provides present research with resources accumulated by people who could not predict the questions future generations would ask. In this sense, preservation is itself an investment in unknown future knowledge (*Franc et al., 2010*; *Mádlová, 2024*).

The relationship between memory and political rupture is particularly important in the Czech case because institutional survival repeatedly required distinguishing preservation from ideological continuity. The transition from the Habsburg monarchy to Czechoslovakia changed the political meaning of older academic institutions without eliminating the value of their

collections and scholarly practices. Nazi occupation interrupted university life and exposed the vulnerability of cultural and scientific institutions to direct political violence. Communist reorganisation after 1948 absorbed earlier institutions and their resources into a new ideological framework while simultaneously excluding or marginalising scholars whose work or biographies were politically unacceptable. Normalisation after 1968 again altered the personnel and intellectual composition of institutions without destroying every scientific capacity they contained. The Velvet Revolution created a radically different challenge because democratic reformers had to recover intellectual freedom without discarding laboratories, archives, research schools, and professional expertise accumulated under ČSAV. The Academy's modern institutional identity emerged from this process of critical inheritance. Memory could not mean accepting previous political narratives, because many of those narratives had themselves been mechanisms of exclusion. Nor could democratic reform begin by declaring every scientific activity conducted under socialism illegitimate, because such a judgement would erase genuine research achievements and the experience of scientists who maintained professional standards under difficult conditions. The modern Academy therefore had to learn to remember selectively but critically: preserving evidence while revising interpretation, restoring excluded figures while examining institutional complicity, and retaining scientific capacity while abandoning structures of political control. This capacity to distinguish memory from loyalty to a previous regime is one of the most mature features of the post-1989 scientific transformation (*Franc & Dvořáčková, 2020*; *Franc & Dvořáčková, 2024*).

Memory becomes scientifically productive when inherited evidence can be questioned rather than merely revered. A biological collection assembled decades ago may be analysed through genomic techniques unavailable to its original curators. Archaeological records produced before digital mapping can be integrated into geographic information systems and compared with new environmental datasets. Historical source editions can be searched computationally, while linguistic archives can become training resources for language technologies. Photographic documentation may allow the reconstruction of cultural monuments or landscapes that have subsequently changed. Old laboratory notebooks can reveal experimental paths that published articles omitted, including failures that become informative when a field returns to similar questions. Scientific memory therefore possesses a latent quality because its value changes when new methods appear. The digitisation of collections, publications, and archival resources greatly expands this potential by allowing materials to be searched, linked, and analysed at scales impossible through purely physical consultation. Yet digital transformation does not replace preservation; it makes preservation more technically demanding because formats, metadata, software, and repositories themselves require long-term maintenance. The Academy's contemporary library, archival, and open-science infrastructures therefore extend an older institutional function into a radically new technological environment. The 18th-century academy preserved printed proceedings and correspondence, whereas the 21st-century Academy must also preserve research data, code, digital images, software environments, web resources, and machine-readable metadata. The underlying responsibility remains recognisable even though its technical form has changed: knowledge must be transmitted in ways that allow later generations to verify, reinterpret, and extend it (*UNESCO, 2021*; *Czech Academy of Sciences, 2024*).

The third function, innovation, must likewise be interpreted broadly if the Academy's historical contribution is to be understood accurately. Scientific innovation includes discoveries and

inventions, but it also includes new methods, classifications, interpretive frameworks, research infrastructures, institutional practices, data resources, and ways of organising cooperation. Otto Wichterle's work provides one celebrated example of how fundamental chemistry and materials research could eventually generate technological and commercial consequences far beyond the laboratory environment in which the relevant knowledge emerged. Jaroslav Heyrovský's polarographic work illustrates a different pathway through which basic investigation created new analytical possibilities with international significance. Yet similar dynamics occur in less publicly celebrated fields. A linguistic database can enable digital language technologies; historical demographic research can influence public policy; archaeological methods can transform heritage management; mathematical theory can become essential to computing decades after its formulation; and ecological monitoring can acquire strategic importance when climate conditions change. Innovation therefore cannot be measured exclusively through patents, spin-offs, or immediate economic revenue. Those indicators are meaningful where relevant, but they capture only one subset of the transformations generated by research. A public academy has particular reason to defend a broader conception because many of its most valuable activities concern knowledge whose future applications remain uncertain. Innovation emerges from the interaction between disciplinary depth and the possibility of recombination, which is why the Academy's broad disciplinary structure can become a strategic advantage. Its task is not to force every field towards application but to create institutional pathways through which ideas can move when new opportunities arise.

The relationship between fundamental research and innovation is therefore less linear than traditional models of technological transfer sometimes imply. New technologies rarely proceed in a simple sequence from a basic discovery through development to market application. They often depend upon multiple scientific traditions converging across long periods. Modern biomedical innovation can combine molecular biology, chemistry, statistics, computing, imaging, materials science, and clinical expertise. Artificial intelligence draws upon mathematics, computer science, linguistics, psychology, philosophy, electronics, and enormous infrastructures for data and computation. Sustainable energy systems require physics, chemistry, materials research, engineering, economics, environmental science, law, and public acceptance. An institution that maintains strong specialised communities across several of these domains creates possibilities for recombination that cannot be forecast precisely. Strategy AV21 reflects this understanding by providing an additional interdisciplinary structure connecting institutes around complex societal problems without dissolving their disciplinary bases. This is historically significant because it represents an alternative to both rigid disciplinary isolation and central planning. Interdisciplinary cooperation emerges through scientific programmes and shared problems rather than ideological command. The Academy's future innovative capacity will depend upon preserving exactly this balance: sufficiently strong disciplines to generate deep knowledge and sufficiently permeable institutional boundaries to allow new combinations to form. Innovation becomes most powerful when organisational structure enables intellectual movement without assuming that every research problem can be reduced to the same strategic programme (*Czech Academy of Sciences, 2025*).

This broader concept of innovation also alters the relationship between the Academy and the economy. Socialist research policy formally connected science with economic development through planned priorities, but administrative command could not guarantee productive circulation of knowledge between laboratories and enterprises. The post-1989 system

replaced this model with a much more plural environment in which companies, public organisations, hospitals, cultural institutions, universities, government bodies, and research institutes negotiate different forms of collaboration. Technology transfer offices, patents, licensing, contract research, joint laboratories, and spin-off activity became increasingly normal components of research management. Yet the Academy's public mission cannot be evaluated solely according to how much revenue such mechanisms produce. Commercialisation may be appropriate for one discovery while being irrelevant to another form of valuable scholarship. The most important institutional objective is therefore not universal commercialisation but permeability between research and potential users of knowledge. Scientists should be able to identify partners when applications become plausible, while external organisations should be able to access expertise without determining the entire research agenda. The Academy's position between government, universities, international science, and the economy makes it particularly suited to this mediating role. It can support pre-commercial knowledge whose development horizon is too long for many private actors while remaining open to collaboration when scientific maturity and external need converge. Innovation in this model is not the opposite of fundamental research; it is one of the possible futures that fundamental research creates.

Knowledge, memory, and innovation also converge in the Academy's research infrastructures. A laboratory instrument appears at first to belong principally to the present because it enables current experiments. In reality, infrastructure connects several temporal levels simultaneously. It embodies earlier investments, technologies, and scientific decisions; it is operated by staff whose expertise has accumulated through years of practice; and it generates data that may remain useful long after the instrument itself becomes obsolete. Large facilities also influence future scientific agendas because researchers formulate questions partly according to the capabilities available to them. Collections and archives function similarly, although their technologies of preservation differ. A specialised infrastructure therefore contains both memory and possibility. This is why the closure of a facility cannot be assessed only through the replacement cost of its equipment. The loss may include experienced technicians, calibration knowledge, long-term datasets, networks of users, and the reputation that attracts collaborators. Conversely, preserving obsolete infrastructure indefinitely can consume resources needed for emerging fields. The Academy's evaluation and investment systems therefore operate at the intersection between historical continuity and strategic innovation. Decisions must identify which inherited capacities possess future value and which should be replaced or reorganised. This is one of the most concrete institutional forms through which the Academy continually negotiates its relationship with time.

Internationalisation intensifies this negotiation because Czech scientific knowledge is now produced within European and global networks rather than within a self-contained national system. Researchers collaborate across borders, infrastructures are shared internationally, grants are awarded through multinational competition, and disciplinary standards are defined through global communities. The modern Academy therefore cannot preserve national scientific capacity by insulating it from international influence. Isolation would weaken precisely the knowledge base that national institutions are supposed to protect. At the same time, participation in international science requires strong domestic organisations capable of absorbing, adapting, and contributing knowledge rather than merely consuming results produced elsewhere. This is particularly important for a medium-sized state whose research system cannot reproduce every advanced capability independently. AV ČR functions as one of

Czechia's principal institutional nodes within this networked environment. Its institutes can specialise deeply in selected fields while gaining access to complementary expertise through European programmes, bilateral cooperation, shared infrastructures, and mobility. Internationalisation therefore changes the meaning of national scientific strength. Strength is no longer equivalent to self-sufficiency; it increasingly means possessing sufficient intellectual and institutional capacity to participate as a credible partner within interdependent systems. The Academy's successful Europeanisation after 1993 is consequently part of its national function rather than a departure from it (*European Commission, 2024*; *Czech Academy of Sciences, 2025*).

The role of memory becomes especially important under these conditions because internationalisation can sometimes create the impression that national scientific traditions are becoming irrelevant. Global journals, English-language publication, multinational infrastructures, and European research programmes may seem to weaken the importance of historically rooted institutions. Yet the opposite can also occur. Strong international participation depends upon distinctive competence, and distinctive competence frequently emerges from long-lived research schools, archives, collections, and accumulated methods. Czech chemistry, materials research, physics, archaeology, linguistics, history, and other fields have developed traditions whose present international value partly reflects institutional investments made across generations. Historical depth can therefore become an international scientific asset rather than a barrier to globalisation. The challenge is to prevent tradition from becoming self-protective. A research school should survive because its accumulated knowledge enables new work, not because its history exempts it from comparison with contemporary science. International evaluation performs a crucial function precisely here. It subjects inherited strengths to external judgement and therefore tests whether institutional memory remains productive. When a long-standing research community continues to perform at a strong international level, continuity becomes evidence of accumulated capability rather than organisational inertia. The Academy's post-1993 evaluation tradition thus connects memory directly with innovation by requiring inherited institutions to demonstrate that their historical capital can generate future research.

Scientific memory also contains experiences of failure, and these are essential to innovation because institutions that remember only success learn very little from their own history. Czech academic science experienced political purges, ideological distortion, international isolation, underinvestment, failed reforms, organisational conflicts, and programmes whose expected benefits never materialised. These episodes are not peripheral to the Academy's identity. They show how scientific communities can lose talent, how institutional authority can be captured politically, how excessive centralisation can reduce adaptability, and how abrupt restructuring can destroy capacities that later prove difficult to rebuild. The post-1989 transformation produced its own mistakes and tensions, including severe financial uncertainty and difficult decisions whose consequences affected entire research communities. Remembering these costs does not invalidate reform; it helps distinguish successful principles from avoidable damage. Institutional learning depends upon preserving such ambiguity rather than constructing a heroic narrative in which every transformation appears inevitable and successful. The Academy's historians and archives therefore perform a strategic role when they investigate uncomfortable parts of institutional history. By showing how earlier decisions affected scientific development, they expand the evidence available to contemporary leaders. Memory in this form becomes a mechanism of organisational foresight. An institution capable

of studying its own failures systematically is better positioned to innovate responsibly than one that treats history exclusively as a source of prestige.

The Academy's relationship with democratic society similarly brings knowledge, memory, and innovation together. Publicly financed research depends upon a social contract that cannot be sustained solely through technical performance. Citizens and policymakers must understand why long-term knowledge deserves support even when its applications remain uncertain. Historical memory provides part of the answer by showing that many socially important capabilities emerged from research whose future value could not have been predicted accurately. Innovation provides another by demonstrating pathways through which new knowledge contributes to technology, health, culture, public policy, environmental management, and economic development. Scientific advice adds a further dimension because societies need institutions capable of interpreting evidence during periods of uncertainty. Yet democratic legitimacy also requires the Academy to accept that expertise does not confer political sovereignty. Scientists can clarify evidence and consequences, but elected institutions must decide among priorities involving values as well as facts. The Academy's strongest public role therefore lies in protecting the quality and independence of knowledge while communicating its limits honestly. This distinction is especially significant given the historical experience of ČSAV, where political authority and scientific institutions were integrated in ways incompatible with democratic autonomy. The modern Academy must maintain the opposite relationship: close enough to society and government to contribute expertise, but sufficiently independent to produce conclusions that may be politically inconvenient.

The rapid growth of science communication after 1993 reflects this changed social contract. Public festivals, lectures, exhibitions, magazines, digital media, school programmes, open days, and direct engagement with researchers have gradually made the Academy more visible to Czech society. Such activities have practical value for recruitment and scientific literacy, but their deeper significance concerns the public legitimacy of institutionalised expertise. A scientific institution can no longer assume that citizens will trust it because of formal status alone. Digital information environments expose people simultaneously to expert analysis, misinformation, political propaganda, commercial persuasion, and machine-generated content. Institutional authority therefore increasingly depends upon transparent procedures and credible communication. The Academy must show not merely what scientists know but how they know it, where uncertainty remains, how disagreements are resolved, and why conclusions may change when new evidence appears. This requirement can strengthen science if it encourages greater reflexivity, but it can also create pressure towards oversimplification or constant media visibility. The future public mission must therefore resist transforming every research result into a dramatic breakthrough. Reliable communication should preserve the provisional and self-correcting character of scientific knowledge rather than hide it. In this sense, the Academy's public role continues the oldest learned-society function of making knowledge socially visible, although the audiences and technologies of communication have changed beyond recognition.

The concept of innovation also extends to governance itself. The Academy's post-1993 development required new methods for selecting directors, evaluating institutes, allocating resources, supporting international projects, managing data, transferring knowledge, and responding to ethical or security concerns. These institutional innovations matter because scientific quality depends upon organisational environments. A poorly designed career system

can drive talented researchers abroad even when laboratories are excellent. Excessively mechanical evaluation can encourage safe publication strategies rather than intellectually ambitious work. Weak project administration can make internationally competitive scientists unable to participate effectively in European programmes. Inadequate data governance can threaten reproducibility or security. Leadership structures lacking transparency can reduce trust and discourage younger researchers from accepting responsibility. Innovation in scientific organisation is therefore not administrative decoration; it shapes the conditions under which intellectual innovation occurs. The modern Academy has already demonstrated this principle through reforms of evaluation, public-research-institution status, open-science policy, Strategy AV21, and career-support mechanisms. Its future will require similar institutional experimentation because the research environment will continue to change. Historical continuity should protect the mission of science, not every procedure through which that mission happened to be administered at one moment.

Artificial intelligence makes this requirement particularly urgent because it will alter both research practice and institutional memory. AI systems can analyse literature, generate code, identify patterns in large datasets, support image analysis, translate texts, model molecular structures, and accelerate forms of hypothesis development. These capabilities may dramatically increase scientific productivity, but they also create new problems concerning provenance, reliability, confidentiality, authorship, bias, and accountability. If machine-generated analysis becomes integrated into scientific workflows without adequate documentation, future researchers may be unable to reconstruct how conclusions were reached. Scientific memory therefore requires that AI-assisted research preserve traceability. Data, prompts, software versions, model assumptions, validation procedures, and human decisions may become components of the historical record of research. Innovation in AI thus increases rather than reduces the importance of institutional standards. Academies can contribute by developing practices that distinguish legitimate computational assistance from the outsourcing of scientific responsibility. They must also preserve human disciplinary competence, because researchers cannot evaluate algorithmic output intelligently without understanding the domain in which the algorithm operates. The Academy's broad structure gives it an opportunity to bring technical, philosophical, linguistic, legal, and social-scientific perspectives into these debates. AI thereby illustrates in contemporary form the central proposition of this synthesis: innovation becomes reliable when it remains connected to knowledge and memory (*OECD, 2025*; *ALLEA, 2023*).

Open science produces a comparable convergence. The expectation that publicly funded publications, data, software, and other research outputs should become accessible where possible extends the public mission of academies into the infrastructure of knowledge itself. Openness allows researchers elsewhere to verify results, reuse data, compare methods, and build new projects more quickly. It can also make Academy research visible to citizens, educators, companies, and institutions that could never afford extensive commercial subscriptions. Yet open science creates long-term obligations because accessible information must also remain interpretable and preserved. A dataset without adequate metadata is technically available but scientifically weak. A repository without sustainable funding can disappear, taking research evidence with it. Open access that relies excessively upon expensive publication charges can reproduce inequality in a different form. Sensitive data, dual-use research, and intellectual-property considerations create legitimate reasons for restrictions. The Academy's Open Science Principles therefore correctly frame openness as a

governed institutional practice rather than a simple imperative of unrestricted disclosure. In historical perspective, open science represents an expansion of the academic commitment to communication that began with learned-society proceedings. The difference is that 21st-century infrastructure makes it possible to expose much more of the underlying research process itself. Knowledge, memory, and public accessibility increasingly become part of one institutional architecture (*UNESCO, 2021*; *Czech Academy of Sciences, 2024*).

The Academy's humanities and social sciences demonstrate especially clearly why the relationship among these three functions cannot be reduced to technological innovation. Historical research produces knowledge about past societies, preserves documentary memory, and can innovate through new questions, methodologies, computational techniques, and comparative interpretations. Linguistic research preserves and analyses the Czech language while simultaneously enabling dictionaries, corpora, educational tools, and language technologies. Archaeology transforms physical heritage into evidence through fieldwork, conservation, dating, digital mapping, and interpretation. Philosophy preserves intellectual traditions while creating new conceptual frameworks for ethical and epistemic problems, including those generated by biotechnology and artificial intelligence. Sociology and economics produce analytical knowledge relevant to social transformation, inequality, institutions, demographics, and policy. None of these fields fits comfortably into a model where innovation is measured primarily through patents or products. Their contributions often alter how societies understand themselves and how institutions interpret evidence. For a medium-sized national community, such capacities possess strategic importance because cultural and institutional self-understanding cannot simply be imported from global markets. The Academy's preservation of strong humanities research therefore represents not a residue of an older cultural academy but part of a modern knowledge infrastructure. Innovation without memory can become socially blind, while memory without new interpretation becomes antiquarian. Humanities scholarship joins the two by transforming inherited evidence into new forms of understanding.

Natural and technical sciences demonstrate the complementary relationship. These fields often produce more visible technological effects, yet they are equally dependent upon historical accumulation. A materials laboratory develops expertise through repeated experimentation across generations. Astronomical research depends upon long observation series and instruments whose calibration histories matter. Molecular biology builds upon collections, protocols, datasets, and conceptual developments accumulated through decades of research. Mathematics produces theories whose applications may remain invisible for long periods. Chemistry connects laboratory knowledge with pharmaceuticals, materials, analytical techniques, and industrial processes through pathways that cannot always be anticipated when research begins. Innovation therefore emerges from memory within experimental science just as surely as within the humanities. The difference lies partly in the material form of memory: samples, instruments, protocols, technical skills, and datasets rather than primarily texts and archives. The Academy's institute model makes these forms of memory institutionally durable because laboratories can maintain communities across the lifespan of individual grants or leaders. This durability is one of the reasons scientific schools matter. They preserve tacit knowledge that publications cannot capture completely while giving younger researchers access to accumulated experience from which new work can depart.

Scientific schools also reveal why institutional continuity depends upon people more than organisational diagrams. Researchers transmit methods, standards, doubts, traditions, and professional expectations through mentoring and collaboration. An institute may retain the same legal name while losing its scientific identity if its community disperses. Conversely, a research school can survive renaming, merger, or institutional relocation when its people, methods, and knowledge remain connected. Czech academic history contains numerous examples of both phenomena. Political purges after 1948 and 1968 damaged scientific continuity precisely because removing individuals also disrupted mentorship and intellectual networks. Post-1989 rehabilitation mattered not only morally but scientifically because it reconnected institutions with expertise and memories that political intervention had excluded. International mobility after 1989 created another form of continuity by allowing Czech researchers to acquire experience abroad and return with new methods and professional cultures. The future Academy will therefore need to treat career development as one of its principal mechanisms of memory and innovation. Supporting younger scientists is not simply a social policy or recruitment problem. It determines whether accumulated knowledge passes to people capable of transforming it. Generational succession is therefore one of the institutional processes through which the Academy turns memory into future knowledge.

This insight also changes the meaning of leadership. Presidents, directors, council members, and scientific boards do not create research directly, but they influence which environments researchers inhabit. Leadership decisions affect recruitment, evaluation, infrastructure, international partnerships, careers, interdisciplinary programmes, and the extent to which institutes tolerate intellectual risk. The history of ČSAV demonstrated how political leadership could weaken research communities even when institutions remained materially intact. The post-1989 history demonstrated how governance reform could create conditions for scientific recovery without dictating the content of every discipline. Good academic leadership therefore operates indirectly: it protects procedures through which scientists can make credible judgements rather than substituting administrative judgement for scientific expertise. It must also recognise the difference between institutional memory and institutional conservatism. A director who preserves every inherited structure may protect history while damaging future relevance, whereas one who reorganises too aggressively may destroy forms of knowledge whose value has not been recognised. The leadership challenge is therefore interpretive as well as managerial. Decisions require understanding which traditions remain scientifically fertile and which have become organisational habit. In an academy with more than two centuries of historical inheritance, leadership inevitably becomes stewardship of time.

The Academy's public archives and libraries make this stewardship unusually visible because they preserve evidence beyond the interests of current leadership. A mature institution should not control its historical record simply to protect its reputation. Researchers must be able to investigate moments when Academy bodies acted poorly, when political pressure shaped careers, or when institutional strategies failed. Such openness transforms memory into accountability. It prevents the organisation from claiming continuity only with achievements while disowning periods of compromise. The same principle applies to contemporary records. Decisions concerning evaluation, funding, restructuring, open science, research security, and public communication will eventually become historical evidence through which later generations judge today's Academy. Institutional memory is therefore being produced continuously. The awareness that present decisions will enter the historical record can itself encourage more responsible governance. This is particularly important for an organisation

whose legitimacy partly rests upon having survived political regimes that attempted to control memory. The democratic Academy strengthens its difference from those regimes when it preserves evidence capable of supporting criticism of itself. Memory then becomes a constitutional value rather than merely a cultural one.

Innovation similarly gains legitimacy when institutions preserve evidence of how it was generated. Contemporary science increasingly values reproducibility because spectacular results that cannot be examined or repeated weaken trust. Open data, code, methodological documentation, and transparent research workflows therefore connect innovation directly with memory. A discovery is scientifically durable only when enough evidence survives for others to understand and test it. This principle is especially important as experiments become computationally complex and dependent upon software or AI systems that may change rapidly. Future researchers may possess publications describing conclusions while lacking access to the technological environments required to reconstruct the analysis. Research infrastructures must therefore preserve not merely final outputs but enough contextual information to make them meaningful. The Academy's repositories, library systems, and data-management policies increasingly address this problem. These practices may seem technically distant from the classical academy, yet historically they continue its most basic scholarly function: establishing conditions under which claims can be examined by communities beyond their original authors. The technologies of verification have changed, but the underlying norm remains remarkably continuous.

The three functions also converge strongly in national resilience. Knowledge provides understanding of emerging threats, memory supplies historical and longitudinal evidence, and innovation generates new ways of responding. The pandemic showed that virological, molecular, mathematical, economic, social, and behavioural expertise could be mobilised rapidly because such capacities already existed. Energy insecurity demonstrated why long-term research into nuclear technologies, plasma physics, materials, renewable systems, and energy economics matters before geopolitical disruption makes it urgent. Climate change reveals the strategic importance of environmental monitoring whose value increases through decades of continuity. Social resilience depends upon historical, sociological, psychological, and political knowledge concerning trust, institutions, polarisation, and communication. The Academy therefore contributes to resilience not through a dedicated emergency function alone but through the diversity and persistence of its normal research activities. This is one of the strongest contemporary arguments for institutional breadth. A society cannot predict which part of its knowledge base will become essential during the next crisis. Preserving a diversified scientific system therefore provides intellectual options. The Academy's public value lies partly in keeping these options available even when they do not correspond to immediate political priorities (*OECD, 2021*).

National resilience also demonstrates why innovation should not be equated with permanent disruption. Political and managerial cultures sometimes celebrate disruption as evidence of dynamism, yet research systems can lose strategic capacity when organisations are repeatedly reorganised before knowledge has time to mature. Long-term laboratories, collections, research teams, and datasets need stability. At the same time, institutions must remain capable of adaptation when scientific conditions change. Resilience therefore depends upon a distinction between stability and rigidity. Stable institutions provide resources and memory; rigid institutions resist evidence that their structures no longer serve scientific purpose. The Academy's post-1993 transformation is historically significant because it

illustrates an attempt to preserve the first while removing the second. Institutes remained, but they were evaluated, reduced, merged, modernised, and increasingly internationalised. The resulting model remains imperfect, yet it provides a useful institutional principle for the future. Innovation does not require constant destruction of inherited structures. It requires organisations capable of changing selectively while protecting capabilities whose loss would be difficult to reverse.

The same principle applies to the Academy's national identity. Czech scientific institutions historically participated in the construction of national language, culture, history, and political self-understanding. In the 19th century, this national mission was explicit and often intertwined with cultural emancipation. In the 21st century, a comparable national responsibility operates within a very different European and global scientific environment. Czech language and cultural heritage still require domestic scholarly expertise, but their study is now embedded within international disciplines and increasingly digital infrastructures. Fundamental research in universal fields remains nationally important because it strengthens Czech scientific capacity even when its subject has no specifically Czech character. European integration therefore does not dissolve the Academy's national function; it redefines it. A modern national academy is valuable not because it produces nationally bounded knowledge but because it ensures that the country participates actively in the production and interpretation of knowledge whose relevance crosses borders. The Academy connects Czech society with international science while preserving forms of expertise that global institutions cannot be expected to maintain specifically for Czech needs. National responsibility and cosmopolitan research therefore reinforce one another when the institution is sufficiently open. This synthesis is one of the clearest outcomes of the period from 1993 to 2025.

The Academy's innovation function likewise depends increasingly upon European interdependence. Major research infrastructures, ERC grants, Horizon Europe projects, international mobility, and multinational expert networks allow Czech researchers to work at scales that domestic resources alone could not sustain. Yet international participation produces durable benefit only when national institutions possess the absorptive capacity required to use it. Researchers need strong laboratories, administrative support, intellectual communities, data infrastructures, and career opportunities at home. Otherwise internationalisation can become primarily an export of talent rather than circulation of knowledge. AV ČR therefore performs a double role. It opens Czech research outward while providing institutional environments into which international knowledge, researchers, and collaborations can return. This circulation strengthens innovation because ideas encounter different methods and research cultures. It also strengthens memory because international networks become part of the institutional experience carried across generations. The Academy's future European relevance will depend upon maintaining sufficient domestic strength to remain a meaningful partner rather than merely a beneficiary of projects organised elsewhere. Institutional knowledge and international openness are therefore mutually dependent.

The modernisation of evaluation offers another example of this relationship. Peer review exposes research to criticism beyond local networks, preventing long institutional history from becoming a shield against declining quality. At the same time, responsible evaluation increasingly recognises that scientific contribution takes diverse forms and that quantitative indicators alone cannot capture the value of collections, datasets, software, infrastructure, books, public expertise, or long-term interdisciplinary work. The Academy's participation in

European reform of research assessment therefore continues a process that began with post-socialist reconstruction but has now acquired a broader epistemic purpose. Evaluation should identify whether institutions are creating conditions for significant future knowledge, not merely count what they produced recently. This makes assessment inherently historical and strategic. Past results matter because they provide evidence of capability, but future plans matter because public research exists to generate knowledge that does not yet exist. Institutional memory can help evaluators understand why some activities require long time horizons, while international comparison prevents historical arguments from becoming excuses for underperformance. The strongest evaluation system therefore becomes another mechanism through which knowledge, memory, and innovation are connected rather than separated (*Czech Academy of Sciences, 2024*).

The Academy's relationship with younger generations brings the same synthesis to the level of scientific careers. Students and early-career researchers enter institutes containing accumulated expertise, established reputations, infrastructures, and disciplinary cultures. They receive this inheritance, but their task is not simply to reproduce it. Scientific development depends upon their willingness to question older methods, adopt new technologies, create different collaborations, and sometimes abandon assumptions central to previous generations. Institutions must therefore transmit memory without demanding conformity. Mentoring should give younger researchers access to accumulated knowledge while protecting their independence sufficiently for genuine innovation. International mobility can accelerate this process by exposing researchers to alternative professional cultures and methods. Return mobility and international recruitment can then introduce these differences back into Czech institutions. Career policy consequently becomes a mechanism through which the Academy renews itself intellectually. If succession produces only replicas of existing leaders, institutional memory becomes conservative; if each generation ignores its predecessors entirely, scientific capital is wasted. The Academy's challenge is to make inheritance generative rather than restrictive.

By 2025, this challenge increasingly included the institutional cultures surrounding research rather than scientific outputs alone. Gender equality, transparent recruitment, research integrity, work-life balance, career support, international accessibility, open science, and responsible leadership became parts of the discussion about excellence. This expansion reflects a more mature understanding of how knowledge is produced. Scientific quality depends not simply upon selecting individually brilliant researchers but upon environments that allow talent to develop, criticism to circulate, and misconduct to be detected. Institutions that lose skilled researchers because of avoidable structural barriers weaken their own capacity for innovation. Institutions that tolerate opaque leadership undermine trust and memory because records of decision-making become unreliable. Institutions that create excessive short-term insecurity may encourage safe research rather than intellectual risk. Modern Academy policy therefore increasingly treats research culture as part of scientific strategy. This does not mean that every desirable social objective automatically improves research, but it does mean that organisational conditions shape which researchers remain, which questions are pursued, and how knowledge is assessed. Innovation thus begins partly inside institutional culture.

The Academy's future public role will also depend upon whether society recognises memory itself as a form of strategic knowledge. Modern politics often privileges novelty and immediate response, yet many of the most difficult contemporary problems require historical

comparison. Democratic erosion cannot be understood without knowledge of earlier authoritarian transformations. Demographic change requires decades of data. Climate adaptation depends upon historical environmental records. Technological policy benefits from understanding previous episodes of innovation, regulation, and unintended consequences. Cultural conflicts frequently involve competing interpretations of national history and identity. The Academy's historians, sociologists, demographers, environmental scientists, economists, linguists, and other researchers therefore provide society with forms of temporal perspective unavailable to institutions oriented exclusively towards current events. This capacity to connect present decisions with longer trajectories is one of the distinctive public values of a research organisation containing both historical and forward-looking disciplines. Memory becomes strategic when it prevents society from mistaking novelty of appearance for novelty of underlying structure. The Academy can therefore contribute to innovation precisely by showing what earlier innovations, reforms, and crises actually produced.

The same historical perspective guards against technological determinism. Artificial intelligence, biotechnology, quantum technologies, and advanced energy systems may transform societies deeply, but their effects will depend upon institutions, law, political choices, labour structures, cultural expectations, and public trust. Scientific innovation therefore cannot be understood solely as the diffusion of technical capability. Humanities and social sciences are required to interpret how technologies alter human relationships and how societies decide which applications are desirable. The Academy's broad disciplinary structure gives it the possibility of organising such conversations internally rather than leaving technological and social analysis to separate institutional worlds. This is particularly valuable in periods when policy discourse tends to present innovation as an unquestioned imperative. Scientific institutions can distinguish between technological possibility and social desirability without rejecting innovation itself. They can also examine unintended consequences before they become irreversible. In this respect, memory of earlier technological transitions becomes part of innovation governance. The Academy can ask not merely what can be built, but what earlier episodes teach about how technologies interact with institutions and society.

The synthesis of knowledge, memory, and innovation therefore provides a stronger account of academic continuity than institutional longevity alone. An academy may survive legally while ceasing to generate significant knowledge, preserve meaningful evidence, or adapt its intellectual capacities. Such continuity would be largely ceremonial. Conversely, an organisation may change its name, governance, structure, or legal form while continuing to transmit scientific competence and create new research. Czech academic history contains examples of both possibilities. This is why the modern Academy cannot justify itself simply through genealogical claims extending back to 18th-century learned societies. Historical inheritance gains meaning only when it remains productive. AV ČR's strongest argument for continuity is therefore contemporary performance connected with preserved scientific capital. Its institutes continue to conduct internationally assessed research, maintain unique resources, train researchers, support public expertise, and participate in European science. The past becomes legitimate institutional inheritance because it expands what the present institution can do.

At the same time, innovation gives historical continuity a future orientation. An institution concerned only with preserving memory would become a museum of science rather than a research organisation. The Academy's archives and libraries matter because scientists use inherited evidence to formulate new questions. Research schools matter because younger

scientists transform their methods. Long-term infrastructure matters because it enables experiments that earlier generations could not perform. Historical knowledge matters because it informs new interpretations and policy choices. The purpose of memory is therefore not to prevent change but to give change intellectual depth. This conception aligns closely with the broader interpretation of continuity developed throughout the later chapters of this book: continuity is not identity, and preservation is not repetition. The Academy remains continuous precisely when it can transmit capacities through transformation. Its institutional resilience therefore depends upon remembering enough to change intelligently.

This dynamic continuity also explains why the relationship between the Academy and the state must remain carefully balanced. Public financing provides the stability required for long-term research, collections, infrastructures, and scientific careers. Democratic government also has legitimate interests in national priorities such as health, energy security, climate adaptation, technological competitiveness, and cultural heritage. Yet the state cannot know in advance which areas of fundamental research will generate the most important future knowledge. Excessive political direction therefore risks reducing the diversity from which innovation emerges. The historical experience of ČSAV demonstrates the dangers of making political authority an arbiter of intellectual legitimacy, while contemporary research policy demonstrates the opposite danger of treating publicly supported science as though it should have no responsibility towards society. The Academy's institutional model attempts to mediate this tension through self-government, evaluation, strategic programmes, and public accountability. Its future legitimacy will depend upon maintaining that mediation rather than moving towards either extreme. The state supports conditions for knowledge; scientific communities determine research through professional procedures; and society evaluates whether the overall system continues to serve public purposes.

In this framework, the Academy's social contract becomes clearer. Czech society provides resources, legal stability, infrastructures, and a degree of institutional autonomy. The Academy returns internationally credible knowledge, preservation of scientific and cultural memory, educational and expert capacity, innovation, public communication, and preparedness for problems that cannot yet be predicted. None of these returns can be measured perfectly in annual indicators. Some appear through publications and grants, others through technologies, policy advice, cultural preservation, or the continued existence of expertise during crisis. The inability to quantify every benefit does not eliminate the need for evaluation, but it requires evaluation sufficiently sophisticated to recognise different forms of value. The same principle applies to memory: not every archive or dataset will become equally important, yet destroying them indiscriminately because their future value is uncertain would undermine the cumulative nature of research. Public investment in an academy therefore rests partly upon a willingness to support intellectual possibilities rather than only verified short-term outcomes. This is the political meaning of long-term scientific institutions in democratic societies.

The period from 1993 to 2025 gave this social contract its modern Czech form. The new Academy began in conditions of financial contraction, institutional uncertainty, political debate over the future of non-university research, and the need to separate scientific capacity from authoritarian governance. Over three decades it established regular evaluation, strengthened self-government, modernised legal status, expanded European participation, developed major infrastructures, professionalised research administration, increased public communication, created interdisciplinary programmes, supported open science, and broadened international recruitment. These changes transformed what knowledge, memory,

and innovation meant institutionally. Knowledge became more explicitly international and externally evaluated. Memory became increasingly digital and connected with open infrastructures. Innovation became more interdisciplinary and involved wider relations with society, industry, and policy. Yet the three functions remained recognisably connected with older academic traditions. The modern Academy did not abandon the historical idea of a public institution devoted to durable knowledge; it translated that idea into the conditions of contemporary European science.

The coming decades will test whether this translation remains successful. Artificial intelligence may alter research methods faster than institutional rules can adapt. Geopolitical tensions may challenge assumptions about unrestricted international cooperation. Climate and biodiversity crises will increase demand for long-term environmental knowledge. Demographic change will reshape scientific careers and national labour markets. Public distrust and information manipulation may make scientific authority more politically contested. European research policy may increasingly prioritise strategic technologies, security, and economic competitiveness. Under these pressures, the temptation will often be to concentrate resources narrowly upon currently visible priorities. The Academy's historical experience suggests that such concentration should be approached cautiously. Future resilience depends upon maintaining knowledge whose importance is not yet obvious. Memory preserves evidence of how previous periods misjudged future needs. Innovation provides mechanisms through which unexpected combinations of existing knowledge can address new problems. The institution's strength therefore lies partly in resisting the illusion that the future can be planned with sufficient precision to make intellectual diversity unnecessary.

The Academy should consequently be understood less as a collection of institutes than as an institutional mechanism for managing relationships between different times. It receives scientific capital from the past, evaluates and reorganises that capital in the present, and invests in research whose ultimate value may belong to the future. Its archives and collections extend backward, while fundamental research extends forward into uncertainty. Its evaluation systems operate in the present but judge both accumulated achievement and future potential. Its career structures connect generations, and its international networks connect national scientific memory with changing global knowledge. Innovation occurs when these temporal relationships become productive rather than when the present simply rejects the past. This is why historical continuity remains central even in highly dynamic fields. The most innovative research institutions are rarely those without history; they are those capable of using history without becoming imprisoned by it.

The Czech experience gives this principle unusual empirical depth because scientific institutions in the Czech lands have repeatedly survived political orders that once appeared permanent. The monarchy disappeared, the First Republic was destroyed, occupation ended, state socialism collapsed, Czechoslovakia dissolved, and the independent Czech Republic entered an increasingly integrated European research environment. Each transition altered the institutions supporting science, yet knowledge accumulated across these boundaries in forms that no single regime controlled completely. The modern Academy embodies this historical fact. Its laboratories may descend organisationally from ČSAV, its archival memory reaches into 19th- and 18th-century scholarly institutions, its governance emerged from the Velvet Revolution, and its contemporary research operates within the European Research Area. These historical layers do not fit into a simple linear progression from backwardness towards modernity. They constitute a complex inheritance containing achievement, damage,

adaptation, and renewal. The Academy's legitimacy in 2025 therefore rests partly upon its capacity to interpret this inheritance critically.

This critical interpretation matters because institutional memory can easily become mythology. Anniversary narratives naturally privilege successful discoveries, eminent scientists, and moments of national pride. Such commemorations have a legitimate cultural function, but they become intellectually dangerous when they suppress political compromise, institutional exclusion, scientific failure, or contested reform. The Academy strengthens itself when its own historical research remains capable of revising flattering narratives. Memory should provide continuity without demanding reverence. Innovation similarly requires permission to criticise established research schools and leadership traditions. Knowledge advances because evidence can overturn authority, including institutional authority. The scientific values the Academy seeks to embody therefore require a historical culture compatible with criticism. An institution of knowledge must be willing to know itself.

Thus, the Czech Academy of Sciences can be understood most fully as an institution in which knowledge, memory, and innovation form a single historical continuum. Knowledge gives the Academy its primary scientific purpose, but knowledge becomes durable only because institutions preserve evidence, methods, infrastructures, research communities, and traditions of professional judgement. Memory gives Czech science temporal depth, but memory remains valuable only when it can be questioned, reinterpreted, digitised, recombined, and placed in dialogue with new methods and new generations. Innovation gives the institution a future orientation, but innovation is most productive when it emerges from accumulated competence rather than from repeated destruction of inherited scientific capital. The history from learned societies through the Czech Academy of Sciences and Arts, ČSAV, and AV ČR demonstrates that these functions survived not through organisational immobility but through continual translation into new political and scientific environments. The socialist Academy expanded institute-based research while compromising scientific autonomy; the democratic transformation after 1989 preserved viable scientific capacity while reconstructing governance, evaluation, and international openness. The period from 1993 to 2025 then converted that inheritance into a European public research system increasingly shaped by international assessment, digital infrastructure, open science, interdisciplinary programmes, mobility, public communication, and societal responsibility. The Academy's archives, libraries, collections, research schools, datasets, and long-term infrastructures preserve resources whose future scientific value cannot always be predicted, while its laboratories and research teams continuously transform those resources into new knowledge. Its public mission connects fundamental research with expert advice, education, resilience, cultural memory, and innovation without reducing science to immediate political or commercial utility. Its internationalisation strengthens national scientific capacity by embedding Czech researchers within European and global networks while maintaining domestic institutions capable of absorbing and producing knowledge. Its future challenges—artificial intelligence, research security, climate transformation, changing careers, geopolitical fragmentation, and the governance of open knowledge—will require further organisational innovation without sacrificing the long temporal horizons upon which fundamental research depends. The strongest lesson of Czech academic history is consequently that continuity and innovation are not opposites. Scientific memory provides the material from which innovation becomes possible, while innovation keeps memory from becoming static inheritance. AV ČR therefore stands at the end of this historical narrative not as the final organisational form of Czech

science, but as its current institutional synthesis: a public institution capable of carrying knowledge from the past, testing it in the present, and transforming it into intellectual possibilities for futures that cannot yet be known.

2. The Czech Scientific Path from Historical Inheritance to Strategic Future

The Czech scientific path cannot be reduced to a succession of institutional foundations, political regimes, or celebrated discoveries. Across the historical development reconstructed in this book, Czech science repeatedly emerged from the interaction between inherited intellectual resources and changing demands imposed by the state, society, international scientific communities, and technological development. Learned societies created durable forms of scholarly communication before a modern Czech nation-state existed. 19th-century academies connected scientific authority with cultural emancipation, language, and the construction of a national intellectual community. The First Czechoslovak Republic inherited these institutions while giving them a new relationship with democratic statehood. Socialist Czechoslovakia then expanded non-university research on a scale that previous academic organisations had never possessed, but placed that capacity within a political structure that limited scientific autonomy and repeatedly intervened in careers and disciplinary development. The Velvet Revolution did not erase this institutional landscape; it forced Czech science to distinguish scientific capital from political dependency. The creation of the Czech Academy of Sciences in 1992–1993 transformed that distinction into a durable institutional settlement. European integration subsequently changed the reference environment once again, making international peer judgement, mobility, shared infrastructure, and competitive research programmes increasingly normal conditions of scientific life. The Czech scientific path is therefore neither a linear advance from provincial scholarship towards modern European science nor a series of complete ruptures produced by political change. Its most characteristic feature is the capacity to transform inherited scientific resources without assuming that inheritance itself guarantees future value. In this sense, Czech scientific development is best understood as a process of selective continuity, institutional learning, and strategic reinterpretation (*Franc et al., 2010*; *Mádlová, 2024*).

Historical inheritance entered Czech science in several different forms, and their coexistence shaped the possibilities available to later institutions. There was first an intellectual inheritance consisting of methods, disciplinary traditions, published scholarship, terminology, and concepts accumulated through learned communities. There was also a material inheritance of libraries, collections, laboratories, observatories, archives, buildings, instruments, and eventually complex research infrastructures. A third inheritance was organisational: societies, academies, universities, institutes, research groups, editorial programmes, and administrative routines created frameworks within which knowledge could outlive individual researchers. A fourth was social, embodied in networks of mentorship, professional reputation, international correspondence, and tacit knowledge transmitted between generations. Political regimes could alter each of these layers but rarely with equal speed or completeness. A law could abolish an institution immediately while its research community continued elsewhere, just as an institute could retain its name while political purges destroyed much of its intellectual continuity. The history of the Czech Academy and its predecessors therefore demonstrates why institutional genealogy must remain analytically more complex than legal succession. Scientific inheritance survives through people and

practices as well as statutes. It can also carry problematic assumptions, hierarchical cultures, ideological distortions, and organisational routines that later generations need to reject rather than preserve. The strategic use of inheritance therefore begins with discrimination: societies must identify which elements of the past provide future capability and which perpetuate obsolete or damaging arrangements. This distinction became especially important after 1989, but it is visible throughout the longer history of Czech science (*Franc et al., 2010*; *Franc & Dvořáčková, 2020*).

The 19th-century connection between science and Czech cultural development remains one of the deepest layers within this inheritance. The expansion of scholarship in Czech, the development of specialised terminology, the systematic study of language, history, natural conditions, and cultural heritage, and the creation of nationally representative scientific institutions all contributed to a broader process through which Czech society established itself as an intellectual community. Science did not simply accompany the National Revival from outside; it helped provide the documentary, linguistic, historical, and natural-scientific evidence through which cultural self-understanding acquired scholarly form. Yet the strongest Czech scholarly traditions never depended solely upon national usefulness. Their authority increased when research on locally important questions satisfied methodological standards recognised beyond the Czech lands. This dual orientation became one of the recurring structural characteristics of Czech science. Nationally specific research could be internationally credible, while internationally oriented research could strengthen national cultural and institutional capacity. The modern Academy inherits this relationship in a substantially transformed form. Czech language, archaeology, history, literature, ethnology, and cultural heritage remain areas in which national institutional responsibility is particularly visible, but these disciplines now operate within international scholarly systems and increasingly digital research infrastructures. The old opposition between national and international science has therefore become analytically inadequate. A strategically capable Czech research system requires institutions sufficiently rooted in national needs to preserve distinctive knowledge while sufficiently open to international criticism to prevent national specificity from becoming intellectual isolation. The 19th-century inheritance is consequently not simply a matter of cultural memory; it continues to define how a medium-sized European state can combine universal scientific standards with responsibilities that no external institution can be expected to assume on its behalf (*Mádlová, 2024*; *Franc et al., 2010*).

The First Czechoslovak Republic added another enduring layer by showing that scientific institutions could contribute to state-building without becoming merely administrative instruments of government. Independence in 1918 transformed organisations created under the Habsburg monarchy into components of a sovereign democratic scientific system. Universities expanded their national significance, new research and technical institutions appeared, and scientific expertise became increasingly connected with economic development, public administration, health, cultural policy, and international representation. This period demonstrated that national sovereignty does not diminish the need for international scholarly cooperation; on the contrary, scientific reputation became one of the means through which the new state established itself intellectually abroad. The democratic environment also allowed a relatively plural institutional ecology in which academies, universities, museums, societies, technical organisations, and public research bodies performed overlapping functions. This plurality later became important as a historical contrast to the stronger centralisation created under communist rule. After 1989, Czech science did not

simply restore the institutional arrangements of the First Republic, because the scale, technology, and organisation of research had changed too substantially. Yet the idea that state support and institutional plurality could coexist again acquired normative significance. The post-socialist scientific system therefore drew indirectly upon an earlier Czech experience of combining public responsibility with differentiated forms of scientific organisation. Historical inheritance worked here not through direct restoration but through remembered institutional alternatives. The strategic future of Czech science continues to depend upon such plurality because no single sector—university, academy, company, government laboratory, or private foundation—can fulfil every research function effectively. A resilient system requires complementary institutions whose strengths overlap sufficiently for cooperation but differ enough to prevent the concentration of intellectual authority within one organisational form (*Franc et al., 2010*).

The socialist period added the most controversial but also one of the most materially substantial inheritances. The establishment of ČSAV in 1952 transformed non-university science into a large institute-based system capable of employing researchers permanently, maintaining expensive laboratories, coordinating major programmes, and sustaining long-term humanities projects. The political organisation of that system compromised autonomy because Communist Party structures influenced appointments, priorities, international contacts, and the permissible boundaries of research, particularly in the humanities and social sciences. The purges of the 1950s and the normalisation period after 1968 imposed lasting costs on careers and disciplinary cultures. Yet the same institutional environment supported major research schools and internationally significant achievements, especially where professional communities retained enough methodological autonomy to maintain international standards. This contradiction cannot be resolved by treating ČSAV either as a successful scientific institution unfairly damaged by retrospective political judgement or as an entirely illegitimate organisation whose scientific outputs are irrelevant because they were produced under dictatorship. Both interpretations confuse the political character of an institution with the heterogeneous work conducted within it. ČSAV created scientific capabilities that democratic Czechia later judged worth preserving, while its governance also provided negative lessons about the dangers of subordinating research to political authority. The modern Czech Academy is strategically stronger because it inherited both kinds of knowledge: practical capacity concerning how to sustain institute-based research and historical knowledge concerning how such capacity can be politically distorted. The socialist inheritance therefore became productive only after being subjected to constitutional, personnel, evaluative, and intellectual transformation (*Franc & Dvořáčková, 2020*; *Franc & Dvořáčková, 2024*).

The Velvet Revolution represented the moment when historical inheritance became an explicit strategic problem. Political freedom created an opportunity to rebuild Czech science, but freedom alone did not answer what should happen to existing institutes, laboratories, staff, buildings, collections, or research programmes. An entirely new research system could not realistically be constructed without sacrificing decades of accumulated expertise, while unconditional continuity would have preserved structures whose legitimacy and performance were deeply contested. The solution that emerged was therefore selective transformation. Politically compromised systems of authority were dismantled, scientific councils and elected bodies gained greater importance, previously restricted international connections reopened, and research activities were subjected increasingly to professional evaluation. Some institutes

disappeared or merged, personnel numbers fell sharply, and funding conditions became extremely difficult. Other workplaces demonstrated sufficient scientific strength to survive and later thrive in the more open environment. This painful process is central to the Czech scientific path because it established a principle that remained important thereafter: institutional continuity must be justified by future scientific value rather than historical entitlement. The new Academy did not simply inherit ČSAV; it filtered its inheritance through democratic legitimacy, peer judgement, and international comparison. This principle later became increasingly routinised, but its origins lay in a period when the survival of the institute-based model itself was uncertain. The transformation therefore gave Czech science something more important than organisational stability: it created a framework within which continuity and reform could cease to be treated as mutually exclusive (*Czech National Council, 1992*; *Czech Academy of Sciences, 1993*).

The legal establishment of AV ČR gave this framework constitutional form. Act No. 283/1992 preserved the Academy as a publicly supported organisation conducting research through its own workplaces while introducing a governance model built around the Academic Assembly, Academy Council, president, and Scientific Council (*Czech National Council, 1992*). The importance of this settlement lies less in the vocabulary of individual bodies than in the redistribution of authority it represented. The state continued to provide legal and financial foundations, because fundamental research on a national scale cannot be sustained without substantial public resources. Yet scientific communities themselves acquired responsibility for many decisions concerning institutional leadership, research development, and professional judgement. Political authority no longer possessed legitimate competence to determine scientific truth or evaluate researchers according to ideological conformity. At the same time, self-government did not imply exemption from accountability because evaluation became central to the Academy's post-socialist legitimacy. The Czech model consequently rejected two extremes: bureaucratic control of scientific content and a corporative system in which institutes could protect themselves indefinitely from external scrutiny. This balance remains strategically relevant because public research in democratic societies always operates between autonomy and responsibility. Excessive political direction can narrow intellectual diversity, while insufficient accountability can weaken public legitimacy and institutional dynamism. AV ČR's future depends upon preserving the constitutional distinction between support for science and control of science while continually improving mechanisms through which scientific quality and public responsibility are assessed.

The Czech scientific path after 1993 was also shaped by a fundamental change in its external reference point. During the early transformation, Czech researchers often compared domestic conditions with Western European and North American institutions in order to identify the consequences of decades of restricted mobility, technological lag, or methodological isolation. Internationalisation initially therefore carried a strong element of recovery. Scientists restored contacts, entered foreign laboratories, attended previously inaccessible conferences, and gained regular access to international publications and funding environments. Over time, however, the relationship changed. Foreign science ceased to function primarily as an external benchmark and increasingly became the environment in which Czech researchers operated normally. European Union accession in 2004 accelerated this process by embedding Czech research institutions within the European Research Area and successive Framework Programmes. International peer review became part of institutional evaluation, multinational consortia became normal forms of project organisation, and mobility

transformed scientific careers. By the 2020s, the strategic question was no longer whether Czech science should reconnect with Europe but how effectively Czech institutions could shape European research rather than simply participate in it. This shift from integration to agency is one of the most important indicators of scientific maturation. A strategically confident research system does not merely import standards from elsewhere; it contributes to debates over how standards themselves should evolve. AV ČR's participation in European discussions on responsible evaluation, open science, research security, and scientific advice therefore marks a new historical phase in which Czech science increasingly acts within Europe rather than orienting itself towards Europe from outside (*European Commission, 2024*; *Czech Academy of Sciences, 2024*).

Europeanisation, however, should not be confused with the dissolution of national scientific responsibility. A medium-sized state benefits from international interdependence only when it retains sufficient domestic competence to use, interpret, and contribute to knowledge produced elsewhere. Dependence on foreign technology or research is strategically different from participation in international science supported by strong national institutions. The first reduces agency, while the second expands it. Czechia cannot rationally construct every advanced facility or maintain world-leading depth in every discipline. It can, however, preserve selected areas of critical mass, ensure broad scientific literacy within the research system, participate in European infrastructures, and maintain institutional capacity to absorb new methods and technologies. AV ČR is one of the principal organisations through which such capacity is sustained. Its institutes give researchers long-term institutional homes, allow specialised infrastructures to be maintained, and provide disciplinary depth that may be difficult to reproduce through fragmented project structures. European programmes then extend these capacities rather than substitute for them. The strategic future of Czech science therefore depends upon interdependence without intellectual dependency. National institutions must be strong enough that collaboration becomes reciprocal. This principle is especially important in an era of geopolitical uncertainty, when access to technologies, data, and international partnerships may become less predictable than during the optimistic phase of post-Cold War integration (*OECD, 2025*; *European Commission, 2025*).

The evolution of the Academy's relationship with universities is another defining element of the Czech scientific path. Under ČSAV, non-university research occupied an unusually strong institutional position and could appear separated hierarchically from higher education. Democratic transformation and the renewed research capacity of Czech universities made such separation neither intellectually nor politically sustainable. Over the following decades, Academy institutes and universities became increasingly interconnected through doctoral education, teaching, shared laboratories, joint grants, and common research centres. This changed the meaning of the non-university institute model. Its justification no longer rests upon a claim that the Academy is the natural centre of superior scientific authority. Instead, it rests upon complementarity. Universities combine research with undergraduate and graduate education across broad fields, while Academy institutes can concentrate more continuously on selected research programmes, specialised infrastructure, long-term datasets, archives, and technical communities. The national system benefits when researchers move between these environments and when institutional borders do not become barriers to scientific cooperation. For Czechia's strategic future, this relationship is essential because a medium-sized state cannot afford unnecessary duplication or rivalry that weakens both sectors. The Academy's long-term strength will therefore depend partly upon whether universities continue

to view its institutes as indispensable research partners rather than privileged competitors. Complementarity, rather than hierarchy, has become one of the clearest markers distinguishing the modern Czech research system from the organisational logic inherited from state socialism (*Czech Academy of Sciences, 2006*; *Czech Academy of Sciences, 2025*).

The transformation of research evaluation similarly illustrates how historical inheritance was converted into strategic capacity. In the early 1990s, evaluation helped determine which inherited institutes and teams should survive. Later cycles became more systematic, international, and strategically oriented, allowing the Academy to compare research teams with disciplinary standards extending far beyond Czechia. This shift had several long-term consequences. First, it reduced the ability of institutional history or domestic reputation to function as sufficient justification for continued support. Second, it increased the Academy's exposure to scientific developments elsewhere, encouraging institutes to revise programmes and recruitment practices. Third, it created information that could be used for strategic planning rather than only retrospective judgement. Fourth, it forced the organisation to confront the difficulty of evaluating highly different research cultures within one institutional system. Humanities and social-science outputs could not be reduced responsibly to the same indicators as experimental natural sciences, while infrastructures and long-term datasets required assessment that exceeded publication counting. The move towards responsible research assessment in the 2020s therefore extends an older Czech institutional problem rather than introducing an entirely new one. The strategic future depends upon developing evaluation capable of identifying quality without narrowing the definition of scientific contribution. If evaluation rewards only what is easily counted, institutions will adapt strategically towards indicators rather than knowledge. If it becomes too diffuse, accountability weakens. The Czech scientific path has consequently made evaluation not merely a management technique but part of the institutional philosophy through which continuity becomes conditional upon excellence (*Czech Academy of Sciences, 2016*; *Czech Academy of Sciences, 2024*).

This same philosophy will need to govern future choices concerning scientific specialisation. No medium-sized research system can invest equally in every frontier field, but excessive concentration carries its own dangers. Strategic technologies attract political attention because their economic or security implications appear visible: artificial intelligence, quantum science, biotechnology, semiconductors, advanced materials, energy technologies, and space research are obvious contemporary examples. Yet the history of science demonstrates that future strategic significance cannot be predicted perfectly from current priorities. Mathematics, theoretical physics, basic chemistry, evolutionary biology, historical datasets, or linguistic research may acquire applications that no policy document anticipated when the underlying knowledge was created. Czech scientific strategy must therefore distinguish selective strengthening from intellectual monoculture. Historical research strengths provide one source of guidance because existing institutes, infrastructures, research schools, and international reputations can lower the cost of achieving excellence in particular fields. Yet inherited strength must remain open to reevaluation because scientific frontiers move and some traditions can become institutionally self-protective. The best strategic use of historical inheritance is therefore to treat it as an asset portfolio rather than an untouchable canon. Existing scientific capital should inform decisions but not predetermine them. AV ČR's evaluation culture and interdisciplinary programmes provide mechanisms through which this balance can be pursued. The future Czech research system will be strongest when it can

concentrate enough to achieve critical mass while preserving sufficient diversity to respond to developments that present strategy cannot foresee.

Strategy AV21 offers one institutional experiment in achieving this balance. By organising broad research programmes around societal challenges without dismantling institute-based disciplinary structures, it created an intermediate layer between curiosity-driven research and strategic coordination. This arrangement is significant historically because Czech science had already experienced a much more coercive form of strategic planning under socialism. The post-1989 lesson was that public relevance does not require political command over research content. Strategy AV21 instead relies upon cooperation among scientists and institutes, with external partnerships involving universities, government bodies, companies, and other organisations where appropriate. Its programmes demonstrate that disciplinary depth can be mobilised towards energy, health, climate, food security, social resilience, cultural identity, and technological change without requiring every research group to redefine itself according to one central plan. The strategic future will probably require more such flexible structures because contemporary problems increasingly cross disciplinary boundaries. Yet flexibility must remain anchored in strong disciplinary competence. Interdisciplinarity without methodological depth produces breadth without intellectual reliability, while strong disciplines without mechanisms for connection may fail to address problems that exceed inherited boundaries. The Czech Academy's broad composition gives it an opportunity to combine these elements more effectively than highly specialised organisations can. The future value of Strategy AV21 and related programmes will therefore depend upon whether they remain scientifically grounded, adaptable, and capable of introducing new priorities without converting the Academy into a permanently mission-driven bureaucracy (*Czech Academy of Sciences, 2025*).

The Czech scientific path also demonstrates that innovation should be understood as a system rather than an event. Public narratives naturally favour discoveries, patents, inventions, spin-off companies, and technologies whose impact is visible and attributable. Actual innovation often develops through much longer and less linear pathways. Fundamental research produces concepts and methods, infrastructures provide technical capability, universities train researchers, companies identify practical needs, public institutions regulate applications, and international networks circulate knowledge. The Academy participates in several parts of this chain but does not control the whole of it. Its strategic value lies especially in maintaining pre-commercial knowledge and specialised expertise that other actors can access when applications become plausible. Technology transfer and collaboration with companies therefore matter, but they should not be treated as the universal measure of Academy performance. Some of its most important contributions concern knowledge that influences public policy, education, language technologies, cultural institutions, environmental management, or legal interpretation rather than private markets. A strong innovation system recognises multiple pathways through which research creates value. This broader understanding is especially important for AV ČR because its disciplinary range extends from theoretical physics and molecular biology to history, philosophy, linguistics, and sociology. Strategic policy that recognises only commercial outputs would misrepresent a substantial part of Czech scientific capacity. Innovation policy should therefore connect research with external users without forcing every field to adopt the same application model.

The transformation of scientific infrastructure provides another example of how inheritance becomes strategic future. Many Academy institutes entered the 1990s with buildings,

instruments, and technical systems created under state socialism. Some were scientifically valuable; others were technologically obsolete or financially difficult to maintain. Over the following decades, national and European investment modernised laboratories and enabled Czech participation in increasingly large and distributed research infrastructures. The strategic significance of this development goes beyond equipment renewal. Modern infrastructures attract international researchers, support doctoral training, create technical professions, and place Czech institutions inside European networks whose scientific capabilities exceed what any one country could support. At the same time, infrastructure creates long-term obligations because facilities require maintenance, skilled personnel, data systems, and sustainable financing after construction projects end. Future investment therefore needs to assess not only whether an infrastructure can be built but whether the surrounding scientific community can use and sustain it productively. Historical continuity becomes relevant because existing research schools and technical expertise often determine whether a new facility will become a genuine scientific centre or an expensive underused asset. Czechia's strategic future should therefore avoid infrastructure policy driven primarily by symbolic scale. Investment is most effective where it amplifies existing competence, attracts new expertise, and creates access for wider national and international research communities. The Academy's permanent institutes can provide exactly the long organisational horizons required for such infrastructures, provided that strategic choices remain subject to rigorous external assessment.

Human capital will be even more decisive because research infrastructures can be purchased more quickly than scientific communities can be built. Czech science faces the structural problem common to medium-sized European states: researchers can move easily into larger or wealthier systems offering higher salaries, more infrastructure, and denser professional opportunities. International mobility should not be treated as a loss in itself because foreign experience is one of the most powerful mechanisms through which scientific methods and networks circulate. The strategic objective should instead be to make Czech institutions sufficiently attractive that mobility becomes multidirectional. Researchers trained in Czechia should be able to leave and later return, while foreign scientists should regard Czech institutes as credible places in which to establish research careers. This requires more than competitive salaries. Recruitment procedures, English-language administration, career transparency, laboratory quality, family support, grant assistance, and the intellectual reputation of host teams all shape decisions. Early-career researchers also need credible pathways towards independence rather than indefinite movement between temporary contracts. AV ČR's future competitiveness will therefore depend increasingly upon the quality of its research environment rather than only upon the historical strength of individual institutes. Scientific inheritance survives only when new generations choose to inhabit and transform it. Human-resource policy is consequently one of the principal mechanisms through which the Czech scientific past is converted into future capability (*Czech Academy of Sciences, 2025*).

Generational transition will also alter the political memory underpinning Academy autonomy. Researchers who experienced state socialism directly played an important role in the institutional culture created after 1989 because they knew personally how political intervention could shape appointments, mobility, research topics, and professional careers. By the middle of the 21st century, that experience will survive only as institutional and historical memory. Younger scientists will have been educated entirely within democratic Czechia and the European Research Area. This is a sign of political success, but it creates a new

responsibility. Principles such as academic freedom, self-government, research integrity, and protection from ideological interference cannot depend indefinitely upon personal memory of their violation. They must be embedded in governance procedures, historical education, archives, professional ethics, and institutional culture. The Academy's own historiography therefore acquires strategic importance. Research on ČSAV, normalisation, exile, rehabilitation, and post-1989 transformation is not simply retrospective scholarship; it helps explain why contemporary institutional safeguards exist. Historical inheritance becomes valuable when it preserves the reasoning behind democratic rules rather than merely their formal existence. An institution that forgets why autonomy was established may eventually treat autonomy as an inconvenient administrative tradition rather than a functional condition of reliable science. The Czech scientific path therefore needs a deliberate culture of institutional memory capable of surviving generational change (*Franc & Dvořáčková, 2020*; *Franc & Dvořáčková, 2024*).

The same problem applies to research integrity. Contemporary science operates under pressures very different from those of the socialist period, but pressures capable of distorting knowledge remain substantial. Publication incentives, grant competition, rankings, media visibility, commercial interests, and rapid digital dissemination can all encourage behaviour inconsistent with careful scientific practice. Artificial intelligence adds further complexity by making it easier to generate text, code, images, synthetic datasets, and apparently plausible interpretations at enormous speed. The strategic future therefore requires institutions whose cultures reward reliability rather than volume alone. The revised *European Code of Conduct for Research Integrity* emphasises reliability, honesty, respect, and accountability as fundamental principles for contemporary research (*ALLEA, 2023*). These principles connect directly with the historical experience of the Czech Academy because political systems are not the only forces capable of distorting scientific judgement. Institutional incentives created within science itself can also weaken epistemic standards. The Academy's responsibility is therefore double: protect researchers from inappropriate external interference while designing internal systems that do not encourage irresponsible behaviour. Evaluation reform, open science, transparent authorship, data management, ethics, and reproducibility all belong to this broader problem. Scientific autonomy without integrity would provide institutional independence without trustworthy knowledge.

Artificial intelligence will probably become one of the most consequential tests of the Czech scientific path because it affects both the content and organisation of research. Czechia cannot expect to compete with the largest global actors through sheer scale of AI infrastructure or commercial investment. Its strategic advantage will instead depend upon specialised expertise, strong mathematical and computational research, access to European computing resources, high-quality data, and the intelligent application of AI across disciplines. Academy institutes can contribute not only through computer science but also through linguistics, mathematics, biology, chemistry, physics, philosophy, sociology, and other fields in which AI changes methods and raises new conceptual questions. Czech-language resources will be particularly important because smaller languages risk becoming technologically dependent if adequate corpora, linguistic expertise, and language models are not developed or accessible. Humanities institutes therefore become part of technological strategy rather than peripheral cultural organisations. At the same time, AI requires critical governance because automated systems can reproduce bias, generate convincing error, and obscure the provenance of scientific claims. Czech science will need researchers capable of using AI creatively without

confusing computational productivity with epistemic reliability. The Academy's interdisciplinary composition can become a major advantage if technical, linguistic, ethical, and social perspectives are connected effectively. The strategic future will depend not on whether Czech science adopts AI—the adoption is inevitable—but on whether it develops enough independent expertise to use, evaluate, and influence these systems rather than merely consume them (*OECD, 2025*).

Open science similarly represents both strategic opportunity and institutional challenge. Czech research benefits when publications, datasets, software, and infrastructures become more accessible because international openness reduces barriers faced by researchers from smaller systems. Reusable data can increase the return on public investment, while transparent methods strengthen reproducibility and collaboration. Yet openness requires resources. Repositories must be maintained, metadata created, data documented, sensitive information protected, and publication models financed sustainably. The shift towards open access can also create new inequalities if high publishing charges become the price of visibility. Smaller language communities face an additional challenge because international openness can reinforce English-language dominance while reducing incentives for high-quality Czech scientific communication. The Academy therefore has a strategic role in shaping open science rather than treating it as an externally imposed compliance requirement. Its library and repository infrastructures provide one basis for this function, while its 2024 Open Science Principles formally connected openness with responsible limitations involving privacy, security, and intellectual property (*Czech Academy of Sciences, 2024*). The Czech scientific path from historical libraries to digital repositories demonstrates continuity at the level of function: institutions preserve and circulate knowledge even as the technical means change. Future strategy should ensure that openness strengthens both international participation and national intellectual capacity rather than forcing a choice between them.

Research security creates almost the inverse challenge. The post-1989 period was defined initially by dismantling restrictions on international cooperation, making openness one of the central symbols of scientific freedom. By the 2020s, geopolitical tension, foreign interference, cyber threats, dual-use technologies, and strategic competition required institutions to recognise that not every research relationship is risk-free. The danger is that legitimate concerns about security could revive broad political suspicion or produce restrictions damaging precisely the international cooperation upon which Czech scientific quality depends. A medium-sized state is especially vulnerable to this trade-off because it cannot compensate for excessive isolation through vast domestic capacity. Czech research security must therefore be selective, evidence-based, and proportional. Sensitive technologies, data, infrastructure, or partnerships may require safeguards, but nationality or geopolitical origin alone should not substitute for professional risk assessment. The Academy's historical experience gives this issue particular weight. Czech science knows the costs of politically determined restrictions on mobility and intellectual contact, yet contemporary institutions also operate in a world where technology transfer can possess genuine strategic consequences. The future Academy will need governance capable of defending both scientific openness and national responsibility. This is one of the clearest areas where the strategic future cannot be constructed through simple repetition of post-1989 principles; openness must now be preserved through more sophisticated management rather than assumed automatically (*OECD, 2025*; *European Commission, 2025*).

Climate change will impose a different kind of long-term strategic pressure. The Czech Republic already faces changing precipitation patterns, drought risk, forest stress, heat, biodiversity loss, agricultural challenges, and the need for energy transformation. These are not discrete emergencies but cumulative processes whose scientific understanding depends upon long-term observation. Academy institutes concerned with atmospheric science, ecology, hydrology, biology, geology, economics, sociology, and related areas therefore contribute to national capacity in ways that cannot be replaced through short-term consultancy alone. Historical datasets and monitoring systems become increasingly valuable as time series lengthen, turning institutional memory directly into strategic evidence. Climate adaptation also requires cooperation across natural and social sciences because technical options must operate within legal, economic, behavioural, and political contexts. The Academy's broad disciplinary structure therefore matches the complexity of the problem unusually well. Yet the institution must also address the environmental consequences of its own research infrastructure, travel, energy use, and computing. Scientific credibility will increasingly require not simply advising society about sustainability but demonstrating that research organisations can examine their own operational footprint rationally. The strategic future therefore combines knowledge production with institutional experimentation. Czech science must both understand climate transformation and adapt the organisational conditions under which that understanding is produced.

Energy strategy illustrates how long-term fundamental research connects directly with national sovereignty under conditions of interdependence. The crisis following Russia's invasion of Ukraine exposed how technological and geopolitical dependencies can acquire immediate economic and political consequences. Czechia cannot become fully energy-independent through national research alone, but it can preserve expertise necessary to evaluate nuclear technologies, grid systems, renewable energy, storage, hydrogen, materials, efficiency, and emerging approaches such as fusion. The Academy's research programmes already contribute across several of these domains. Their strategic value lies not only in producing domestic technologies but in ensuring that Czech policymakers and industries possess access to independent expertise when choosing among technologies developed internationally. A state that lacks scientific understanding of the systems on which it depends has less freedom of choice even when it can purchase those systems abroad. Fundamental research therefore contributes to technological sovereignty by strengthening evaluation and adaptation capacity. This is the same logic visible across other strategic fields: complete national self-sufficiency is unrealistic, but complete intellectual dependency is dangerous. The Czech scientific path towards the future should therefore aim for informed interdependence, in which national institutions possess enough depth to negotiate participation in European and global technological systems from a position of competence.

The humanities and social sciences will be equally important to this strategic future because resilience is not primarily a technical property of infrastructure. Democratic states can possess advanced technology and still respond poorly to crises if institutions lack public trust, social inequalities intensify conflict, or misinformation prevents coordinated action. Czech history itself demonstrates the importance of political culture, institutional legitimacy, historical memory, and language in periods of transformation. Research on contemporary history, sociology, economics, law, psychology, demography, philosophy, and communication therefore contributes directly to a society's capacity to interpret change. The strategic value of such fields is sometimes less visible because their outputs do not take the form of machines

or patents. Yet economic reform after 1989, European integration, demographic ageing, migration, political polarisation, and digital communication all require forms of expertise produced within these disciplines. The Academy also preserves national cultural competencies that cannot simply be imported from larger scientific systems. Czech-language research remains essential to language technologies, education, public administration, and cultural continuity. Historical scholarship remains necessary if national memory is not to be monopolised by political narratives unsupported by evidence. Legal and philosophical research become increasingly important as AI, biotechnology, surveillance, and security policies create new conflicts over rights and responsibility. A strategic future that marginalises humanities and social sciences would therefore reduce the Czech Republic's ability to understand the social consequences of the technological changes it seeks to accelerate.

The public mission of science will likewise become more strategic as information environments become more fragmented. The authority of scientific institutions can no longer depend upon formal prestige or the assumption that citizens will distinguish automatically between professional expertise and persuasive misinformation. The Academy's public communication therefore needs to develop beyond popularisation into a broader culture of scientific explanation. Citizens should be able to understand how evidence is produced, why uncertainty exists, how scientific disagreement differs from ideological conflict, and why conclusions may change when new data appear. Such communication is particularly important during crises, when political decisions may depend upon incomplete evidence and public frustration with uncertainty can become intense. Yet communication should not transform researchers into permanent media performers or encourage the exaggeration of results for visibility. Institutional systems need professional communicators capable of translating scientific processes accurately while protecting researchers from incentives to oversimplify. Public trust will increasingly depend upon demonstrated integrity, correction of errors, transparency concerning methods, and willingness to distinguish expertise from political preference. The Academy's historical experience gives it a strong basis for this role because it represents both a major research organisation and a carrier of Czech scientific memory. Its future authority will be strongest when public communication shows that scientific knowledge is reliable not because institutions are infallible but because they possess procedures for criticism and correction (*OECD, 2025*).

The strategic future also requires a more sophisticated relationship between national research policy and uncertainty. Governments understandably seek priorities because public resources are finite, and science policy cannot avoid choices. Yet strategic planning becomes dangerous when it assumes that future scientific importance can be forecast with precision. The Czech Republic must certainly invest in areas such as AI, energy, biotechnology, climate adaptation, cybersecurity, and advanced materials, but it must also preserve research whose applications remain unknown. This is not inconsistency; it is portfolio strategy under uncertainty. Some resources should support clearly identified national and European priorities, while others should preserve curiosity-driven research capable of producing unexpected knowledge. The Academy is particularly well positioned to maintain this balance because institutional funding can protect long-term work while competitive programmes and Strategy AV21 create channels for targeted priorities. Evaluation then provides a mechanism for ensuring that non-prioritised research remains scientifically strong rather than simply historically protected. Strategic foresight should therefore identify capabilities the country cannot afford to lose rather than attempt to predict every future discovery. The strongest Czech science policy will be one that

distinguishes preparedness from prophecy. It should create conditions enabling researchers to respond to futures policymakers cannot yet describe.

The Academy's relationship with society also requires a clearer understanding of what constitutes public value. Economic competitiveness is one important dimension, but it cannot serve as the sole criterion for a national research institution. Fundamental science contributes to technological options, while humanities scholarship contributes to cultural continuity and democratic self-understanding. Environmental research supports adaptation, social science improves policy diagnosis, archives preserve evidence, and scientific communication strengthens public capacity to assess claims. These benefits operate on different timescales and cannot be aggregated easily into one measure. The strategic future therefore demands a plural but disciplined framework for public value. Research organisations should explain what kinds of contribution they expect to make and accept evaluation appropriate to those contributions. At the same time, policymakers should resist the temptation to compare all disciplines through one output metric. The Academy's breadth can make this pluralism visible because its institutes embody very different forms of knowledge production within one public system. This may be one of its strongest strategic functions: demonstrating institutionally that a modern state requires multiple forms of intelligence rather than a single definition of innovation. Public value is strongest when scientific diversity is connected through shared standards of quality, integrity, and responsibility.

International representation will remain another important part of Czech scientific strategy. Organisations such as ALLEA, EASAC, European research infrastructures, and the European Research Area allow smaller and medium-sized states to exercise influence collectively. Czech researchers contribute expertise to transnational assessments and gain access to scientific debates whose outcomes may shape European regulation, research priorities, and funding. This participation can increase national agency precisely because Czechia does not possess the demographic or financial scale to influence global science through resources alone. Expertise becomes a form of soft power. A country capable of producing credible research and supplying respected scientists to European panels can shape discussions beyond what its population might otherwise suggest. The Academy therefore contributes to Czech international position through knowledge diplomacy as well as research output. Its historical transition from an institution once embedded in a Soviet-dominated scientific bloc to a participant in plural European networks is one of the most striking transformations in the entire Czech scientific path. The future challenge is to move further from participation towards agenda-setting where Czech scientific strengths justify it. This requires concentration in selected areas, strong international communication, and researchers capable of combining disciplinary excellence with institutional leadership.

Scientific diplomacy will also become important in periods when formal political relations deteriorate. Academies can sometimes sustain professional networks across political divisions, but the war in Ukraine demonstrated that international scientific cooperation cannot always remain untouched by geopolitical responsibility. Czechia's historical experience of occupation, exile, and political restriction makes the defence of threatened researchers particularly meaningful. Programmes supporting scholars at risk transform academic solidarity into practical preservation of human capital. They also strengthen Czech science by bringing researchers with different expertise and experiences into domestic institutions. The strategic future should therefore treat support for endangered scientists not simply as humanitarian assistance but as part of a wider European infrastructure protecting knowledge

against political destruction. At the same time, partnerships involving sensitive technologies or authoritarian states may require careful security review. Science diplomacy in the 21st century will therefore be more selective and ethically demanding than the ideal of unrestricted post-Cold War openness suggested. Academies can contribute because their institutional independence allows scientific and ethical considerations to be articulated alongside government security concerns. The Czech Academy's own history provides a particularly strong basis for insisting that researchers should not be identified automatically with the policies of their governments while recognising that institutional relationships can carry political and strategic consequences.

The future Czech scientific path will also depend upon regional and social distribution of scientific capacity. Prague's dominance reflects centuries of institutional concentration, but national resilience benefits when research, education, infrastructure, and innovation are connected with regions beyond the capital. Academy workplaces in Brno, České Budějovice, and other locations already demonstrate the possibilities of distributed scientific development. Regional research can address environmental, historical, industrial, agricultural, and social questions that acquire different forms across the Czech Republic. Cooperation with regional universities, companies, museums, hospitals, and public authorities can also spread the benefits of public science more widely. Digital infrastructure makes geographical distribution easier by enabling remote collaboration and access to datasets or specialised resources, although physical laboratories and face-to-face scientific communities remain important. A strategic national system should therefore avoid both excessive fragmentation and excessive metropolitan concentration. Critical mass is necessary, but critical mass can exist in several centres when investment is connected with genuine research strength. The Academy can contribute by linking regional institutes to a common national and European framework, ensuring that scientific quality does not depend upon physical proximity to central administration in Prague.

The relation between science and Czech economic development will likewise require greater emphasis on absorptive capacity. Increasing research spending or producing excellent publications does not automatically generate economic transformation. Firms need skilled employees, management capable of understanding new technologies, access to finance, appropriate regulation, and incentives to collaborate with research institutions. The Academy cannot solve these broader innovation-system problems alone, but it can strengthen the supply of advanced knowledge and specialised expertise available to companies. Technology transfer should therefore focus not only on patents but on long-term relationships, shared laboratories, researcher mobility, consultancy, contract research, and collaborative problem-solving. Smaller firms may require different forms of support from large multinational companies, while some sectors may benefit more from workforce development than from formal licensing. The strategic future should therefore treat knowledge transfer as an interface rather than a pipeline. Scientific institutions generate options, while economic actors transform some of those options into products and services under market conditions. AV ČR's role is strongest when it preserves research independence while lowering unnecessary barriers to collaboration. Such an approach allows fundamental science to contribute to national competitiveness without redefining scientific value exclusively through market outcomes.

By the 2020s, the Czech scientific system had therefore moved far beyond the original problem of post-socialist reconstruction. The central strategic questions concerned not the survival of institutes but the quality of scientific careers, participation in European programmes, research

infrastructure, open science, responsible evaluation, AI, security, sustainability, knowledge transfer, and public legitimacy. This change in agenda is historically significant because it shows that the post-socialist category has decreasing explanatory power for contemporary Czech science. Historical inheritance still matters, but it increasingly functions as accumulated capacity and institutional memory rather than as the dominant problem of the present. The Academy now operates within debates shared by research organisations throughout Europe. Its challenges concerning AI, data, trust, mobility, climate, and research security are not specifically Czech or post-communist, even though Czech historical experience shapes how they are interpreted. The scientific path from inheritance to strategy is therefore visible precisely in this shift. The institution has moved from reacting to the political system from which it emerged towards anticipating the scientific environment into which it is moving. This does not mean transformation is complete, because no research system reaches a final stable form. It means that the dominant temporal orientation has changed from reconstruction of the past to management of the future.

The strongest strategic asset available to Czech science may ultimately be its capacity for institutional learning. The scientific system has already experienced monarchy, democratic statehood, occupation, authoritarian centralisation, reform, normalisation, democratic transition, state dissolution, European integration, digitalisation, and global crisis. Such a history provides a large repertoire of institutional experiences unavailable to systems that have operated under more stable political conditions. The value of this repertoire depends upon whether it is remembered critically. Historical trauma alone does not produce wisdom, and institutions can repeat errors even when archives documenting earlier failures remain available. Strategic learning requires historians, policymakers, directors, researchers, and public institutions to connect past experience with contemporary decisions. The Academy can contribute because it simultaneously preserves the evidence of previous scientific regimes and participates directly in current research governance. It can therefore examine how centralisation affected autonomy, how isolation affected scientific quality, how evaluation supported transformation, how austerity threatened capabilities, and how internationalisation changed institutional standards. Such knowledge should not prescribe contemporary policy mechanically, because current technological and geopolitical conditions differ from those of earlier decades. Its value lies instead in expanding the range of consequences decision-makers consider plausible. An institution capable of remembering multiple futures that earlier generations once considered inevitable is less likely to mistake present assumptions for permanent truths.

The strategic future should consequently be based on a concept of continuity that is deliberately non-conservative. Czech science does not need to preserve every institute, programme, hierarchy, or method simply because it has historical roots. Research fields change, technologies converge, and some organisational structures lose their rationale. At the same time, perpetual restructuring can destroy precisely the accumulated competences upon which future innovation depends. The challenge is therefore to identify the appropriate unit of continuity. Sometimes it will be an institute, sometimes a research school, collection, dataset, infrastructure, or community of technical expertise. Organisational forms should remain flexible enough to protect these capabilities while allowing structures to change when necessary. This principle offers a more strategic interpretation of the Czech historical experience than either traditionalism or permanent reform. Institutions survive scientifically when they transmit capabilities rather than administrative shells. AV ČR's own genealogy

demonstrates this repeatedly: legal forms and names changed, but research communities, archives, infrastructures, and intellectual traditions could pass through those changes when sufficient institutional care existed. The Academy's future should therefore be evaluated by whether it preserves and renews the capabilities Czech science will need, not by whether its organisational map remains visually stable.

A strategic future also requires confidence about what Czech science can contribute internationally. Smaller states sometimes frame research strategy primarily through catching up with larger scientific systems, but permanent imitation creates dependency of a different kind. Czechia cannot and need not reproduce the research portfolios of Germany, France, the United Kingdom, the United States, or China. It can instead build internationally significant niches where historical expertise, contemporary infrastructure, and strong researchers create comparative scientific advantage. Some of these strengths will be traditional, while others will emerge from new technologies and interdisciplinary combinations. The Academy can help identify such areas because its evaluation systems provide international comparison and its institutional memory reveals where research schools possess unusual depth. European infrastructures and multinational consortia then allow those strengths to connect with capabilities unavailable domestically. Strategic confidence therefore means choosing where Czech science can lead, where it should partner, and where access is more rational than national duplication. Such differentiation is more realistic than universal ambitions and more productive than accepting permanent peripheral status. The movement from historical inheritance to strategic future culminates when Czech science no longer asks only how it compares with stronger systems but where its own knowledge can shape shared scientific agendas.

The final direction of this path depends upon preserving intellectual pluralism. Scientific strategy inevitably creates priorities, but priorities should not become boundaries defining which knowledge is considered legitimate. Czech history provides strong evidence of the damage produced when political systems attempt to determine acceptable intellectual content too narrowly. Contemporary strategic policy uses different language, yet it can create analogous pressures if funding is concentrated almost entirely on economically fashionable or geopolitically urgent themes. The Academy's broad disciplinary composition provides one institutional safeguard because researchers from very different fields participate in a common system of academic governance. Humanities, theoretical sciences, experimental disciplines, and applied research all possess constituencies capable of articulating different temporal horizons and forms of value. This plurality can create conflict over resources, but such conflict is also a source of balance. A mature Academy should not eliminate internal disagreement over priorities; it should organise disagreement through transparent procedures informed by evidence and external assessment. Strategic unity need not mean intellectual uniformity. The Czech scientific future will be strongest when national priorities coexist with protected spaces for questions that current strategy has not anticipated.

Thus, the Czech scientific path from historical inheritance to strategic future should be understood as a transition from accumulated institutional experience towards a deliberately adaptive knowledge system rather than as the replacement of the past by an entirely new scientific order. Czech science inherited learned-society traditions, national cultural responsibilities, university scholarship, research institutes, laboratories, archives, scientific schools, and the contradictory legacy of ČSAV. The democratic transformation after 1989 demonstrated that inherited scientific capital could be preserved without preserving the

political structures through which part of it had been organised. Act No. 283/1992, academic self-government, systematic evaluation, institutional restructuring, and international reopening converted that principle into the foundations of AV ČR. European integration then changed Czech science from a system recovering access to international research into a participant in the European Research Area, shared infrastructures, multinational funding, mobility, and collective debates over scientific governance. The strategic future now requires another transformation of emphasis. Scientific strength will increasingly depend upon the ability to use artificial intelligence critically, preserve open and secure research environments, sustain international talent circulation, maintain irreplaceable infrastructures and long-term datasets, respond to climate and energy pressures, strengthen trustworthy public communication, and connect fundamental research with innovation without reducing knowledge to short-term utility. Humanities and social sciences will remain essential because technological resilience without historical memory, linguistic capacity, legal analysis, social understanding, and democratic legitimacy would be strategically incomplete. The Academy's role will be to provide continuity where continuity creates future capability and change where inherited structures no longer serve scientific purpose. Czechia will not achieve scientific sovereignty through isolation or self-sufficiency, but through strong domestic institutions capable of acting as competent partners within European and global networks. Historical inheritance therefore becomes strategically valuable only when it increases the range of futures a society can navigate. The long Czech experience shows that scientific institutions are strongest not when they attempt to predict one future and organise everything around it, but when they preserve enough intellectual diversity, organisational memory, methodological depth, and international openness to respond when the future develops differently from expectation. AV ČR stands at this threshold not as the conclusion of Czech scientific development but as one of the principal institutions through which historical knowledge, accumulated capability, and strategic choice can be connected. The movement from inheritance to strategy is therefore ultimately a movement from preserving what Czech science has been towards consciously maintaining the conditions that will allow Czech science to become what it cannot yet fully foresee.

3. The Role of AV ČR in the Development of Czech Science, 1993–2025

The role of the Czech Academy of Sciences between 1993 and 2025 can be understood only by placing the institution within the longer history from which it emerged. AV ČR did not begin as an entirely new scientific organisation created after the disappearance of Czechoslovakia, nor did it remain simply a reduced Czech continuation of ČSAV. Its historical importance lies precisely in the way it transformed inherited scientific capacity into a form compatible with democratic government, European integration, professional evaluation, and a plural national research system. The laboratories, institutes, collections, archives, research schools, buildings, and scientific communities that entered the new Academy in 1993 carried substantial intellectual capital accumulated during previous decades. They also carried organisational habits, personnel structures, political memories, technological limitations, and inequalities produced under state socialism. The challenge facing the new Academy was consequently much more difficult than either institutional preservation or institutional abolition. It had to decide which parts of the inherited system represented genuine scientific capacity, which required profound reform, and which no longer justified continued support. The decisions made during the 1990s therefore shaped not simply the future of one

organisation but the structure of Czech science as a whole. Had the Academy been dismantled rapidly, the national research system would have lost specialised communities and infrastructures that universities were unlikely to absorb without significant disruption. Had it been preserved without reform, its legitimacy within democratic Czechia would have remained weak and its scientific competitiveness uncertain. The historical significance of AV ČR between 1993 and 2025 lies in having developed a third path: transformation through inheritance rather than either institutional restoration or institutional erasure (*Czech National Council, 1992*; *Czech Academy of Sciences, 1993*).

The year 1993 should therefore be treated as a decisive constitutional threshold rather than an absolute beginning in scientific time. Act No. 283/1992 established the Academy of Sciences of the Czech Republic and provided a legal bridge through which research workplaces located in the Czech lands could continue within the institutional framework of the new state (*Czech National Council, 1992*). Yet the scientific work conducted on 1 January 1993 had not been invented the previous night. Experiments remained unfinished, manuscripts remained in preparation, long-term observations continued, libraries and collections retained their contents, and research groups preserved knowledge that depended upon years or decades of cooperation. The political disappearance of the Czechoslovak federation therefore occurred more rapidly than the scientific processes taking place within its institutions. This difference between political and scientific time is essential for understanding the role of AV ČR. Legal succession allowed scientific continuity where interruption would have been costly, while constitutional reconstruction made it possible to change the meaning of that continuity. The Academy inherited public responsibility for research but no longer claimed the ideological or hierarchical status once associated with ČSAV. It inherited institutes but subjected them progressively to a different regime of evaluation and self-government. It inherited Czechoslovak scientific traditions while becoming an institution of the independent Czech Republic. The resulting organisation was therefore historically continuous without being politically identical to its predecessor. This distinction became one of the foundations of the Academy's legitimacy during the entire period from 1993 to 2025.

The first major contribution of AV ČR to Czech science was thus preservation under conditions of radical transformation. Scientific systems are vulnerable during periods of political and economic transition because research capacity is accumulated slowly but can be dismantled quickly. The early 1990s combined economic restructuring, severe pressure on public budgets, institutional uncertainty, and rapid changes in the criteria by which science was judged. Some areas of research that had been sustained through the planned economy lost former users or sources of support, while many institutes urgently required technological modernisation and renewed international contacts. The Academy could not prevent all losses, and its transformation included major personnel reductions, mergers, closures, and reorganisation. Yet the existence of a central self-governing framework prevented the transition from becoming an entirely uncoordinated dissolution of research capacity. Evaluation provided a mechanism through which decisions could be related increasingly to scientific performance rather than merely administrative convenience or political preference. Surviving institutes retained enough continuity to preserve long-term programmes and research schools while adapting to new funding and publication environments. The Academy therefore functioned as a stabilising institution during a period when much of Czech society was being reorganised simultaneously. Its importance should not be romanticised, because restructuring imposed serious costs on individuals and disciplines. Nevertheless, preserving a viable core of non-university

fundamental research was one of the preconditions for the later international performance of Czech science. The 1990s demonstrated that institutional resilience can itself become a form of national scientific capital (*Czech Academy of Sciences, 1993*).

The second contribution was the reconstruction of scientific authority. Under state socialism, professional scientific reputation coexisted with political structures capable of influencing appointments, careers, international mobility, and acceptable lines of research. The democratic Academy could not establish legitimacy merely by removing ideological language from statutes. It needed procedures through which scientific judgement itself could be reorganised. Elections to academic bodies, scientific councils, new procedures for selecting institute directors, personnel evaluation, and external assessment progressively shifted authority towards professional communities. This transformation did not eliminate power relationships within science, because all institutions contain hierarchies, reputations, interests, and conflicts. It did, however, alter the legitimate basis upon which such authority could be exercised. Political loyalty ceased to be an acceptable criterion of professional worth, while research quality, disciplinary judgement, and international recognition gained much greater weight. The change was particularly important for younger generations whose careers developed entirely after 1989 and for scholars returning from marginalisation or exile. AV ČR therefore helped reconstruct the social meaning of the scientific elite in democratic Czechia. Scientific leadership was expected increasingly to rest upon recognised professional competence combined with institutional accountability. This transformation of authority was as important as changes in funding or infrastructure because it altered the culture through which scientific careers were reproduced. The Academy's role in Czech science thus included rebuilding trust inside scientific communities as well as producing research.

Systematic evaluation became one of the principal instruments through which this new scientific authority was institutionalised. During the early transformation, evaluation was inseparable from painful questions of organisational survival, but over subsequent decades it became a normal feature of Academy governance. Successive assessment cycles increasingly involved international experts and disciplinary comparison extending beyond Czech institutional boundaries. The large-scale evaluation of research activities for 2010–2014, with participation by more than 1,400 external experts from approximately fifty countries, demonstrated how far the Academy had moved from a research system judged largely through internal or administratively defined criteria (*Czech Academy of Sciences, 2016*). The importance of this development extends beyond AV ČR itself. It contributed to the wider normalisation of international peer assessment within Czech research culture and strengthened the argument that institutional funding could coexist with strong external accountability. The Academy also became an arena in which the limitations of mechanical metrics were confronted because its disciplinary breadth made a single quantitative model especially inappropriate. Humanities monographs, linguistic resources, archaeological documentation, experimental articles, theoretical mathematics, databases, software, and long-term infrastructures could not be judged responsibly through identical indicators. The later participation of AV ČR in European initiatives to reform research assessment therefore developed from a long internal experience rather than from sudden external pressure (*Czech Academy of Sciences, 2024*). Evaluation became not only a method of controlling institutes but a mechanism for defining what different forms of scientific excellence could mean. Through this process, the Academy contributed to the development of a more mature evaluative culture within Czech science.

The role of AV ČR was also decisive in preserving the principle that fundamental research requires institutions with temporal horizons longer than ordinary project cycles. Post-socialist transformation introduced competitive grants and market-oriented expectations that brought necessary dynamism into Czech research. Yet an entirely project-based system would have threatened activities whose value depends upon continuity rather than rapid turnover. Long-term ecological observations, archival programmes, biological collections, astronomical series, dictionaries, critical editions, research infrastructures, and theoretical programmes cannot always be organised effectively through short grants. Academy institutes provided stable institutional homes within which such work could continue while individual research questions evolved. This stability was not simply a survival of socialist organisational practice. Similar functions are performed by public research organisations throughout Europe, even where their institutional histories differ substantially from those of ČSAV. The Czech contribution was to preserve a large institute-based system while redefining its legitimacy through evaluation, autonomy, and international performance. Stable institutional financing therefore became one component of a mixed research economy rather than a substitute for competition. Grants stimulated new directions, while institutional resources protected continuity and infrastructure. AV ČR's existence helped ensure that Czech research policy retained space for knowledge whose future applications could not be predicted easily. In this sense, the Academy protected not merely institutes but the possibility of scientific time extending beyond immediate political and economic demand.

A related contribution lay in the preservation and renewal of scientific schools. Czech science has repeatedly demonstrated that important research capacity resides not only in individual researchers or pieces of equipment but in communities capable of transmitting specialised knowledge across generations. Institutes in chemistry, physics, mathematics, biology, astronomy, materials research, archaeology, history, linguistics, and other disciplines inherited distinctive traditions of research from ČSAV and, in many cases, from earlier organisations. Some of these traditions had been damaged by political interventions, isolation, or technological stagnation, while others had maintained strong international standing even under difficult conditions. Post-1993 openness allowed surviving schools to reconnect rapidly with international disciplinary communities. Foreign travel, new collaborations, improved access to literature, international grants, and the return or renewed participation of researchers with experience abroad changed their intellectual environment. Younger scientists no longer had to inherit local disciplinary cultures without comparison with alternatives. The strongest research schools consequently became more international while retaining institutional memory accumulated domestically. This combination contributed substantially to the competitiveness of Czech science. Continuity provided deep expertise; internationalisation tested whether that expertise remained relevant. AV ČR thus functioned as a mechanism through which inherited scientific schools could become contemporary rather than merely historical.

The Academy's impact was particularly visible in the natural and technical sciences, where modernisation of equipment and research infrastructure became indispensable. The scientific value of strong research traditions could not be sustained indefinitely if laboratories lacked advanced instrumentation, computing resources, technical support, or international access. During the 1990s, many institutes confronted the technological consequences of late-socialist underinvestment and the financial constraints of transformation. Over the following decades, national programmes, European funding, institutional resources, and collaborative

infrastructure projects allowed major renewal. Academy institutes became participants in research environments ranging from molecular and cellular biology to advanced physics, chemistry, materials science, environmental research, astronomy, and computational fields. Modern infrastructure changed the position of Czech science internationally because research groups increasingly became not merely users of foreign facilities but hosts or partners within wider European networks. This transformation had multiplier effects. Strong infrastructure attracted international researchers, strengthened doctoral education, created specialised technical employment, and increased the feasibility of ambitious grant applications. AV ČR therefore contributed to Czech science not only through research outputs but through the maintenance of material conditions under which internationally competitive research became possible. The Academy's institute structure allowed investments to be accumulated over longer periods than would often be possible within temporary project consortia. Its role became especially significant in fields where critical mass and technical continuity determine whether a national research community can participate effectively at the scientific frontier.

The life sciences offer an equally important example of how institutional continuity could support rapid scientific renewal. Biology, chemistry, molecular sciences, ecology, genetics, and related fields changed dramatically after 1990 as new methods and technologies transformed the international research frontier. Czech institutes could not remain competitive simply by preserving expertise developed under earlier conditions. They needed to integrate new instrumentation, computational analysis, molecular techniques, genomic methods, and international standards of collaboration. The Academy's institutional framework gave research communities the continuity required to undergo this methodological transformation without losing accumulated disciplinary knowledge. Cooperation with universities and new shared research centres further reduced the isolation that had once separated academy and higher-education research. European programmes and foreign recruitment added new intellectual influences. The result was not homogeneous success, and different institutes modernised at different speeds. Nevertheless, the broader institutional system proved sufficiently adaptable to allow major areas of Czech life science to enter 21st-century international research networks. This demonstrates one of the central features of AV ČR's role between 1993 and 2025: it did not merely conserve scientific capital but repeatedly subjected that capital to technological and methodological renewal. Continuity became productive because it remained open to transformation.

The humanities and social sciences reveal another dimension of the Academy's importance. Their post-1989 transformation involved not only modernisation of infrastructure but recovery of intellectual freedom, reinterpretation of archives, reconstruction of suppressed research questions, and renewed engagement with international methodological debates. Institutes concerned with history, contemporary history, philosophy, sociology, economics, law, linguistics, literature, archaeology, ethnology, and cultural research played a particularly important role in interpreting the democratic transformation of Czech society itself. Research on communist repression, exile, property transformation, social inequality, political institutions, national memory, European integration, language, and cultural heritage supplied Czech society with forms of knowledge that were difficult to develop freely before 1989. The establishment or renewal of institutes working on contemporary history and other previously restricted subjects demonstrated that institutional development could include restitution as well as continuity. At the same time, older collections, archives, dictionaries, source editions, and archaeological records retained their value even when ideological frameworks

surrounding them had to be rejected. AV ČR therefore became one of the principal institutional spaces in which the Czech humanities could combine critical revision with preservation of accumulated evidence. This function was central to the intellectual reconstruction of post-socialist Czechia. A democratic state requires not only scientific and technological capacity but also the ability to investigate its own history, institutions, language, and social change critically. The Academy helped ensure that these forms of knowledge remained part of the national research system rather than being relegated entirely to cultural commemoration.

Its role in preserving Czech language and cultural scholarship deserves particular emphasis. Global science increasingly operates through English, international journals, multinational databases, and transnational research programmes. These developments expand scientific communication but can create pressures on scholarship concerned with smaller national languages and culturally specific materials. Research on Czech language, historical sources, national literature, archaeological heritage, regional culture, and intellectual history cannot be expected to emerge automatically from international market incentives. Czech society requires domestic institutions willing to preserve sources, build corpora, prepare dictionaries, conduct long-term editions, and maintain expertise whose primary empirical objects are nationally specific. AV ČR has performed this role while simultaneously internationalising the methods and comparative frameworks of the relevant disciplines. The result demonstrates that national cultural responsibility and international scientific standards need not be opposites. Czech-specific scholarship can contribute to European and global disciplines when it is methodologically rigorous and internationally connected. The Academy therefore remained a national institution in a deeper sense than merely receiving funding from the Czech state. It preserved intellectual capacities through which Czech society could investigate and interpret its own linguistic and cultural inheritance. In a medium-sized European country, this function forms part of scientific sovereignty as much as laboratory research does.

The Academy also transformed relations between non-university research and higher education. The post-1993 development of Czech universities created a scientific environment very different from that of late socialism. Universities recovered autonomy, expanded doctoral programmes, intensified international cooperation, and increased research ambitions. AV ČR could therefore not preserve a hierarchical conception in which academy institutes represented the unquestioned pinnacle of national research. Its contribution became increasingly complementary. Academy researchers supervised doctoral students, taught specialist courses, participated in joint programmes, and cooperated with university researchers in laboratories and research centres. Universities supplied new generations of students and broad disciplinary environments, while Academy institutes offered concentrated research settings, specialised collections, technical infrastructure, and long-term programmes. The institutional boundary remained legally important but became intellectually porous. This development strengthened Czech science because researchers could combine the advantages of both organisational sectors rather than choose between them completely. It also helped integrate the Academy socially into the broader research and educational system, making its public financing easier to justify through national rather than exclusively institutional outcomes. The post-1993 relationship between AV ČR and universities therefore represents one of the most important structural changes in Czech science. Cooperation replaced claims to institutional supremacy, even though competition for grants, researchers, and resources naturally remained (*Czech Academy of Sciences, 2006*).

Doctoral education became one of the principal channels through which this relationship shaped the future of Czech science. Academy institutes could not award university degrees independently in the same way as universities, yet they provided research environments in which large numbers of doctoral candidates developed scientific careers. Students gained access to laboratories, archives, research groups, international collaborations, and mentors whose principal professional responsibility was research. Academy researchers, in turn, remained connected with the educational process through university teaching and supervision. This system helped transmit specialised expertise while preventing the institute network from becoming generationally closed. It also created mobility between institutional sectors because researchers trained partly inside Academy workplaces could later build careers at universities, companies, hospitals, public institutions, or foreign laboratories. The influence of AV ČR on Czech science therefore extended considerably beyond its own employment statistics. It contributed to the reproduction of scientific competence across the national system. This function is especially important when assessing the Academy's historical significance because institutions affect science not only through what they publish but through the people they train. By 2025, the distinction between "Academy scientist" and "university scientist" often described employment rather than completely separate intellectual communities. Such permeability was one of the clearest signs that the post-socialist research system had matured.

Internationalisation was another area in which AV ČR played a system-wide role. During the early 1990s, reopened mobility allowed Czech researchers to reconnect with international science after decades of politically structured access. Over time, Academy institutes became increasingly embedded in European and global networks through joint projects, bilateral programmes, multinational infrastructures, international conferences, scientific organisations, and researcher mobility. European Union accession in 2004 intensified this integration and changed the administrative as well as intellectual environment of research. Institutes learned to operate within Framework Programmes, manage international consortia, comply with complex financial and legal rules, and recruit across borders. International publication and foreign peer review became normal components of scientific life. Success in European Research Council competitions provided especially visible evidence that researchers based in Czech institutions could compete within one of Europe's most demanding frontier-research funding systems. The importance of such participation goes beyond the grants themselves. International projects create professional networks, circulate methods, improve institutional management, and increase the attractiveness of Czech workplaces to researchers abroad. AV ČR therefore became one of the principal organisations through which Czech science moved from post-Cold War reopening to routine participation in transnational research. By the 2020s, internationalisation no longer represented recovery from isolation; it had become part of the normal institutional architecture of Czech science.

European integration altered the Academy's role further by giving it opportunities to contribute to research governance and scientific advice beyond the national level. Membership and participation in organisations such as ALLEA and EASAC connected AV ČR with other European academies and placed Czech researchers within transnational expert networks. Such participation is significant for a medium-sized state because scientific influence within Europe depends not only upon research expenditure but also upon the credibility of expertise contributed to common institutions. The Academy could bring Czech scientific perspectives into discussions concerning climate, energy, health, integrity, open science, research security,

and the organisation of the European Research Area. At the same time, European standards and debates entered Czech institutional practice through the same networks. This reciprocal movement marked a transition from internationalisation as access towards internationalisation as agency. AV ČR increasingly participated in debates about how European science should evaluate research, protect academic freedom, organise openness, and respond to strategic challenges. Its role in Czech science therefore included acting as an institutional interface between national research communities and wider European governance. This function strengthened Czech scientific capacity without requiring the country to reproduce the scale of larger states. Knowledge networks allowed national expertise to exercise influence beyond demographic size.

The Academy's role in research infrastructures reinforced this European position. Contemporary science increasingly relies upon facilities whose scale, cost, or complexity makes national self-sufficiency unrealistic. Medium-sized states benefit when strong domestic institutions can participate in shared infrastructures rather than attempting to build everything independently. AV ČR institutes became important partners in such networks because they possessed long-standing technical expertise, specialised research communities, and institutional continuity. European integration therefore changed the meaning of national infrastructure policy. The question was no longer whether Czechia could possess every scientific capability domestically, but which capabilities it should develop deeply enough to contribute distinctive value within international systems. The Academy's permanent institutes were well suited to sustaining such specialisation because they could maintain technical staff and institutional knowledge across long periods. At the same time, participation in shared facilities gave Czech researchers access to capabilities beyond the domestic research budget. AV ČR thus helped convert European interdependence into national scientific strength. Its contribution lay in ensuring that Czechia entered collaborative infrastructures as a knowledgeable partner rather than merely as a user dependent upon decisions made elsewhere. This capacity is one of the clearest strategic outcomes of the transformation initiated in 1993.

Modernisation also changed the Academy's relationship with innovation and practical application. During the socialist period, research had often been connected administratively with state economic planning, although actual transfer from science to production was uneven. Post-1989 reform initially emphasised the autonomy of fundamental research, partly as a corrective to command-oriented conceptions of usefulness. Over time, however, the relationship between basic and applied research became more sophisticated. Institutes developed patenting, licensing, contractual research, technology transfer, cooperation with companies, and support for spin-off activity where appropriate. The important change was that application emerged increasingly through negotiated relationships rather than central administrative directives. Scientific opportunity, economic need, public policy, and institutional partnerships could intersect in multiple ways. AV ČR's role was therefore not to transform itself into an industrial research corporation but to create channels through which publicly generated knowledge could move towards external users when scientifically and socially appropriate. This plural approach was necessary because the Academy's disciplinary breadth means that application takes very different forms. Chemistry may generate patents, while linguistics can contribute to language technologies, history to cultural institutions, economics to public policy, and ecology to environmental management. The Academy's contribution to Czech innovation therefore extends beyond conventional commercial

indicators. It maintains a broad knowledge base from which multiple forms of application can emerge.

Strategy AV21 provided one of the most visible institutional frameworks for connecting this broad research base with societal challenges. Introduced from 2015 under the principle of top research in the public interest, the strategy organised cross-institute programmes around themes whose complexity exceeded individual disciplines (*Czech Academy of Sciences, 2025*). Energy, health, environmental sustainability, food security, social resilience, cultural identity, technological transformation, and other problems required combinations of expertise that the Academy's traditional institute structure could not always mobilise automatically. Strategy AV21 created an additional horizontal layer without abolishing disciplinary homes. Its significance within Czech science lies partly in demonstrating a democratic alternative to central planning. Research could be oriented towards public challenges through scientific coordination rather than political command. The programme also encouraged cooperation with universities, government bodies, businesses, and other external partners, thereby connecting Academy resources with the wider national innovation and policy system. By 2025, Strategy AV21 had become a durable component of the institution's identity rather than a temporary reform initiative. It showed how an academy built upon long-term fundamental research could respond strategically to contemporary problems without abandoning curiosity-driven science. This ability to connect disciplinary depth with societal relevance became increasingly important to the Academy's public legitimacy.

The public mission of AV ČR expanded substantially during the same period. In the early 1990s, the institution often had to explain why it should survive at all as a publicly funded non-university research organisation. By the 2020s, its public activities included large science festivals, lectures, exhibitions, media communication, school programmes, open days, publications, podcasts, online resources, and direct engagement with citizens. Such activities transformed the Academy from an institution largely visible through specialised scientific communities into one of the major organisers of public scientific culture in Czechia. The Week of the Czech Academy of Sciences and the Science Fair created opportunities for tens of thousands of people to encounter research directly, including laboratories, instruments, demonstrations, and researchers themselves. Public communication became increasingly professional because scientific legitimacy in a democracy cannot depend solely upon formal institutional prestige. Citizens need to understand why long-term research deserves support and how scientific conclusions are produced. This is especially important in an information environment where expert knowledge competes with misinformation, political propaganda, and commercial claims. AV ČR therefore contributed to Czech science by strengthening not only research production but the public visibility of scientific methods and expertise. The Academy's social role became increasingly inseparable from its scientific role.

Scientific advice represents a more demanding dimension of this public mission. Governments require expertise in health, energy, environment, demography, law, economics, language, technology, security, and many other areas, but public administration cannot maintain full specialised competence across every field. A broad research organisation can therefore provide independent knowledge when policy questions become technically or socially complex. AV ČR institutes increasingly contributed expert analyses, recommendations, data, and public commentary while remaining outside direct political decision-making. The distinction is crucial. Scientists can clarify evidence and uncertainty, but democratic authority remains with elected institutions. The Academy's historical experience gives this boundary

particular importance because ČSAV had operated within a political system where scientific institutions could be subordinated ideologically to state power. The democratic Academy's credibility depends upon the opposite principle: proximity sufficient for expertise to be useful, but independence sufficient for conclusions to remain professionally rather than politically determined. This model became particularly important during crises, when governments needed rapid advice while evidence remained incomplete. AV ČR's contribution to Czech science therefore included strengthening the institutional culture through which expertise could enter democratic decision-making without becoming indistinguishable from politics.

The COVID-19 pandemic demonstrated the practical importance of this capacity. Academy institutes contributed through biomedical research, diagnostic work, materials science, mathematical and statistical analysis, economic research, social-science expertise, and public communication. The significance of this mobilisation lies less in any one individual result than in the fact that relevant expertise already existed when the crisis began. Fundamental research conducted before 2020 created knowledge, laboratories, datasets, and professional networks that could be redirected towards urgent problems. The pandemic therefore revealed the strategic value of institutional continuity more clearly than normal research conditions often do. Czech society could not have created virologists, molecular biologists, economists, psychologists, or modelling specialists at the moment political demand for their expertise suddenly increased. AV ČR's long-term research capacity functioned as a reservoir of competence. This experience strengthened the argument developed elsewhere in this chapter that fundamental research contributes directly to national resilience. It also demonstrated why disciplinary breadth matters, because the crisis involved not only disease but behaviour, education, labour markets, public trust, logistics, and economic policy. The Academy's response showed how a broad scientific institution could mobilise different forms of knowledge without being organised permanently around one emergency.

The war against Ukraine and the resulting geopolitical crisis created a different test. Energy security, migration, disinformation, historical interpretation, economics, political systems, and international security all became more urgent topics within Czech public debate. The Academy responded not only through research and expert communication but through institutional solidarity with threatened scholars. Programmes supporting Ukrainian researchers allowed scientific careers disrupted by war to continue within Czech institutes and later informed broader mechanisms for researchers at risk. This response had particular historical resonance because Czech and Czechoslovak science had itself experienced occupation, exile, purges, and political exclusion. AV ČR therefore transformed scientific memory into contemporary institutional responsibility. At the same time, the Academy suspended or ended formal cooperation with institutions in Russia and Belarus, demonstrating that scientific internationalism increasingly had to coexist with ethical and security considerations. The war thus revealed the complexity of the Academy's international role by 2025. It was simultaneously a national research organisation, a participant in European science, a host for endangered researchers, and an institution responsible for managing the risks of geopolitical cooperation. Such responsibilities would have been difficult to imagine during the early post-socialist phase, when the primary challenge was simply reopening international contacts. Their emergence demonstrates how fundamentally the Academy's place in Czech and European science had evolved.

Climate, energy, and environmental questions provided another area in which AV ČR contributed to long-term national capacity. Institutes maintained expertise in atmospheric science, ecology, biodiversity, hydrology, soils, materials, plasma physics, nuclear technologies, renewable energy, and related fields. Many of these research programmes operate on timescales much longer than ordinary political attention spans. Environmental datasets become more valuable as observation periods extend, while energy technologies may require decades of fundamental and applied research before large-scale deployment becomes realistic. The Academy's stable institutional structure therefore allowed Czech science to maintain capabilities whose strategic relevance increased gradually. During the Czech Presidency of the Council of the European Union in 2022, Academy programmes concerning safe and low-emission energy, food security, and resilient society demonstrated how long-established research could be mobilised within contemporary European policy discussions. AV ČR thus connected national research depth with European strategic agendas. Its contribution was not simply to supply policy solutions but to preserve the expertise necessary to evaluate competing technological and social choices. In a medium-sized state, this interpretive capacity is especially important because Czechia will often adopt technologies developed within wider European or global systems. Scientific competence gives the country greater ability to assess those technologies rather than depend entirely upon external expertise.

The Academy's archives, libraries, collections, and institutional-history research represent another contribution whose significance cannot be measured easily through publication or innovation indicators. AV ČR became one of the principal custodians of the documentary history of Czech science, preserving records of learned societies, earlier academies, ČSAV, research institutes, and individual scientists. These materials make it possible to reconstruct how Czech scientific institutions developed through monarchy, democratic statehood, occupation, communism, normalisation, and post-socialist transformation. The Academy therefore acts simultaneously as participant in and historian of Czech scientific development. Its memory institutions preserve evidence not only of achievements but of political intervention, institutional conflict, failed programmes, exile, and rehabilitation. This reflexive capacity strengthens scientific culture because organisations able to investigate their own past critically are less dependent upon celebratory mythology. It also preserves national cultural memory, particularly through humanities collections, source editions, language research, archaeological archives, and personal fonds. By 2025, digital repositories and open-science systems were extending this memory function into born-digital publications, research data, and web resources. The Academy's role in Czech science therefore spans scientific production and preservation of the conditions necessary for future reinterpretation of that production. Such long-term memory is one of the distinctive functions that differentiates a permanent research institution from a temporary project organisation.

Open science further changed the meaning of the Academy's contribution. By the end of the period, publicly supported research was expected increasingly to make publications, data, software, and other outputs accessible where ethical, legal, security, or intellectual-property constraints permitted. The Academy's Open Science Principles formalised this development and linked openness with FAIR data, repositories, responsible research practice, and long-term preservation (*Czech Academy of Sciences, 2024*). This was not merely a technical change in publication policy. It altered the relationship between scientific institutions and society by treating access to knowledge as part of public responsibility. Open science also strengthened

international collaboration because researchers elsewhere could reuse data and results more efficiently. At the same time, it required substantial institutional investment in libraries, metadata, digital infrastructure, data stewardship, and research support. AV ČR's ability to build these capacities demonstrated how scientific modernisation had moved beyond laboratories into the architecture of information itself. The Academy's historical library and archival functions therefore became directly connected with 21st-century research practice. The institution that once preserved printed proceedings now had to preserve code, datasets, digital publications, and other forms of evidence. This continuity of purpose beneath technological change is one of the clearest illustrations of how AV ČR transformed its historical functions between 1993 and 2025.

Artificial intelligence was beginning to create another such transformation by the end of the period. AI affected research methods, data analysis, scientific writing, language technologies, modelling, image interpretation, and the organisation of information across disciplines. For Czech science, the strategic challenge was not simply whether researchers would use AI but whether domestic institutions possessed enough expertise to evaluate and shape its use independently. AV ČR's broad disciplinary profile creates particular potential because AI is simultaneously a mathematical, computational, linguistic, philosophical, legal, social, and scientific-methodological issue. Institutes concerned with language can contribute to Czech-language resources, while computer scientists and mathematicians address technical foundations and other disciplines explore applications and consequences. The Academy's future role therefore builds upon capacities developed during the period ending in 2025. Its importance lies not in competing directly with the largest global technology corporations but in preserving independent scientific competence capable of assessing rapidly changing technologies. This is consistent with the broader historical function of the Academy: maintaining knowledge communities whose strategic significance may exceed the immediate scale of their economic output. AI thus illustrates how the institutional model created after 1993 continues to generate new responsibilities rather than approaching a final stable form.

Research careers provide one of the most consequential measures of the Academy's system-wide role. Czech science cannot remain competitive if strong researchers regard domestic institutions only as temporary stages before permanent migration to larger or wealthier scientific systems. At the same time, international mobility is essential for intellectual renewal. AV ČR therefore increasingly faced the challenge of transforming brain drain into brain circulation. Foreign postdoctoral experience, international recruitment, ERC competition, return opportunities, and transparent career development became central to institutional strategy. The Academy's capacity to host internationally mobile researchers also depended upon administrative services, language accessibility, working conditions, family considerations, and professional culture. These issues show that scientific excellence is produced by institutions as well as individuals. A brilliant researcher requires an environment capable of providing equipment, colleagues, time, administrative support, and career security sufficient for ambitious work. By the 2020s, excellence programmes and support for scientific careers had become explicit strategic priorities within AV ČR (*Czech Academy of Sciences, 2025*). This represented a profound shift from the early 1990s, when personnel policy was dominated by contraction and reassessment of inherited staffing. The Academy had moved from asking which researchers the system could afford to retain towards asking how the Czech research environment could attract and develop the researchers it would need in the future.

Institutional culture became increasingly important within the same process. Democratic self-government could not remain meaningful if leadership procedures were opaque or if younger scientists had little opportunity to influence research environments. Gender equality, transparent recruitment, research integrity, career interruptions, mentoring, and work-life conditions gradually became connected with debates about scientific quality. These issues should not be dismissed as administrative additions to "real" research because they affect who remains within scientific careers and who acquires opportunities to lead. An institution that systematically loses talented people because of avoidable structural barriers weakens its own scientific capital. The Academy's growing attention to gender equality and research culture by the mid-2020s therefore formed part of its modernisation as a European research organisation. At the same time, such policies had to remain connected with credible standards of scientific excellence rather than become purely symbolic compliance. The broader historical significance lies in the transition from a personnel system once strongly influenced by political reliability to one increasingly concerned with transparent professional opportunity. AV ČR's role in Czech science thus included experimentation with the institutional conditions under which merit, diversity, continuity, and career sustainability could coexist.

The relationship between AV ČR and national competitiveness should consequently be interpreted broadly. Scientific competitiveness cannot be measured only through immediate industrial output or international rankings. It includes the capacity to produce reliable knowledge, attract talent, participate in European research, maintain strategic expertise, educate researchers, preserve cultural resources, advise public institutions, and generate technologies or methods whose applications may emerge unpredictably. Academy institutes contribute to several of these dimensions simultaneously. Fundamental research in physics or chemistry may create technological possibilities, while humanities research supports cultural and linguistic capacities essential to a modern national community. Environmental research contributes to adaptation, and social sciences strengthen policy analysis. Archives and libraries preserve intellectual resources whose economic value may be indirect but whose loss would weaken national self-understanding. The Academy therefore broadens the very concept of what it means for a country's science to be competitive. A scientifically strong state is not merely one that commercialises rapidly; it is one capable of generating, understanding, preserving, and applying knowledge across different time horizons. AV ČR's institutional breadth allowed Czechia to maintain this more plural concept of scientific capacity between 1993 and 2025.

The evidence available by the end of the period indicates that the Academy had become one of the principal contributors to Czech research performance. It comprised fifty-four public research institutions and more than 8,000 employees, and Academy reporting based on national research evaluation data indicated that its institutes accounted for a disproportionately large share of outputs classified within the highest category of scientific quality (*Czech Academy of Sciences, 2025*). Aggregate figures should not be treated as complete measures of scientific value, particularly across very different disciplines. Nevertheless, they demonstrate that AV ČR had not survived merely because of historical prestige or institutional inertia. Its continued role rested upon substantial contemporary research performance. This is crucial for interpreting the period historically. The Academy's success cannot be reduced to having preserved old institutions; preservation would have possessed little strategic value had those institutions ceased to generate competitive knowledge. The post-1993 transformation succeeded to the extent that inherited capacities

became productive within new scientific environments. Performance therefore became the bridge between historical continuity and contemporary legitimacy. AV ČR remained central to Czech science because it was both historically rooted and scientifically active.

The Academy also contributed to Czech scientific identity by showing that national scientific strength can coexist with deep European integration. The Czech scientific community of 2025 was much more international than that of 1993 in terms of publication, mobility, funding, infrastructure, recruitment, and professional networks. Yet this internationalisation did not make AV ČR less significant as a national institution. It made the Academy one of the channels through which Czech public investment entered global knowledge production and through which international knowledge returned to Czech society. National scientific identity therefore became less about intellectual self-sufficiency and more about competent participation. Czechia did not need to possess every research capability independently, but it needed institutions capable of understanding, contributing to, and benefiting from international science. AV ČR fulfilled this role through specialisation combined with network participation. The Czech scientific path thereby moved beyond the older contrast between national science and cosmopolitan science. The Academy demonstrated that a modern national institution can be valuable precisely because it is internationally embedded. Its Czech character lies in the public responsibilities it carries and the scientific capacities it preserves, not in insulation from foreign influence.

This transformation has a wider European significance because it provides an example of how a large post-socialist academy system could be democratised without being dismantled entirely. Across Central and Eastern Europe, the fate of academy research networks after 1989 differed considerably. Some states transferred substantial research capacity elsewhere, while others retained and reformed large institute systems. The Czech case is distinctive for combining preservation of the institute network with strong self-government, regular international evaluation, public-research-institution status, a separate Learned Society, and extensive integration with universities and European programmes. The resulting model should not be treated as universally transferable because every national research system has different demographic, historical, and institutional conditions. Its comparative significance lies instead in demonstrating that organisational structures inherited from an authoritarian regime are not automatically inseparable from that regime's political logic. Research institutes can be reconstituted under democratic rules when scientific value justifies continuity. This is one of the broader historical lessons of AV ČR's development from 1993 to 2025. Institutions can outlive political systems without preserving their political identity, provided that governance, evaluation, and accountability are genuinely transformed.

At the same time, the Czech experience demonstrates why continuity should never become entitlement. The legitimacy of AV ČR cannot rest permanently upon its historical genealogy, the achievements of earlier scientists, or the difficulty of reconstructing specialised capacity once lost. Every generation must demonstrate that existing institutions remain scientifically and socially valuable. The Academy's own history after 1993 supports this principle because its survival was secured through evaluation, restructuring, and openness rather than through refusal to change. Some research organisations were closed or merged, and others transformed their disciplinary profiles substantially. New priorities emerged as technologies and societal problems changed. This capacity for internal differentiation is crucial to the Academy's future. Preserving long-term research does not require preserving every administrative structure indefinitely. The appropriate unit of continuity may be a research

school, collection, infrastructure, dataset, or specialised competence rather than an institute name. AV ČR's role in Czech science is therefore strongest when it acts as a steward of scientific capability rather than a defender of organisational permanence. That distinction will become increasingly important as AI, climate change, demographic shifts, and technological convergence alter the structure of research in coming decades.

By 2025, the Academy's strategic agenda showed how far the institution had moved from the problems of its founding period. The principal concerns now included European funding, scientific excellence, research careers, knowledge transfer, university cooperation, digital transformation, research security, sustainability, public communication, open science, and the further development of Strategy AV21 (*Czech Academy of Sciences, 2025*). These priorities belonged to the world of contemporary European science rather than to the immediate post-socialist transition. The shift does not mean that historical inheritance ceased to matter. On the contrary, institutional memory continued to shape the Academy's understanding of autonomy, long-term research, and the dangers of political interference. What changed was the temporal orientation. The institution no longer defined itself primarily through what it had escaped or inherited from ČSAV. It increasingly defined itself through the problems it expected to confront in the future. This transition from retrospective transformation to prospective strategy is perhaps the clearest indicator that AV ČR had become a mature institution of the Czech Republic rather than a provisional successor to a dissolved Czechoslovak structure. By the end of 2025, the central historical question was no longer whether the Academy had successfully separated itself from state socialism. It was how the Academy would use the scientific capital preserved and renewed during three decades of democracy.

The role of AV ČR between 1993 and 2025 can therefore be interpreted as a process of institutional translation. The Academy translated inherited research institutes into self-governing public institutions, political rupture into legal continuity, national scientific traditions into European participation, disciplinary depth into interdisciplinary programmes, public financing into internationally evaluated research, archives into digital memory infrastructures, and fundamental science into multiple forms of societal relevance. None of these translations was complete or free from tension. Internationalisation created competition for talent, evaluation created administrative burdens, public communication created pressure for visibility, open science introduced new costs and responsibilities, and strategic priorities raised questions about the protection of curiosity-driven research. Yet these tensions are characteristic of mature scientific systems rather than evidence that transformation failed. The Academy's significance lies in developing institutions capable of negotiating them without abandoning either autonomy or public responsibility. Its history between 1993 and 2025 therefore represents not the disappearance of contradiction but the creation of democratic procedures through which contradiction could be managed more openly.

The final historical judgement should consequently avoid both triumphalism and reductionism. AV ČR did not single-handedly modernise Czech science, and many crucial developments occurred within universities, hospitals, companies, state agencies, private organisations, and international networks. Nor did every Academy institute achieve equivalent international success, and the Czech research system continued to face problems involving funding, salaries, administrative burden, technology transfer, regional concentration, and the attraction of researchers. Yet the Academy's contribution was sufficiently broad and structurally important that the history of Czech science after 1993 cannot be understood without it. It preserved research capacity during transformation, reconstructed professional

governance, institutionalised evaluation, supported disciplinary continuity, helped renew humanities scholarship, expanded international participation, maintained major infrastructures, trained researchers, developed public engagement, and provided expertise during national and European crises. It also preserved the scientific memory through which earlier periods of Czech research could be studied critically. These functions interacted rather than operating separately. Their combination made AV ČR one of the principal institutions through which Czech science moved from post-socialist reconstruction towards a more mature European research system.

Thus, the role of the Czech Academy of Sciences in the development of Czech science between 1993 and 2025 was neither that of a passive successor to ČSAV nor that of an institution created anew by the democratic Czech state, but that of a historical mediator capable of converting inherited scientific capital into contemporary and future capacity. It preserved laboratories, research schools, archives, collections, long-term programmes, and specialised expertise at a moment when rapid institutional dismantling could have produced irreversible losses, yet it simultaneously subjected that inheritance to restructuring, evaluation, self-government, and international comparison. It helped replace political authority over science with professional authority while demonstrating that autonomy could remain compatible with public accountability. It maintained a powerful non-university research sector while progressively redefining relations with universities through cooperation rather than hierarchy. It supported the modernisation of natural, technical, social, and human sciences and preserved disciplines whose national significance could not be measured adequately through immediate economic application. It became one of Czechia's principal gateways into European science through mobility, international peer review, collaborative infrastructures, Horizon programmes, ERC competition, ALLEA, EASAC, and the wider European Research Area. It contributed to innovation without abandoning fundamental research, developed Strategy AV21 as a mechanism for connecting disciplinary depth with societal challenges, and strengthened knowledge transfer without allowing commercialisation to become the universal measure of scholarly value. It expanded public communication and scientific advice, making the Academy increasingly visible as an institution of democratic expertise rather than a closed corporation of specialists. During the COVID-19 pandemic, the energy and security crises following Russia's invasion of Ukraine, and growing environmental and technological challenges, it demonstrated why long-term research capacity constitutes a form of national resilience. Its support for threatened researchers connected Czech memories of repression and exile with contemporary European responsibility for academic freedom. Its archives, libraries, datasets, and digital repositories ensured that scientific memory remained available for future reinterpretation, while open science extended the public accessibility of research. By 2025, AV ČR had become a network of fifty-four public research institutions whose strategic agenda concerned excellence, European funding, careers, AI, digital transformation, research security, sustainability, innovation, public trust, and the future of Czech participation in international science rather than the unresolved institutional legitimacy of the post-socialist transition. The deeper historical significance of this development lies in the fact that the Academy did not secure continuity by resisting change. It secured continuity by repeatedly changing the forms through which Czech scientific capability was organised. From this perspective, the period 1993–2025 represents a completed historical cycle: the Czech Academy moved from inheriting a research system shaped by the 20th century to becoming one of the institutions through which the Czech Republic could consciously prepare its scientific capacity for the 21st. The history of AV ČR is therefore not simply the final chapter in

the history of Czech academies reconstructed in this book. It is the point at which centuries of learned tradition, national scientific institution-building, 20th-century institute research, political rupture, democratic reconstruction, and European integration converge into a strategic principle for the future: Czech science develops most successfully when it preserves enough memory to understand its inheritance, enough autonomy to question it, and enough institutional imagination to transform that inheritance into knowledge that future generations will be able to use.

References

Academic Assembly of the Academy of Sciences of the Czech Republic. (1993). *Usnesení II. zasedání Akademického sněmu Akademie věd České republiky ze dne 25. října 1993* [Resolution of the Second Session of the Academic Assembly of the Academy of Sciences of the Czech Republic of 25 October 1993]. Akademie věd České republiky.

Academy of Sciences of the Czech Republic. (2004). *Annual report 2004*. CAS.

Academy of Sciences of the Czech Republic. (2005). *Annual report 2005*. CAS.

Akademie věd České republiky. (n.d.). *Historie* [History]. CAS.

ALLEA. (2022). *Towards climate sustainability of the academic system in Europe and beyond*. All European Academies.

ALLEA. (2023). *History of ALLEA*. All European Academies.

ALLEA. (2023). *The European code of conduct for research integrity: Revised edition 2023*. All European Academies.

ALLEA. (2025). *Activities report 2024–2025*. All European Academies.

ALLEA. (2026). *ALLEA in brief*. All European Academies.

ALLEA. (2026). *Governance*. All European Academies.

Austrian Academy of Sciences. (2023). *20 years of pioneering research: Academy Institute IMBA celebrates anniversary*. AAS.

Austrian Academy of Sciences. (n.d.). *The OeAW at a glance*. AAS.

Baláž, V. (Ed.). (2024). *ERA country report 2023: Czechia*. European Commission, Directorate-General for Research and Innovation.

Centre of Biosciences of the Slovak Academy of Sciences. (n.d.). *Centre of Biosciences*. Slovak Academy of Sciences.

Czech Academy of Sciences. (1993). *Usnesení II. zasedání Akademického sněmu Akademie věd České republiky ze dne 25. října 1993* [*Resolution of the Second Session of the Academic Assembly of the Academy of Sciences of the Czech Republic of 25 October 1993*]. CAS.

Czech Academy of Sciences. (2006). *Stanovy Akademie věd České republiky* [*Statutes of the Czech Academy of Sciences*]. CAS.

Czech Academy of Sciences. (2016). *Evaluation of the research and professional activities of the institutes of the CAS in the period 2010–2014*. CAS.

Czech Academy of Sciences. (2020). *Methodology of evaluation of research and professional activities of research-oriented institutes of the Czech Academy of Sciences for the period 2015–2019*. CAS.

Czech Academy of Sciences. (2020). *The Czech Academy of Sciences tests samples, develops protective materials and advises with economics*. CAS.

Czech Academy of Sciences. (2022). *Energy security in the context of the war in Ukraine*. CAS.

Czech Academy of Sciences. (2022). *Food safety, new genomic techniques, CRISPR*. CAS.

Czech Academy of Sciences. (2022). *Involvement of the CAS in the Czech Presidency of the Council of the European Union*. CAS.

Czech Academy of Sciences. (2022). *Resilient Society for the 21st Century: Crisis potentials and effective transformation*. Strategy AV21, CAS.

Czech Academy of Sciences. (2022). *The Czech Academy of Sciences suspends or ends scientific activities in Russia and Belarus*. CAS.

Czech Academy of Sciences. (2022). *The Czech Academy of Sciences announces fellowships for researchers from Ukraine*. CAS.

Czech Academy of Sciences. (2023). *What international mark is our Academy making?* CAS.

Czech Academy of Sciences. (2024). *Action plan for reforming research assessment at the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2024). *Akademie věd představila výsledky tří výzkumných programů Strategie AV21* [*The Academy of Sciences presented the results of three Strategy AV21 research programmes*]. CAS.

Czech Academy of Sciences. (2024). *Annual report 2023*. CAS.

Czech Academy of Sciences. (2024). *Open Science Principles of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2024). *The CAS will support scientists whose research is at risk in their home country*. Czech Academy of Sciences.

Czech Academy of Sciences. (2025). *Academy Assembly: Thirteen priorities to boost basic and applied research*. CAS.

Czech Academy of Sciences. (2025). *Annual report 2024*. CAS.

Czech Academy of Sciences. (2025). *CAS membership in international organisations*. CAS.

Czech Academy of Sciences. (2025). *Gender Equality Plan 2025–2027*. CAS.

Czech Academy of Sciences. (2025). *International cooperation projects: Mobility and Mobility Plus programmes*. CAS.

Czech Academy of Sciences. (2025). *Mission of the Czech Academy of Sciences*. CAS.

Czech Academy of Sciences. (2025). *Public events: Week of the Czech Academy of Sciences and Science Fair*. CAS.

Czech Academy of Sciences. (2025). *Strategy AV21: Top research in the public interest*. CAS.

Czech Academy of Sciences. (2025). *Úspěšnou dekádu Strategie AV21 podtrhují nové výzkumné programy* [*New research programmes mark a successful decade of Strategy AV21*]. CAS.

Czech National Council. (1992). Zákon České národní rady č. 283/1992 Sb., o Akademii věd České republiky [Act of the Czech National Council No. 283/1992 Coll., on the Academy of Sciences of the Czech Republic]. Sbírka zákonů České republiky, 59.

Drahoš, J. (2015). Z projevu předsedy AV ČR Jiřího Drahoše na XLV. zasedání Akademického sněmu [From the speech of the President of the Czech Academy of Sciences Jiří Drahoš at the 45th session of the Academic Assembly]. *Živa, 63*(1), 2.

Engelbrecht, J., et al. (2002). *National strategies of research in smaller European countries*. ALLEA.

Estonian Academy of Sciences. (n.d.). *Academy: History and mission*. EAS.

European Commission. (2024). *European Research Area Country Report 2023: Czechia*. Directorate-General for Research and Innovation.

European Commission. (2025). *Artificial intelligence in science*. Directorate-General for Research and Innovation.

European Commission. (2025). *European Open Science Cloud*. Directorate-General for Research and Innovation.

European Commission. (2025). *European Research Area Policy Agenda 2025–2027*. Directorate-General for Research and Innovation.

European Commission. (2025). *Widening participation and spreading excellence*. European Commission.

Franc, M., & Dvořáčková, V. (Eds.). (2020). Dějiny Československé akademie věd I (1952–1962) [History of the Czechoslovak Academy of Sciences I (1952–1962)]. Academia.

Franc, M., & Dvořáčková, V. (Eds.). (2024). Dějiny Československé akademie věd II (1963–1970) [History of the Czechoslovak Academy of Sciences II (1963–1970)]. Academia & Masaryk Institute and Archives of the CAS.

Franc, M., Kostlán, A., & Míšková, A. (Eds.). (2010). *Bohemia docta: K historickým kořenům vědy v českých zemích* [*Bohemia docta: On the historical roots of science in the Czech lands*]. Academia.

Hungarian Academy of Sciences. (2019). *MTA: Latest government proposals do not guarantee freedom of science, and separation of research network still unjustified*. HAS.

Hungarian Academy of Sciences. (2019). *Performance report on MTA research network institutes concluded*. HAS.

Hungarian Academy of Sciences. (2019). *Statement of the leaders of the research network of the Hungarian Academy of Sciences*. HAS.

HUN-REN Hungarian Research Network. (2025). *About HUN-REN Hungarian Research Network*. HUN-REN.

Institute of State and Law of the CAS. (n.d.). *O nás* [About us]. CAS.

Library of the CAS. (2025). *Library services in the area of Open Science in relation to OP JAK*. Library of the Czech Academy of Sciences. CAS.

Library of the CAS. (n.d.). *About the Library*. CAS.

Library of the CAS. (n.d.). *ASEP system*. CAS.

Library of the CAS. (n.d.). *Digital Library of the Czech Academy of Sciences*. CAS.

Mádlová, V. (2024). Stálé vojsko vědecké: Česká akademie věd a umění 1891–1952 [The permanent scientific army: The Czech Academy of Sciences and Arts, 1891–1952]. Academia.

Masaryk Institute and Archives of the CAS. (n.d.). *About the Institute*. CAS.

Masaryk Institute and Archives of the CAS. (n.d.). *History of science and scientists in the 20th-century society*. CAS.

Masaryk Institute and Archives of the CAS. (n.d.). *Personal fonds*. CAS.

National Assembly of Czechoslovakia. (1952). Zákon č. 52/1952 Sb., o Československé akademii věd [Act No. 52/1952 Coll., on the Czechoslovak Academy of Sciences]. Sbírka zákonů republiky Československé, 31.

OECD. (2021). *Mobilising public research funding and infrastructures in times of crisis*. In *OECD science, technology and innovation outlook 2021: Times of crisis and opportunity*. OECD Publishing.

OECD. (2021). *OECD science, technology and innovation outlook 2021: Times of crisis and opportunity*. OECD Publishing.

OECD. (2025). *OECD science, technology and innovation outlook 2025: Driving change in a shifting landscape*. OECD Publishing.

Parliament of the Czech Republic. (2005). *Zákon č. 341/2005 Sb., o veřejných výzkumných institucích* [*Act No. 341/2005 Coll., on public research institutions*]. *Sbírka zákonů České republiky*, 122.

Polish Academy of Sciences. (2024). *Horizon Europe collaboration opportunities with institutes of the Polish Academy of Sciences*. PAS.

Polish Academy of Sciences. (2024). *Participation of institutes of the Polish Academy of Sciences in the Framework Programmes of the European Union*. PAS.

Polish Academy of Sciences. (n.d.). *International cooperation*. PAS.

Royal Netherlands Academy of Arts and Sciences. (n.d.). *Academy's institutes*. Royal Netherlands Academy of Arts and Sciences.

Šlechtová, A., & Levora, J. (2004). Členové České akademie věd a umění 1890–1952 [Members of the Czech Academy of Sciences and Arts, 1890–1952]. Academia.

Slovak Academy of Sciences. (n.d.). *Department of International Cooperation: About us*. SAS.

Slovak Academy of Sciences. (n.d.). *International scientific and educational organisations*. SAS.

Slovenian Academy of Sciences and Arts. (n.d.). *History*. SASA.

Slovenian Academy of Sciences and Arts. (n.d.). *SASA introduction*. SASA.

UNESCO. (2021). *Recommendation on Open Science*. United Nations Educational, Scientific and Cultural Organization.

Appendices

Appendix I

Chronology of the Czech Academy of Sciences and Its Predecessors

Year	Event
1746	The *Societas incognitorum* is established in Olomouc, representing an early Enlightenment attempt to organise scholarly communication in the Czech lands and forming part of the broader institutional prehistory of Czech learned societies.
1769	The Private Society of Sciences (*Soukromá společnost nauk*) is established in Prague. It becomes the principal organisational precursor of the later Royal Czech Society of Sciences.
1784	The Prague learned society begins to use the name Royal Czech Society of Sciences (*Královská česká společnost nauk*). It becomes the oldest long-lasting learned society in the Czech lands and remains active until 1952.
Early 19th century	The Royal Czech Society of Sciences consolidates its role as an important centre of scholarly publication, correspondence, scientific discussion, and recognition across the natural sciences and humanities.
1820s–1840s	The growing institutionalisation of Czech scholarship strengthens relations among the Royal Czech Society of Sciences, Prague universities, museums, collections, observatories, and emerging specialist communities.
1848–1849	Revolutionary and constitutional changes in the Habsburg Monarchy intensify debates about Czech language, national culture, education, and the organisation of scholarship, contributing to the later demand for distinct Czech scientific institutions.
1861–1863	Jan Evangelista Purkyně, in his writings under the title *Academia*, proposes an autonomous non-university scientific institution composed of specialised research institutes. His conception anticipates important features of the later institute-based academy model.
1869	The Prague Polytechnic is divided into Czech and German institutions, marking an important stage in the creation of an autonomous Czech-language scientific and technical infrastructure.
1882	Charles-Ferdinand University in Prague is divided into separate Czech and German universities. The division significantly expands the institutional basis of Czech-language academic science.
1888	On 9 October, the Bohemian Diet approves the proposal to establish a new Czech national academy, promoted above all by architect, builder, and patron Josef Hlávka.

Year	Event
1890	On 23 January, Emperor Franz Joseph I approves the establishment and statutes of the Czech Academy of Emperor Franz Joseph for Sciences, Literature and Arts. Josef Hlávka becomes its first chairman later that year. This date is regarded as the formal foundation of the Academy.
1891	On 18 May, the Czech Academy of Emperor Franz Joseph for Sciences, Literature and Arts ceremonially begins its activities in the newly opened building of the National Museum in Prague.
1890s	The new Academy develops its four-class structure covering social sciences, natural and technical sciences, philology, and the arts; publications, grants, prizes, and scholarly recognition become central instruments of its activity.
1908	Following the death of Josef Hlávka, Antonín Randa succeeds him as chairman. The Academy enters a new stage after the end of the founding presidency.
1914–1918	The First World War restricts scholarly communication and international contacts but does not terminate the activities of the Czech Academy or the Royal Czech Society of Sciences.
1918	Following the establishment of independent Czechoslovakia, the Czech Academy removes the imperial designation from its name and becomes the Czech Academy of Sciences and Arts (*Česká akademie věd a umění*, ČAVU). The institution is reinterpreted as part of the scientific and cultural infrastructure of the new republic.
1918–1938	During the First Czechoslovak Republic, ČAVU and the Royal Czech Society of Sciences coexist with universities, museums, the Masaryk Academy of Labour, the Czechoslovak National Research Council, and a growing network of specialist scientific organisations.
1923	The internal institutional culture of ČAVU is modernised; women become eligible for regular membership, and writer Eliška Krásnohorská becomes the first woman elected as a regular member.
1938–1939	The Munich crisis, the destruction of the First Czechoslovak Republic, and the creation of the Protectorate of Bohemia and Moravia radically alter the political environment in which Czech scientific institutions operate.
1939	Nazi occupation places Czech science under severe political restrictions. Czech universities are closed on 17 November 1939, while the Academy and other non-university institutions continue to function under increasingly constrained conditions.
1939–1945	ČAVU preserves parts of Czech scholarly continuity during the occupation, although censorship, persecution, imprisonment, exile, the disruption of international contacts, and the destruction of normal university life seriously damage scientific communities.

Year	Event
1945	The liberation of Czechoslovakia begins a period of scientific and institutional reconstruction. Zdeněk Nejedlý becomes president of ČAVU in July, while universities and research organisations reopen or rebuild their activities.
1946–1948	Specialised research departments and commissions increasingly develop towards permanent research institutes, reinforcing a trend towards professional non-university research that predates the formal creation of ČSAV.
1948	The Communist seizure of power fundamentally changes the political framework of Czech and Czechoslovak science. Personnel vetting, ideological supervision, central planning, and political intervention increasingly affect universities, academies, and research institutions.
1949	The Scientific Research Centre is established. A number of central research institutes in biology, chemistry, physics, geology, mathematics, astronomy, and polarography subsequently develop around this structure, helping prepare the institutional foundations of the future ČSAV.
1952	On 15 January, the government establishes the Commission for the Establishment of the Czechoslovak Academy of Sciences, charged with assessing existing research workplaces, preparing the structure of the new Academy, selecting candidates for membership, and drafting the relevant legislation.
1952	On 29 October, Act No. 52/1952 Coll., on the Czechoslovak Academy of Sciences, is adopted. The legislation restructures the Royal Czech Society of Sciences, ČAVU, and other research bodies into a new centrally organised Academy.
1952	On 17 November, the Czechoslovak Academy of Sciences (ČSAV) is formally inaugurated. Zdeněk Nejedlý becomes its first president. The Royal Czech Society of Sciences and the Czech Academy of Sciences and Arts cease to exist as independent organisations.
1953	The new institute-based system of ČSAV begins full operation. The Archives of the Czechoslovak Academy of Sciences is established on 1 January and begins preserving not only ČSAV records but also the documentary heritage of older Czech scientific organisations.
1950s	ČSAV rapidly expands its network of permanent research institutes. Scientific capacity grows particularly in the natural and technical sciences, while political and ideological supervision remains strong throughout the Academy.
1959	Jaroslav Heyrovský, associated with the institutional tradition that became part of ČSAV, receives the Nobel Prize in Chemistry for the discovery and

Year	Event
	development of polarographic methods of analysis. The award becomes one of the strongest symbols of the international standing of Czechoslovak science.
1962	František Šorm succeeds Zdeněk Nejedlý as president of ČSAV. His presidency becomes associated with professionalisation, greater scientific dynamism, and expanding international contacts.
1963–1967	Political liberalisation, generational change, methodological renewal, and expanding East–West scientific contacts strengthen reform tendencies within ČSAV. Institutes gradually acquire greater professional influence over scientific priorities.
1968	During the Prague Spring, Academy researchers participate actively in discussions concerning economic, legal, social, cultural, and scientific reform. ČSAV becomes an important centre of expert and reformist intellectual activity.
1968	The Warsaw Pact invasion of 21 August ends the political conditions that had supported the reform movement and begins the reversal of liberalisation in Czechoslovak scientific institutions.
1969	Following the federalisation of Czechoslovakia, a Preparatory Commission for the Czech Academy of Sciences temporarily operates in relation to ČSAV workplaces in the Czech Socialist Republic. The plan for a separate Czech academy is not ultimately realised.
1969–1970	The beginning of normalisation leads to political reviews, leadership changes, personnel removals, restrictions on publication and travel, and the reversal of many reforms introduced during the 1960s.
1970	Jaroslav Kožešník assumes the presidency of ČSAV after serving as acting head. The Academy enters the consolidated normalisation period.
1970s	Political and ideological control remains extensive, particularly in the humanities and social sciences. At the same time, major laboratories, collections, research programmes, and scientific schools continue to develop within the ČSAV institute system.
1980s	ČSAV retains substantial scientific infrastructure but increasingly faces technological lag, restricted mobility, bureaucratic planning, and growing difficulty keeping pace with the rapidly changing international research environment.
1985	Josef Říman becomes president of ČSAV, leading the institution during the final phase of state socialism.
1989	The Velvet Revolution ends Communist Party control of Czechoslovak political life. Reform begins rapidly within ČSAV; politically compromised leadership

Year	Event
	structures are replaced and institutes move towards democratic scientific self-government.
1990	On 28 June, Otto Wichterle is elected president of ČSAV. His presidency symbolises the restoration of professional scientific authority and leads the Academy through the democratic transformation of 1990–1992.
1990–1992	ČSAV undergoes internal democratisation before its formal dissolution. Scientific councils, personnel assessment, institutional restructuring, renewed international cooperation, and debate over the future of individual institutes prepare the foundations of AV ČR.
1992	On 6 May, the Czech National Council adopts Act No. 283/1992 Coll., on the Academy of Sciences of the Czech Republic, establishing the legal framework for the future Czech Academy and providing for the continuation of Czech-based ČSAV institutes. The Act becomes effective on 28 December.
1992	Federal Act No. 599/1992 Coll. abolishes the Czechoslovak Academy of Sciences and regulates the transfer of its property, rights, and obligations to the successor states.
1992	On 31 December, ČSAV ceases to exist together with the Czechoslovak federation. Its dissolution ends forty years of the centrally organised Czechoslovak academy system.
1993	On 1 January, the Academy of Sciences of the Czech Republic (AV ČR) begins operating in the independent Czech Republic. During the transitional period, the former Committee for the Administration of ČSAV Workplaces in the Czech Republic temporarily exercises the powers of the Academy Council.
1993	On 24–25 February, the first Academic Assembly establishes the principal self-governing bodies of AV ČR. Rudolf Zahradník becomes the first president of the modern Czech Academy.
1993	The Academy begins an extensive transformation programme involving evaluation of institutes and researchers, reduction of personnel, mergers and closures of workplaces, and reconstruction of institutional financing and governance.
1993	In October, the Academic Assembly confirms systematic independent evaluation as a central instrument for determining research quality and the future development of Academy institutes.
1994	The Learned Society of the Czech Republic is founded under the initiative of leading Czech scientists, including Otto Wichterle. It restores the freely elected learned-society function as an institution separate from the research-performing AV ČR.

Year	Event
1995	The basic post-socialist transformation framework of AV ČR is consolidated. The Academy increasingly defines its role through high-quality fundamental research, international cooperation, evaluation, and partnership with universities rather than through the hierarchical authority formerly claimed by ČSAV.
1990s	AV ČR undergoes rapid international reopening. Research mobility, foreign collaboration, access to international literature, competitive grants, and professional comparison with Western and global scientific communities become normal features of Academy research.
2001	Helena Illnerová becomes president of AV ČR, the first woman to head the Academy or its principal institutional predecessors.
2004	The Czech Republic joins the European Union on 1 May. AV ČR enters a new phase of participation in the European Research Area, EU Framework Programmes, European mobility, and multinational scientific cooperation.
2005	Act No. 341/2005 Coll., on Public Research Institutions, together with amendments to the Act on the Academy, creates a new legal and economic framework for Academy institutes. The reform prepares their transformation into autonomous public research institutions.
2006	New Statutes of the Czech Academy of Sciences are approved by the Czech government, completing the principal legal preparations for the new public-research-institution model.
2007	From 1 January, Academy institutes operate under the legal status of public research institutions (*veřejná výzkumná instituce*, v. v. i.). The reform significantly changes their governance, property relations, and economic responsibilities.
2009–2010	Major national disputes over research financing produce strong public debate about the future of fundamental research and the Academy. AV ČR becomes a prominent defender of stable institutional support for non-university science.
2010	The Academy Council approves the first Academy-wide Open Access Policy, marking an early institutional commitment to broader access to publicly funded research. The policy later develops into the more comprehensive Open Science framework.
2010–2014	AV ČR conducts a major international evaluation cycle that assesses institutes and research teams against contemporary international disciplinary standards.
2014	On 16 December, President Jiří Drahoš presents the new Strategy AV21, designed to connect excellent fundamental research with major societal challenges through interdisciplinary cooperation.

Year	Event
2015	Strategy AV21 begins with fourteen research programmes under the motto “Top Research in the Public Interest.” The Academy simultaneously marks the 125th anniversary of the establishment of the Czech Academy founded in 1890.
2016	Results of the evaluation of Academy research for 2010–2014 are completed with the participation of more than 1,400 external experts from approximately fifty countries, strengthening international peer review as a central mechanism of Academy governance.
2017	Eva Zažímalová becomes president of AV ČR. Her presidency is associated with further internationalisation, institutional modernisation, open science, public engagement, and the Academy's response to major societal crises.
2020	During the COVID-19 pandemic, Academy institutes mobilise biomedical, materials, mathematical, economic, social-scientific, and other expertise. The crisis significantly expands the visibility of AV ČR as a source of scientific advice and national research capacity.
2020	The Academy marks 130 years since the formal establishment of the Czech Academy of Emperor Franz Joseph for Sciences, Literature and Arts, explicitly reaffirming the longer institutional genealogy of modern AV ČR.
2022	Following Russia's full-scale invasion of Ukraine, AV ČR establishes the Researchers at Risk Fellowship programme to support Ukrainian researchers and doctoral candidates whose scientific work has been disrupted by war.
2022	During the Czech Presidency of the Council of the European Union, the Academy mobilises research around food security and genomic techniques, low-emission and safe energy, and societal resilience, strengthening its role at the interface of Czech and European science policy.
2022	AV ČR joins the European movement for reform of research assessment associated with the Agreement on Reforming Research Assessment and CoARA, building upon its own long tradition of institutional evaluation.
2023	AV ČR marks thirty years of activity in the independent Czech Republic, highlighting the transformation from the post-socialist successor of ČSAV into a mature European public research organisation.
2024	The Academy broadens the Researchers at Risk Fellowship beyond Ukraine to researchers whose work is threatened by war, persecution, or other serious risks in their home countries.
2024	AV ČR presents an Action Plan for reforming research assessment, aligning its evaluation system with broader European principles of responsible assessment.

Year	Event
2024	On 26 November, the Academy Council approves the Open Science Principles of the Czech Academy of Sciences, replacing the 2010 Open Access Policy and establishing a common framework for FAIR data, open access, research software, repositories, and sustainable scientific information management.
2025	On 25 March, plasma physicist Radomír Pánek begins his term as president of the Czech Academy of Sciences, succeeding Eva Zažímalová.
2025	A new Academy Council begins its 2025–2029 term. Strategic responsibilities include research excellence, European funding, scientific careers, international cooperation, knowledge transfer, research evaluation, digital transformation, research security, sustainability, cooperation with universities, public communication, and Strategy AV21.
2025	Strategy AV21 reaches its tenth year, confirming challenge-oriented interdisciplinary research as a durable part of the Academy's institutional structure rather than a temporary programme.
2025	By the end of the period covered by this book, AV ČR operates as a system of 54 public research institutions, combining long-term fundamental research, international competition, European integration, scientific memory, research infrastructure, public expertise, and societal engagement.

Appendix II

Presidents and Leading Representatives of the Academy and Its Predecessors

Because the titles of the highest offices changed over time, the table uses President, Chairman, or another equivalent leadership designation where appropriate. For the Royal Czech Society of Sciences, whose governance structure changed repeatedly and sometimes contained parallel presidential and chairmanship functions, the table includes the principal presidents and selected chairmen who were especially important to the institutional history developed in this book. From the foundation of the Czech Academy in 1890 onwards, the sequence of principal heads is given continuously. The dates are based primarily on the official historical register of the Czech Academy of Sciences.

Years	Person
1784	Johann Tessanek — Chairman of the Royal Czech Society of Sciences
1784–1787	Karl Egon Fürstenberg — President of the Royal Czech Society of Sciences
1784–1789	Eugen of Vrbno and Bruntál — President of the Royal Czech Society of Sciences
1789–1794	Prokop Lažanský of Buková — President of the Royal Czech Society of Sciences
1794–1797	Franz de Paula Hartig — President of the Royal Czech Society of Sciences
1804–1824	Johann Rudolf Chotek — President of the Royal Czech Society of Sciences
1807–1811; 1823–1825	Josef Dobrovský — Chairman of the Royal Czech Society of Sciences
1818–1819; 1841–1845; 1845–1848	Bernard Bolzano — Chairman of the Royal Czech Society of Sciences
1825–1861	František Antonín Kolovrat-Libštejnský — President of the Royal Czech Society of Sciences
1835–1836	František Palacký — Chairman of the Royal Czech Society of Sciences
1840	Josef Jungmann — Chairman of the Royal Czech Society of Sciences
1841–1842	Jan Svatopluk Presl — Chairman of the Royal Czech Society of Sciences

Years	Person
1846	Pavel Josef Šafařík — Chairman of the Royal Czech Society of Sciences
1847	Christian Doppler — Chairman of the Royal Czech Society of Sciences
1852–1853; 1863–1864	Karel Jaromír Erben — Chairman of the Royal Czech Society of Sciences
1854–1855	Jan Evangelista Purkyně — Chairman of the Royal Czech Society of Sciences
1875–1888	Josef Jireček — Chairman of the Royal Czech Society of Sciences
1917–1932	František Vejdovský — Chairman of the Royal Czech Society of Sciences
1932–1945	Josef Janko — Chairman of the Royal Czech Society of Sciences
1946–1952	Rudolf Urbánek — Deputy Chairman and principal senior representative of the Royal Czech Society of Sciences until its dissolution
1890–1908	Josef Hlávka — Chairman of the Czech Academy of Emperor Franz Joseph for Sciences, Literature and Arts
1908–1914	Antonín Randa — Chairman of the Czech Academy
1914–1922	Karel Vrba — Chairman of the Czech Academy
1923–1931	Josef Zubatý — President of the Czech Academy of Sciences and Arts
1931–1939	Josef Bohuslav Foerster — President of the Czech Academy of Sciences and Arts
1939–1945	Josef Šusta — President of the Czech Academy of Sciences and Arts
1945–1952	Zdeněk Nejedlý — President of the Czech Academy of Sciences and Arts
1952–1962	Zdeněk Nejedlý — President of the Czechoslovak Academy of Sciences
1962–1969	František Šorm — President of the Czechoslovak Academy of Sciences
1969–1970	Jaroslav Kožešník — Acting head of the Czechoslovak Academy of Sciences
1970–1980	Jaroslav Kožešník — President/Chairman of the Czechoslovak Academy of Sciences
1981–1985	Bohumil Kvasil — President/Chairman of the Czechoslovak Academy of Sciences
1985–1989	Josef Říman — President/Chairman of the Czechoslovak Academy of Sciences

Years	Person
1990–1992	Otto Wichterle — President of the Czechoslovak Academy of Sciences
1 January–25 February 1993	Jiří Velemínský — Chairman of the Committee for Managing Institutes of the former ČSAV in the Czech Republic; transitional head before the election of the first AV ČR leadership
1993–2001	Rudolf Zahradník — President of the Academy of Sciences of the Czech Republic
2001–2005	Helena Illnerová — President of the Academy of Sciences of the Czech Republic
2005–2009	Václav Pačes — President of the Academy of Sciences of the Czech Republic
2009–2017	Jiří Drahoš — President of the Academy of Sciences of the Czech Republic
2017–2025	Eva Zažímalová — President of the Czech Academy of Sciences
2025–present	Radomír Pánek — President of the Czech Academy of Sciences

Appendix III

Selected Academicians and Major Scientific Figures

The following table is selective rather than exhaustive. It includes scientists and scholars associated with the principal institutional traditions leading to the Czech Academy of Sciences, as well as major figures whose work significantly shaped Czech and Czechoslovak science.

Years	Person
1716–1778	Joseph Stepling — mathematician, physicist, astronomer, and Jesuit scholar; organiser of astronomical and experimental research in Prague and an important precursor of the institutionalised scientific tradition from which the later Prague learned society developed.
1719–1790	Gelasius Dobner — historian and Piarist scholar; pioneer of modern critical Czech historiography and one of the important representatives of Enlightenment historical scholarship in the Czech lands.
1742–1791	Ignaz Anton von Born — mineralogist, geologist, metallurgist, and mining specialist; major Enlightenment organiser of scientific life and one of the central figures associated with the early Prague learned-society movement.
1753–1829	Josef Dobrovský — philologist, Slavist, historian, and leading representative of the Czech National Revival; one of the founders of modern Czech and Slavic philology and a prominent member and chairman of the Royal Czech Society of Sciences.
1756–1832	Franz Josef Gerstner — mathematician, physicist, astronomer, and engineer; professor at Prague University and founding director of the Prague Polytechnic; important figure in the development of technical and mathematical science in Bohemia.
1761–1838	Kaspar Maria von Sternberg — botanist, palaeontologist, geologist, and scientific organiser; one of the founders of modern palaeobotany and a founder of the National Museum in Prague.
1781–1848	Bernard Bolzano — mathematician, logician, philosopher, and theologian; internationally significant precursor of modern mathematical analysis and logic and an important representative of the Royal Czech Society of Sciences.
1787–1869	Jan Evangelista Purkyně — physiologist, physician, and experimental scientist; one of the founders of modern physiology and histology; chairman of the Royal Czech Society of Sciences and author of the *Academia* proposals of 1861–1863 for an autonomous institute-based Czech scientific academy.

Years	Person
1795–1861	Pavel Josef Šafařík — Slavist, philologist, historian, and ethnographer; major scholar of Slavic languages and cultures and chairman of the Royal Czech Society of Sciences.
1798–1876	František Palacký — historian, philosopher, and statesman; founder of modern Czech political historiography and one of the leading scholarly figures of the National Revival; chairman of the Royal Czech Society of Sciences.
1803–1853	Christian Doppler — mathematician and physicist; professor in Prague and formulator of the physical principle subsequently known as the Doppler effect; chairman of the Royal Czech Society of Sciences in 1847.
1838–1907	Jan Gebauer — linguist and philologist; founder of modern historical Czech grammar and one of the most influential representatives of Czech linguistic scholarship; member of the Royal Czech Society of Sciences and the Czech Academy.
1849–1939	František Vejdovský — zoologist, comparative anatomist, and embryologist; major representative of Czech zoological research and long-serving chairman of the Royal Czech Society of Sciences.
1855–1935	Bohuslav Brauner — chemist; internationally recognised authority on rare-earth elements, atomic weights, and the periodic system; member of the Czech Academy and an important teacher of the generation that included Jaroslav Heyrovský.
1873–1966	Bohumil Němec — botanist, plant physiologist, and scientific organiser; major figure in experimental plant science and an influential representative of Czech academic biology during the first half of the 20th century.
1879–1952	Bedřich Hrozný — Orientalist, archaeologist, and linguist; internationally renowned for the decipherment of the Hittite language and for establishing its Indo-European character; one of the outstanding humanistic scholars associated with the Czech Academy.
1890–1967	Jaroslav Heyrovský — physical chemist; founder of polarography and of an internationally recognised Czech school of electroanalytical chemistry; academician of ČSAV and Nobel Prize laureate in Chemistry, 1959. His achievement became one of the clearest symbols of the international standing of Czechoslovak science.
1890–1986	Vilém Laufberger — physiologist and biochemist; pioneer of Czech experimental physiology and protein research, associated particularly with the isolation and study of ferritin; member of older Czech academic institutions and later academician of ČSAV.
1891–1970	Milada Paulová — historian and Byzantinist; specialist in Byzantine and South-East European history; in 1925 became the first woman to obtain a university

Years	Person
	docent qualification in Czechoslovakia, an important milestone in the position of women in Czech academic life.
1893–1960	Eduard Čech — mathematician; internationally influential specialist in topology and differential geometry, associated with Čech cohomology and the Stone–Čech compactification; founder and leading organiser of institutional mathematical research in Czechoslovakia.
1905–1987	Václav Černý — literary historian, critic, comparatist, and essayist; major 20th-century Czech humanities scholar whose Academy career was repeatedly affected by political repression and exclusion.
1906–1980	Jaroslav Průšek — Sinologist and literary scholar; internationally influential founder of the Prague School of Sinology and a major organiser of Oriental studies within ČSAV.
1907–1977	Jan Patočka — philosopher and phenomenologist; internationally recognised Czech philosopher, researcher at the Institute of Philosophy, pupil of Edmund Husserl and Martin Heidegger, and one of the first spokesmen of Charter 77.
1909–1994	Ivan Málek — microbiologist and academician; major organiser of Czechoslovak microbiology and research on continuous microbial cultivation and antibiotics; founder and leading representative of the institutional tradition of the Microbiology Institute.
1909–1990	Václav Votruba — theoretical physicist; founder of a major Czechoslovak school of theoretical and elementary-particle physics and an influential figure in the development of physics within ČSAV.
1913–1980	František Šorm — organic chemist and academician; internationally recognised researcher in natural products and bioactive compounds; founder and first director of the Institute of Organic Chemistry and Biochemistry and President of ČSAV from 1962 to 1969.
1913–1998	Otto Wichterle — polymer chemist, inventor, and academician; founder of Czechoslovak macromolecular chemistry, creator of hydrogels used in soft contact lenses, founder of the Institute of Macromolecular Chemistry, and President of ČSAV in 1990–1992.
1918–1995	Miroslav Katětov — mathematician and topologist; internationally respected representative of the Czech school of topology and an important organiser of mathematical research and academic self-government.
1919–2020	Luboš Perek — astronomer; internationally recognised specialist in galactic structure and planetary nebulae; long-time researcher at the Astronomical Institute and Secretary General of the International Astronomical Union, 1967–1970.

Years	Person
1919–2004	Ota Šik — economist and academic researcher; director of the Economics Institute of ČSAV and principal intellectual architect of the Czechoslovak economic-reform programme of the 1960s.
1924–1983	Radovan Richta — philosopher, sociologist, and academician of ČSAV; leader of interdisciplinary research into the scientific and technological revolution and principal author/editor of *Civilisation at the Crossroads* (1966), one of the most influential Czechoslovak social-science works of the reform era.
1925–2017	Armin Delong — physicist, engineer, and academician; founder of the Czechoslovak school of electron microscopy and long-term director of the Institute of Scientific Instruments; his table-top electron microscope received a gold medal at Expo 58 in Brussels.
1926–2012	Jan Bureš — neurophysiologist and experimental neuroscientist; internationally renowned for research on memory, learning, and cortical spreading depression and regarded as one of the pioneers of modern neuroscience.
1926–1994	Vít Kárník — geophysicist and seismologist; internationally recognised earthquake researcher and co-developer of the Medvedev–Sponheuer–Kárník (MSK) seismic intensity scale; leading representative of the Geophysical Institute.
1926–2003	Karel Kosík — philosopher and social theorist; internationally influential author of *Dialectics of the Concrete* and one of the major intellectual representatives of Czech philosophical reform during the 1960s; later restored to academic life after 1989.
1926–2022	Jaroslav Kurzweil — mathematician; internationally renowned for the generalised integral now commonly known as the Henstock–Kurzweil integral and one of the leading representatives of the Mathematical Institute.
1928–2020	Rudolf Zahradník — theoretical and quantum chemist; founder of an influential Czech school of quantum chemistry and molecular theory; first President of AV ČR, 1993–2001, and one of the principal architects of the Academy's post-socialist transformation.
1929–2009	Zdeněk Ceplecha — astronomer; world authority on meteors and fireballs and founder of a distinguished Czech school of meteor astronomy; his work on the Příbram meteorite fall of 1959 produced the first photographic determination of a meteorite's pre-atmospheric orbit followed by recovery of its fragments.
1930–2018	Emil Paleček — biochemist and biophysicist; pioneer of the electrochemistry of nucleic acids, whose 1960 work opened a new approach to the electrochemical investigation of DNA; one of the internationally most influential scientists of the Czech Academy.

Years	Person
1933–2007	Dušan Třeštík — medieval historian; leading scholar of the formation of the Přemyslid state, early Czech statehood, and medieval Central Europe; influential representative of post-1989 historical research within the Academy.
1934–2025	František Šmahel — medieval historian; internationally renowned authority on Hussitism, the Bohemian Reformation, medieval universities, and late medieval Central Europe; Director of the Institute of History in 1990–1998, founder of the Centre for Medieval Studies, and long-serving Chairman of the Scientific Council of AV ČR.
1934–2017	Jan Svoboda — molecular geneticist and retrovirologist; internationally recognised pioneer of research into retroviral replication and proviruses, long-time scientist and director of the Institute of Molecular Genetics, founding member of the Learned Society of the Czech Republic, and Foreign Associate of the US National Academy of Sciences.
1936–2012	Antonín Holý — medicinal and organic chemist; one of the most internationally important Czech chemists of the late 20th century; his research at the Institute of Organic Chemistry and Biochemistry produced antiviral compounds that became foundations for major medicines against HIV/AIDS and hepatitis B.
1936–present	Jiří Grygar — astronomer, astrophysicist, and one of the most influential Czech science communicators; researcher at the Astronomical Institute and later the Institute of Physics; recipient of the UNESCO Kalinga Prize for the Popularisation of Science (1996). He remained active in Czech scientific public life in 2026.
1937–present	Helena Illnerová — physiologist and chronobiologist; pioneer of Czech research on biological clocks and photoperiodic regulation in mammals; first woman President of AV ČR, serving in 2001–2005. She remained active in Academy scientific life in 2026.
1939–2024	Josef Michl — theoretical and organic chemist; internationally renowned researcher in photochemistry, molecular electronics, organic chemistry, nanorotors, and molecular machines; long associated with the Institute of Organic Chemistry and Biochemistry and among the most highly cited Czech scientists.
1942–present	Blanka Říhová — immunologist; internationally recognised for research in cancer immunology, immunotherapy, and targeted drug delivery; long associated with the Microbiology Institute, former member of the Academy Council, and former President of the Learned Society of the Czech Republic.
1942–present	Václav Pačes — molecular geneticist and genomics specialist; long-time researcher and former director of the Institute of Molecular Genetics; President of AV ČR in 2005–2009 and prominent organiser of Czech molecular-biological research and research infrastructures.

Years	Person
1946–present	Pavel Hobza — theoretical and computational chemist; internationally recognised authority on non-covalent interactions, including the discovery and theoretical description of unconventional hydrogen bonding; recipient of the Schrödinger Medal (2017) of the World Association of Theoretical and Computational Chemists.
1949–present	Václav Hořejší — immunologist and molecular biologist; internationally recognised researcher on leukocyte surface molecules, membrane proteins, and immune-cell signalling; head of the Laboratory of Molecular Immunology and Director of the Institute of Molecular Genetics in 2005–2017.
1955–present	Eva Zažímalová — plant physiologist and biochemist; internationally recognised specialist in the plant hormone auxin, its metabolism, signalling, and transport; former Director of the Institute of Experimental Botany and President of AV ČR in 2017–2025.
1966–2026	Pavel Jungwirth — physical chemist; internationally recognised researcher of ions, water, molecular solvation, and biomolecular interfaces; long-time research-group leader at the Institute of Organic Chemistry and Biochemistry, prominent science communicator, and former President of the Learned Society of the Czech Republic. He died on 23 July 2026.

Appendix IV

Institutes of the Czech Academy of Sciences after 1993

The institutional structure of the Czech Academy of Sciences underwent substantial consolidation, merger, renaming, and legal transformation after 1993. The table below presents the structure existing at the end of 2025, the endpoint of the period covered by this book. At that time, AV ČR consisted of 54 public research institutions, organised principally into three research areas and nine disciplinary sections. 52 constituted research institutes in the narrower evaluative sense, while the Library of the CAS and the Centre of Administration and Operations performed major research-infrastructure and support functions. The grouping follows the official structure of the Czech Academy of Sciences.

It should not be interpreted as implying that all fifty-four institutions existed in precisely this organisational form throughout 1993–2025. The post-1993 Academy underwent repeated restructuring. Some institutes continued directly from ČSAV workplaces; others changed names, were merged, divided, or reorganised, and new institutional configurations emerged in response to scientific and strategic developments. Particularly important transformations included the consolidation of biological and ecological institutes, the development of new biotechnology and global-change research capacities, and the integration of archival and historical-science institutions. The structure presented here therefore represents the institutional endpoint of the 1993–2025 transformation, rather than a frozen image of the Academy as it existed in January 1993.

A major legal threshold occurred on 1 January 2007, when Academy institutes began operating as public research institutions (*veřejné výzkumné instituce*, v. v. i.) under the framework created by Act No. 341/2005 Coll. This legal transformation strengthened their organisational and economic autonomy while retaining their position within the Czech Academy of Sciences. The Academy itself remained an organisational component of the Czech Republic and continued to conduct research through its institutes in accordance with Act No. 283/1992 Coll.

By the end of 2025, this system of fifty-four institutions embodied the principal structural outcome of more than three decades of post-socialist transformation: a large, self-governing, institute-based public research organisation combining fundamental research, specialised research infrastructures, scientific memory, doctoral education, international cooperation, public expertise, and interaction with universities and applied research. The structure therefore preserves significant institutional continuity with ČSAV while operating according to fundamentally different legal, political, evaluative, and international principles.

I. Mathematics, Physics, and Earth Sciences

This first research area brings together eighteen institutes covering mathematics, computer science, astronomy, fundamental and applied physics, nuclear science, instrumentation, mechanics, atmospheric research, geology, geophysics, hydrology, and the study of the Earth's structure. Its composition reflects both the extensive physical-sciences infrastructure inherited from ČSAV and the subsequent modernisation of Czech research after 1993.

No.	Institute
Section 1	Mathematics, Physics, and Computer Science
1	Astronomical Institute of the CAS
2	Institute of Physics of the CAS
3	Institute of Mathematics of the CAS
4	Institute of Computer Science of the CAS
5	Nuclear Physics Institute of the CAS
6	Institute of Information Theory and Automation of the CAS
Section 2	Applied Physics
7	Institute of Photonics and Electronics of the CAS
8	Institute of Physics of Materials of the CAS
9	Institute of Plasma Physics of the CAS
10	Institute of Scientific Instruments of the CAS
11	Institute of Theoretical and Applied Mechanics of the CAS
12	Institute of Thermomechanics of the CAS
Section 3	Earth Sciences
13	Institute of Geophysics of the CAS
14	Institute of Geology of the CAS
15	Institute of Atmospheric Physics of the CAS
16	Institute of Geonics of the CAS
17	Institute of Hydrology of the CAS
18	Institute of Rock Structure and Mechanics of the CAS

II. Life and Chemical Sciences

The second research area consists of eighteen institutes and represents one of the principal concentrations of Czech non-university research in chemistry, molecular and cellular biology, physiology, genetics, microbiology, biotechnology, medicine-related experimental research, botany, zoology, ecology, and global environmental change. It contains several of the scientific traditions most strongly associated with the international reputation of 20th- and 21st-century

Czech science, including polarography, macromolecular chemistry, organic chemistry and biochemistry, molecular genetics, and modern life sciences.

No.	Institute
Section 4	Chemical Sciences
19	Institute of Analytical Chemistry of the CAS
20	Institute of Inorganic Chemistry of the CAS
21	Heyrovský Institute of the CAS
22	Institute of Chemical Process Fundamentals of the CAS
23	Institute of Macromolecular Chemistry of the CAS
24	Institute of Organic Chemistry and Biochemistry of the CAS
Section 5	Biological and Medical Sciences
25	Institute of Biophysics of the CAS
26	Institute of Biotechnology of the CAS
27	Institute of Physiology of the CAS
28	Institute of Microbiology of the CAS
29	Institute of Experimental Botany of the CAS
30	Institute of Experimental Medicine of the CAS
31	Institute of Molecular Genetics of the CAS
32	Institute of Animal Physiology and Genetics of the CAS
Section 6	Bio-Ecological Sciences
33	Biology Centre of the CAS
34	Institute of Botany of the CAS
35	Institute of Vertebrate Biology of the CAS
36	Global Change Research Institute of the CAS

III. Humanities and Social Sciences

The third research area contains seventeen institutions and preserves a particularly important component of the Academy's longer historical mission. Its institutes conduct research in

economics, psychology, sociology, law, history, archaeology, art history, contemporary history, ethnology, philosophy, Oriental and Slavonic studies, Czech literature, and the Czech language. The Library of the CAS is formally assigned to the Section of Social and Economic Sciences, while simultaneously performing an Academy-wide research-information and infrastructure function. The presence of extensive humanities and social-science capacities distinguishes AV ČR from research organisations devoted primarily to laboratory and technological sciences and continues the historical connection between Czech academic institutions, scientific research, cultural memory, language, and national intellectual life.

No.	Institute
Section 7	Social and Economic Sciences
37	Economics Institute of the CAS
38	Library of the CAS
39	Institute of Psychology of the CAS
40	Institute of Sociology of the CAS
41	Institute of State and Law of the CAS
Section 8	Historical Sciences
42	Institute of Archaeology of the CAS, Brno
43	Institute of Archaeology of the CAS, Prague
44	Institute of History of the CAS
45	Masaryk Institute and Archives of the CAS
46	Institute of Art History of the CAS
47	Institute of Contemporary History of the CAS
Section 9	Humanities and Philology
48	Institute of Ethnology of the CAS
49	Institute of Philosophy of the CAS
50	Oriental Institute of the CAS
51	Institute of Slavonic Studies of the CAS
52	Institute of Czech Literature of the CAS
53	Czech Language Institute of the CAS

Academy-Wide Research Infrastructure and Support

The Centre of Administration and Operations of the CAS stands outside the nine disciplinary sections. It provides Academy-wide organisational, technical, economic, information, property, conference, publication-support, and related services required for the functioning of AV ČR and its institutes. Its inclusion completes the total of fifty-four public research institutions constituting the Academy at the end of the period examined in this book.

No.	Institute
54	Centre of Administration and Operations of the CAS

About the Author

Alexander Buychik is a researcher, author, scientific editor, and Doctor of Economic Sciences whose work spans the humanities, social sciences, cultural heritage studies, institutional history, and the study of scientific and socio-economic development. His research interests include the history and philosophy of science, cultural memory, institutional transformation, innovation, and the long-term mechanisms through which knowledge and heritage are preserved and transmitted.

He is the creator and principal developer of the interdisciplinary concept of klironomy, devoted to the systematic study of the preservation, transmission, interpretation, and development of cultural heritage. His scholarly work includes monographs, conceptual studies, educational projects, and interdisciplinary research connecting history, philosophy, culture, economics, and contemporary approaches to knowledge management.

Alexander Buychik serves as Director of Science at the European Institute for Innovation Development (EIID) and is actively involved in international academic cooperation, scientific publishing, research initiatives, and the development of scholarly and educational projects. An important part of his professional activity is dedicated to strengthening international research networks, supporting academic publishing culture, and creating opportunities for cooperation among scholars from different countries and disciplines.

His recent work has increasingly focused on the development of European science, the history of scientific institutions, the transformation of research systems, and the role of knowledge in modern society. *Development of Czech Science: The History of the Czech Academy of Sciences* forms part of this broader research trajectory, examining the Czech Academy not simply as an institution, but as a historical nexus of scientific continuity, political transformation, cultural memory, and European integration.

SCIENTIFIC PUBLICATION

Alexander Buychik

DEVELOPMENT OF CZECH SCIENCE: THE HISTORY OF CZECH ACADEMY OF SCIENCES

Typesetting by Tuculart Edition
Approved for printing on September 6, 2026
Format: 21.0 x 29.7 cm

Tuculart Edition
Zámostní 1155/27, Slezská Ostrava, Ostrava, 710 00, Czech Republic

European Institute for Innovation Development
Hlavnice 163, okr. Opava, 747 52, Czech Republic

Authorisation to Undertake Publishing Activities



ISBN 978-80-88474-48-7
DOI 10.47451/book-2026-10